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Role of switching costs and perceived risk in managing customer loyalty in Vietnam e-commerce

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This research investigates the effects of switching costs and perceived risk on customer loyalty in Vietnam e-commerce context. The study also examines the mediating roles of switching costs and perceived risk in the relationships between important factors including communication, satisfaction and personalization and customer loyalty. A questionnaire survey was conducted with the sample of 437 Vietnamese online shoppers. AMOS 22 was used to analyze the data. The results indicate that perceived risk does not directly affect customer loyalty; instead, the effect of perceived risk on customer loyalty is totally mediated by switching costs. Moreover, switching costs and perceived risk significantly mediate the relationship between each of customer satisfaction, communication and personalization on customer loyalty. The findings give an insight into the roles of switching costs and perceived risk in managing customer loyalty as well as demonstrate new perspectives in explaining paths from customer satisfaction, communication and personalization to customer loyalty.

Keywords: e-loyalty, e-satisfaction, switching cost, perceived risk, e-tailing, personalization

Introduction

In recent years, the rapid growth of Vietnam e-commerce has been driven by accelerating Internet penetration as well as the country's economic reforms and integration (Vietnam Ministry of Industry and Trade, 2016). Since online retailing industry is characterized by low initial investment and potential market growth, the number of Vietnamese Business to Customer (B2C), e-tailers has increased rapidly. While competition in the e-retailing market becomes more and more intense, customers are bombarded with numerous online advertisements, achieving customer e-loyalty is one of the primary targets of every online retailer to achieve sustainable business growth. Determining factors which affect customer e-loyalty, therefore, has long been a central theme of both academic and empirical studies in e-commerce.

As online transactions are featured by anonymity, lack of control and potential opportunism that result in high risk and uncertainty, perceived risk is a crucial topic in ecommerce researches. Currently, there are two different perspectives regarding perceived risks: the risks related to doing transactions with an online retailer and the risks resulted from switching to other online providers (Büttner and Göritz, 2008).While the second perspective represents a psychological component of switching costs which only exits to customers who have already had experience with the online retailer, the first one is available to both potential and current customers and also referred as perceived transaction risks (Kiely, 1997; Lee and Clark, 1996). In this study, we will examine switching costs and perceived risks as two separate variables. While the relationship between switching costs and customer loyalty has been confirmed in many studies and increasing switching costs is one of the key strategies to retain customers, the literature on the relationship between perceived risk and customer loyalty reveals different outcomes. According to Chen and Chang (2005); Cunningham et al. (2005); Forsythe and Shi (2003); Gefen and Devine (2001); Ha (2004) and Zhang and Prybutok (2005), perceived risk directly and negatively affects customer loyalty. However, other studies indicated that perceived risk has no direct effect on customer loyalty, instead, perceived risk merely moderates the effect of switching costs on customer loyalty (Yen, 2010) or complements switching costs to influence customer loyalty (Yen, 2011). More clearly, Yen (2015) found that the effect of perceived risk on customer loyalty is totally mediated by switching costs. In this study, we will test the interrelationships between switching costs, perceived risk and customer loyalty in Vietnam e-retailing context to examine which types of risks, risk of staying with the current online retailer or risk resulted from switching to a new alternative one, will directly affect customer loyalty. Besides, the mediating role of switching costs in the relationship between perceived risk and customer loyalty also has been tested.

Despite the existing arguments about how switching costs, perceived risk and customer loyalty is correlated, most of the previous studies agree that increasing switching costs and reducing perceived risk are important customer-retention strategies. While determinants of switching costs have been a popular topic in marketing researches, there is hardly literature on what are factors affecting perceived risks. According to Yen (2011), the experience that online customers have with their online retailers changes their perceived switching costs and perceived risks. However, what marketing variables reflect such online shopping experience has not been adequately addressed. To fill this gap in the literature and provide trustworthy implications for marketing practitioners in managing switching costs, perceived risk and customer loyalty, we test the effect of customer satisfaction, communication and personalization, which either reflect or create customers' experiences with the online retailer before, during and after their purchasing process, on switching costs and perceived risk. Moreover, the mediating roles of switching costs and perceived risk in the relationship between each of customer satisfaction, communication and personalization and customer loyalty are also investigated.

This study aims to establish a comprehensive model framework to explain the interrelationships between switching costs, perceived risk and customer loyalty as well as examine the paths to and mediating roles of switching costs and perceived risks in e-commerce. Thereby, the study will extend the previous understanding on the roles and determinants of perceived risk and switching costs in e-retailing context as well as draw scientific-based implications on which strategies should be implemented to reduce perceived risk and raise switching costs in managing customer loyalty.

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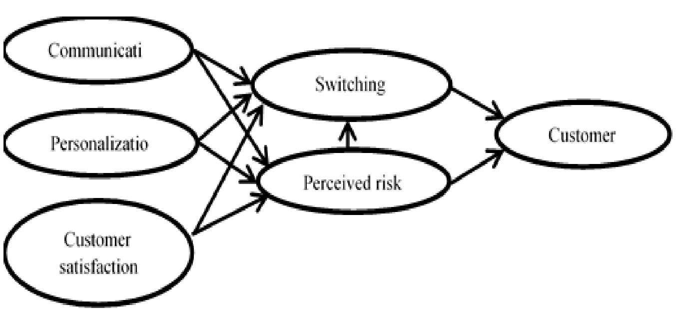
Conceptual framework and hypotheses development

Conceptual framework

The conceptual model of this research was developed based on the studies of Yen (2011, 2015) regarding the relationships among three vital concepts in e-commerce: perceived risk, switching costs and customer loyalty. Specifically, switching costs not only exert a direct effect on customer loyalty but also mediate totally the effect of perceived risks on customer loyalty (Yen, 2015). In other words, lowering perceived risks helps increase switching costs and thereby, strengthens loyalty. The relationship and complementing effects between switching costs and perceived risk are explained further by Yen (2011). The research indicates that for new customers during their acquisition stage, they mostly have high perceived risks in a transaction with an unknown online retailer while there are available choices of alternatives. However, once the customer has some experience with the e-tailer, they may perceive higher switching costs and lower risks of doing transactions with the current provider. We argue that perceived risk may not always decrease and switching costs do not necessarily increase after a customer interacts with the e-tailer. Instead, the changes in perceived risks and switching costs may be either positive or negative due to customers' evaluation of their online experience. Since online customer experience is defined as the whole process from interacting with the website to placing an order and waiting for the purchased item (Constantinides, 2004; Constantinides et al., 2010) while e-satisfaction is "the contentment of a customer with respect to his or her prior purchasing experience with a given electronic commerce firm" (Anderson and Srinivasan, 2003), customer satisfaction should be an important variable affecting both switching costs and perceived risk. Moreover, other strategies implemented by the e-tailers through all brand contacts such as marketing communication and personalization of products and services also enrich customers' brand experience whether they have made purchase or not. Therefore, we extend the model proposed by Yen (2015) to include customer satisfaction, communication and personalization as variables which may have influence on switching costs and perceived risk. These variables have also been found to have direct effects on customer loyalty in previous studies (Ball et.al, 2006). Furthermore, the study will test both the direct and mediating effect of switching costs and perceived risk on customer loyalty. Although there are interrelationships between customer satisfaction, communication and personalization (Ball et.al, 2006), since the role of switching costs and perceived risks is the main focus of this study, we consider customer satisfaction, communication and personalization as three exogenous variables in the conceptual framework as shown in Figure 1 below:

Figure 1 Conceptual framework (Model 1)



Switching costs and perceived risks

Switching costs represent one of the key factors in maintaining customer loyalty since its importance has been affirmed in many marketing studies in general (Jones et al., 2007) and researches in online shopping behavior in particular (Shapiro and Varian, 1999). Switching costs is defined by Porter (1980) as "the onetime costs facing the buyer of switching from one supplier's product to another's". The literature reveals various components of switching costs. In general, switching costs primarily consists of economic and psychological costs. In which economic costs are either monetary costs, also known as financial costs and sunk costs (Burnham et al., 2003; Guiltinan,1989; Jones et al., 2002) while psychological cost includes perceived risks or uncertainty related to the loss in relational investments and procedural costs such as time and effort to search, evaluate, and set up a new business relation with new providers (Burnham et al., 2003; Guiltinan,1989; Jones et al., 2002; Wan-Ling Hu and Ing-San, 2006). Due to the existence of psychological costs which may last during the switching process and even after that, Wan-Ling Hu and Ing-San (2006) argue that switching costs are actually more than just a one-time cost. According to Yen (2010), there are some differences between switching costs in offline contexts and those in online ones. Specifically, online customers may not be concerned about set-up costs, contract costs or learning costs, instead, they may be reluctant to switch their online providers due to time and energy related to search an alternative e-tailer, transaction history information, and uncertainty about product and service quality of the new provider (Kolsaker et al., 2004; Wieringa and Verhoef, 2007; Yen, 2011, 2015)

According to Bauer (1960), Bettman (1973), Jasper and Ouellette (1994), Lim (2003) and Peter and Ryan (1976), perceived risk can be defined as a feeling of uncertainty about the outcome of a particular decision or transaction as a customer cannot predict. In e-retailing, perceived risk is defined as "the expectation of loss subjectively determined by an Internet shopper in contemplating a particular online purchase" (Forsythe and Shi, 2003). In traditional retailer, perceived risk is mainly related to product performance and fraud (Wu and Wang, 2005). However, in online retailing context, perceived risk is represented by multi-constructs. Table 1 summarizes dimensions of perceived risks drawn from the literature:

Table 1 Dimensions of perceived risks in e-commerce

Dimensions of perceived risks in e-commerce	Authors
Privacy concerns, security uncertainty, ordering or delivery, and distrust of e-tailers	Furnell and Karweni (1999); Liang and Huang, (1998); Hine and Eve (1998)
Channel-related risk, product-related risk, social-related risk	Gutierrez et al. (2010)
Financial risk, performance risk, social risk, psychological risk, safety risk, time/convenience loss risk	Brooker (1984); Chen and He (2003); Jacoby and Kaplan (1972)
Financial, performance, social, psychological, physical and time risks	Boksberger et al. (2007); Chang (2008); Kaplan et al. (1974)
Financial risk, performance risk, social risk, psychological risk, safety risk, time/convenience loss risk, channel-related risk	Yen (2011, 2015)

In this study, perceived risks are measured in the interaction between customers and the e-commerce website as a new modern retail format. Therefore, we will use perceived risks' dimensions proposed by Yen (2011, 2015) in which the most widely- accepted components are selected and revised to suit the e-commerce context.

Customer satisfaction, Communication, Personalization

Customer satisfaction is a common customer-oriented metrics for managers in quality control and marketing effectiveness evaluation across different types of products and services. The concept of customer satisfaction is developed upon customers' comparison of what they expect and what they receive. Specifically, according to Berry and Parasuraman (1991), each consumer forms two levels of expectations: a desired level and an adequate level. The area between two these levels is called a zone of tolerance which is a range of service performance within which customer satisfaction is achieved and if perceived service performance exceeds the desired level, customers are pleasantly surprised and their loyalty is better strengthened. In general, customer satisfaction can be defined as an effective response or an affective state with positive feelings resulted from their overall experience upon the comparison between the perceived product or service performance and pre-purchase expectations (Cronin et al., 2000; Fornell, 1992; Halstead et al., 1994). In an e-retailing environment, customer satisfaction is measured as the cumulative effect of the overall purchasing experience with a given e-tailer over a period of time (Chang and Chen, 2008; Szymanski and Hise, 2000)

Communication has been affirmed as an important exogenous variable positively affecting customer loyalty (Jiang et al., 2010; Keller and Lehmann, 2006; Runyan and Droge, 2008; Sahin et al., 2011; Vatanasombut et al., 2008; Yoon et al., 2008). Communication is actually a part of a company's marketing mix strategy and it is all about how well the company communicates with its customers.

Nowadays, as online customers are bombarded with advertisements and numbers of offers, using technology and customer information to personalize products and services to customers is a key to e-commerce success (Desai, 2016). The concept of personalization is rooted in the emergence of one-to-one marketing (Peppers and Rogers, 1993). According to Doug Riecken (2000), personalization is about "building customer loyalty by building a meaningful one-to-one relationship; by understanding the needs of each individual and helping satisfy a goal that efficiently and knowledgeably addresses each individual's need in a given context". Personalization is a feature of products and services and creates competitive advantages for the company (Ball et al., 2006). In e-retailing, Desai (2016) adds that personalization is the process of providing customized information, presentation and structure of the website based on the need of the user. We argue that all website functions interactions have an utmost purpose that is providing personalized products and services to customers. Therefore, in general, we define personalization as the ability of an e-tailer in providing products and services based on each customer's particular needs. In e-retailing, online customer needs can be identified by online chatting or through the website's search engine. Moreover, customers' searching or purchasing history are also tracked so that the online retailer can suggest exact products or provide customer services that suit customers' needs. Previous research has affirmed the importance of personalization in tackling information overload and encouraging more customer interaction through the retailing website, thereby, enhance customer satisfaction and strengthen customer relationship (Desai, 2016; Fan and Poole 2006; Liang et al., 2009)

Customer loyalty

As a key component of relationship quality and business performance, customer loyalty and its determinants have been this central focus of many theoretical and empirical studies in marketing (Berry and Parasuraman, 1991; Sheth and Parvatiyar, 1995). Solomon (1992) and Dick and Basu (1994) distinguishes two levels of customer loyalty which are loyalty based on inertia resulted from habits, convenience or hesitance to switch brands and true brand loyalty resulted from the conscious decision of purchasing repetition and motivated by positive brand attitudes and highly brand commitment. Recent literature on measuring true brand loyalty reveals different measurement items, but most of them can be categorized into two dimensions: behavioral and attitudinal loyalty (Algesheimer et al., 2005; Asuncion, Josefa and Agustın, 2002; Maxham, 2001; Morrison and Crane, 2007; Teo et al., 2003). From a behavioral perspective, customer loyalty is defined as biased behavioral response reflected by repetitive purchases in spite of influences and marketing efforts that may encourage brand switching (Oliver, 1999). Meanwhile, attitudinal loyalty is driven by the intention to repurchase, the willingness to pay a premium price for the brand, and the tendency to endorse the favorite brand with positive WOM. Moreover, supporters of attitudinal perspective argued that commitment to rebuy should be the core component of customer loyalty since high purchasing frequency may result from convenience purposes or happenstance buying while multi-brand loyal customers may be not detected due to infrequent purchasing (Jacoby and Kyner, 1973; Jacoby and Chestnut, 1978). In this study, we measure true brand loyalty based on both behavioral and attitudinal components.

Customer loyalty in e-commerce, also known as e-loyalty, has parallels with the concept of loyalty to a brand or a company. Srinivasan et al. (2002) define e-loyalty simply as customer's favorable attitude toward the e-tailer that results in repetitive purchases. For this study, upon both behavioral and attitudinal perspectives, e-loyalty is defined as the likelihood of repeated purchases and favorable attitude of an online customer towards an e-tailer. In an online shopping context, easy alternative offerings and instant information availability result in low switching costs and vanishing e-loyalty (Kuttner, 1998). E-loyalty is one of the main tools to achieve customer retention that ensure sustainable business growth in such competitive environment (Reinartz and Kumar, 2003). The literature has revealed various determinants of e-loyalty including customer satisfaction, communication, personalization, switching costs and perceived risk as shown in Table 2. Investigating the nature of the relationship between these potential determinants and e-loyalty is the primary focus of this study.

Table 2 Determinants of customer loyalty in e-commerce

Determinants of customer loyalty	**Authors**
Customer satisfaction (positive impact)	Allagui and Temessek, 2004; Algesheimer et al., 2005; Chen et al, 2010 ; Chung and Shin, 2010; Karahanna et al., 2009; Kim et al., 2011; Jin and Park, 2006; Lin et al., 2008; Ltifi, 2012; Luarn and Lin, 2003; Moon and Kim, 2001; Molinari et al., 2008; Teo et al., 2003 ; Tsai et al., 2006; Valvi and West, 2013; Wang, 2008; Zhang and Prybutok, 2005
Communication (positive impact)	Jiang et al., 2010 ; Vatanasombut et al., 2008; Yoon et al., 2008
Switching costs (positive impact)	Bansal et al., 2004; Burnham et al., 2003; Chang and Chou, 2010; Wang and Head, 2007; Yen, 2010; Yen, 2011; Yen, 2015; Zeithaml et al., 1996

Perceived risk (negative impact)	Chen and Chang, 2005; Cunningham et al. , 2005; Forsythe and Shi, 2003; Gefen and Devine, 2001; Ha, 2004; Morgan and Hunt, 1994; Zhang and Prybutok, 2005
Personalization (positive impact)	Chung and Shin (2008); Srinivasan et al. (2002); Tong et al. (2012)

Hypotheses development

Relationships linking to customer loyalty

Since e-loyalty has been long the key metric in relationship marketing and a popular topic of many studies in e-commerce, the relationship between each of communication, customer satisfaction, switching costs and perceived risks and customer loyalty have been tested in previous researches.

According to Fornell (1992), loyal customers may not necessarily be satisfied customers, but satisfied customers are highly likely loyal customers. In fact, it is more difficult for a competitor to persuade satisfied customers to switch than unsatisfied customers (Methlie and Nysveeen, 1999). A research study by Chung and Shin (2010) indicated that customers' e-loyalty could have close linkage with their online shopping experience. In addition, an exploratory study by Szymanski and Hise (2000) revealed that e-satisfaction is an essential pre-requisite for loyalty. Previous quantitative research with survey method has also found that customer satisfaction positively affects e-loyalty in e-commerce context (Allagui and Temessek, 2004; Chung and Shin, 2010; Karahanna et al., 2009; Kim et al., 2011; Ltifi, 2012; Valvi and West, 2013; Wang, 2008). In line with previous studies, this study hypothesizes that:

Hypothesis 1: Customer satisfaction has a direct positive effect on customer loyalty

Grace and O'Cass (2005) suggested that the more favorable feelings and attitudes the consumers form towards the brand's controlled communication, the more effectively such communication initiatives convey relevant brand messages. As a result, customers' attitude towards brand communication will significantly affect their intention to either make the first purchase or repurchase. The direct positive effect of brand communication on customer loyalty upon online shopping context has been confirmed in previous studies (Jiang et al., 2010; Vatanasombut et al., 2008; Yoon et al., 2008). Based on the existing literature, the following hypotheses are proposed:

Hypothesis 2: Communication has a direct positive effect on customer loyalty

The direct effect of personalization on customer loyalty has been affirmed in previous studies with service context (Ball et al., 2006). Moreover, according to Rust et al. (2000), personalization creates a kind of "retention equity" that leads to psychological loyalty. In e-tailing environment, there are multiple reasons why personalization is expected to influence e-loyalty. Specifically, personalization increases the likelihood that customers will find something that they wish to buy instead of being frustrated or confused when navigating the website (Lidsky, 1999). In addition, focusing on what an individual customer really wants through personalized facilities helps create the perception of increased choice as well as supports customers to complete their transactions more efficiently (Srinivasan et al., 2002). As a result, personalization makes repurchasing from a specific e-tailer more appealing (Chung and Shin, 2008; Srinivasan et al., 2002; Tong et al., 2012). This study, therefore, hypothesizes that:

Hypothesis 3: Personalization has a direct positive effect on customer loyalty

Switching costs and perceived risk are two important drivers of customer loyalty. As switching to a new provider often involves effort, time, and money, the primary role of switching costs, is to induce some sort of loyalty, either a committed passive one, in customers (Dwyer et al., 1987; Heide and Weiss, 1995). More specifically, customers will not switch e-tailers if the onetime costs associated with the process are perceived as prohibitively high. In contrast, the perceived loss incurred from staying with a current e-tailer due to either product performance or fraud may create the intention to switch (Wu and Wang, 2005). The direct positive effect of switching cost on e-loyalty as well as the direct negative impact of perceived risk on e-loyalty have been confirmed in many empirical studies (Bansal et al., 2004; Yen, 2010; Yen, 2011; Yen, 2015; Cunningham et al., 2005; Forsythe and Shi, 2003; Zhang and Prybutok, 2005). In line with the existing literature, the following hypotheses are proposed:

Hypothesis 4: Switching costs have a direct positive effect on customer loyalty

Hypothesis 5: Perceived risk has a direct positive effect on customer loyalty

Mediating role of switching costs

Switching costs and perceived risks are negatively correlated during the life cycle of a purchase (Gremler, 1995; Stone and Gronhaug, 1993; Yen, 2011, 2015). When an online customer first interacts with a totally new e-tailer, perceive risk is very high while the switching cost is relatively low. However, after the customer has some experience with the online provider and accept it, perceived risk will reduce (Cases, 2002; Yen, 2015) that may increase switching costs (Yen, 2015) since there are some brand attachment is achieved and relational investment has been made that, in turn, may create some sort of loyalty. In fact, switching costs are found to mediate totally the effect of perceived risks on loyalty in a research by Yen (2015). This study, therefore, hypothesize that:

Hypothesis 6: Switching costs mediate the relationship between perceived risks and customer loyalty, in such a way that the greater the perceived risks, the less the customer loyalty

Based on opportunity cost analysis, it is widely agreed that the higher customer satisfaction is, the larger the opportunity cost associated with forging satisfaction can be expected from switching providers (Hellier et al., 2002). Bolton and Lemon (1999) have explained the relationship between customer satisfaction and switching costs based on usage rate. Specifically, the higher customer satisfaction is, the greater levels of usage can be achieved that lead to larger relational attachment with the provider, therefore, result in higher switching costs. As a result, customers will become more loyal to their current providers. The literature also suggested that switching costs mediate partially the effect of customer satisfaction on loyalty (Edward and Sahadev, 2011). The following hypothesis is proposed:

Hypothesis 7: Switching costs mediate the relationship between customer satisfaction and customer loyalty, in such a way that the greater the customer satisfaction, the greater the customer loyalty

The literature shows that effective communication enhances the commitments and cooperative relationship between customers and their suppliers (Fynes et al., 2005; Kwon and Suh, 2004; Paju, 2007; Terpend et al., 2008). Since communications may strengthen connection and engagement between customers and their providers, it has a positive influence on switching costs (Yen et al., 2011). In e-retailing context, Chang and Chou (2010) and Rowley and Slack (2001) affirm that effective online communication leads to more interaction and benefits to customers, therefore, enhance customer relations that build higher switching barriers. Eventually, customers may stay longer with the e-tailer. Although the mediating role of switching costs in the relationship between communication and customer loyalty in previous studies based on the above discussion, the following hypothesis will be tested:

Hypothesis 8: Switching costs mediate the relationship between communication and customer loyalty, in such a way that the greater the communication's perceived effectiveness, the greater the customer loyalty

The literature shows the positive relationship between personalization and satisfaction (Ball et al., 2006; Peppers and Rogers, 1993; Rust et al., 2000) while satisfaction is found to build barriers to switch (Bolton and Lemon,1999; Hellier et al., 2002), personalization may have an impact on switching costs. Moreover, personalization presents a unique feature of products and services (Ball et al., 2006) that may not be found from other alternative providers that makes customers feel more hesitant to switch. Increasing switching costs, therefore, may be one of the reasons for the positive impact of personalization on e-loyalty. Despite no existing literature about the mediating effect of switching costs in the relationship between personalization and customer loyalty, the study hypothesizes that:

Hypothesis 9: Switching costs mediate the relationship between personalization and customer loyalty, in such a way that the greater the personalization, the greater the customer loyalty

Mediating role of perceived risk

According to Yen (2011, 2015), the experience that online customers have with their e-tailer may alter their perception of risks related to engaging with the e-tailer. Such online shopping experience may be reflected by customer e-satisfaction or comes from every brand interaction through communication and personalization strategies. Therefore, customer satisfaction, communication and personalization may have positive influences on perceived risk. As a result, perceived risk or the expected loss that may incur from transactions with the current retailer will affect customer loyalty (Chen and Chang, 2005; Cunningham et al., 2005; Zhang and Prybutok, 2005). To date, no prior studies have examined the mediating role of perceived risks in the relationships between neither satisfaction nor communication or personalization and customer loyalty. However, the above discussion suggests the following hypotheses:

Hypothesis 10: Perceived risk mediates the relationship between customer satisfaction and customer loyalty, in such a way that the greater the customer satisfaction, the greater the customer loyalty

Hypothesis 11: Perceived risk mediates the relationship between communication and customer loyalty, in such a way that the greater the communication's perceived effectiveness, the greater the customer loyalty

Hypothesis 12: Perceived risk mediates the relationship between personalization and customer loyalty, in such a way that the greater the personalization, the greater the customer loyalty

Research method

Sampling and data collection

This study conducted a quantitative survey to investigate Vietnamese online consumers. A paper-based questionnaire was used. The questionnaire adopted measurement scales selected from previous research and was translated into Vietnamese by a Vietnamese interpreter who has good English skills so that all statements of the measurement scales are translated in the most accurate and natural way. The questionnaire starts with the instruction that the respondents should continue if they have ever shopped online and list one online retailer that they have purchased from most recently. The questionnaire was translated into Vietnamese by an interpreter who has good English skills while Vietnamese is her mother tongue so that all statements in each measurement scale are translated in the most accurate and natural way. The instruction helps the respondents recall a clear memory of their purchasing behavior (Wu, 2013). Further, a pilot test was conducted on twenty Vietnamese online shoppers in which participants who had filled in the questionnaire were asked about the comprehension; easy-to-understand language and phraseology; ease of answering; practicality and length of the survey upon individual interviews (Hague, P et.al, 2004).

The data was collected within January 2018. The demographic profile of a national sample survey of Vietnamese online population by VECOM (Vietnam E-commerce Association) was used as a guideline for selecting the respondents. Specifically, the sampling units include students, officers and housewives since they represent the most frequent online shoppers. Convenience sampling was adopted to draw an initial sample of 500 units. In order to ensure high response rate while directly giving assistance to the respondents, paper-based questionnaires were distributed face-to-face and randomly on campus, at office buildings and residential areas where the target sample can be approached the most conveniently. Out of 437 questionnaires filled, 48 were removed since they were incomplete or showed an apparently high level of response error. As shown in Table 3, the sample includes 51.93% female and 48.07% males. The larger age groups were 25-35 years old (66.31%). Most respondents have more than one year of online shopping experience (76.35%) with monthly spending on online purchases mostly between 500 thousand to 2 million VND (76.83%). As for occupation, officers were the most with 30.59%, followed by students, housewives and self-employed with 30.59%; 24.93% and 11.32% correspondingly.

Table 3 Respondents' demographic and usage behavior

Indicator	Item	Frequency	%
Gender	Male	187	48.07
	Female	202	51.93
Age	18-24	89	22.88
	25-30	131	33.67
	31-35	127	32.64
	36-40	42	10.81
Occupation	Students	119	30.59
	Officers	129	33.16
	Housewives	97	24.93
	Other (Self-employed)	44	11.32
Online shopping experience	Less than 1 year	92	23.65
	From 1 to less than 2 years	81	20.82
	From 2 to less than 3 years	78	20.05
	From 3 to less than 4 years	72	18.51

	From 4 years and above	66	16.97
Monthly spending on online purchases (VND)	Less than 500,000	41	10.54
	From 500,000 to less than 1 million	78	20.05
	From 1 million to less than 2 million	217	55.78
	From 2 million to less than 3 million	32	8.23
	From 3 million and above	21	5.40

Measurement items

The measurement instruments were adopted from previous studies with minor adjustments to suit the e-commerce context. Customer satisfaction was measured with three items adapted from Oliver and Swan (1989) and Westbrook and Oliver (1991) which assess cumulative satisfaction. The scales of communication with four items and personalization with three items were revised based on those suggested by Ball et al. (2006). Switching costs were tapped through three items proposed by Yen (2010, 2011). The scale of perceived risks was adopted from Yen (2011, 2015) with six items. Finally, customer loyalty was measured with three items modified from Zeithaml et al. (1996) and Macintosh and Lockshin (1997) and once adopted by Wang et al. (2009). All of these items were measured using a five-point Likert scale, ranged from strongly disagree (1) to strongly agree (5); very satisfied (1) to very dissatisfied (5) or very poor (1) to very good (5). Details of measurement scale items are displayed in Annex 1.

Analysis results

Before testing the conceptual model, we assessed the validity and reliability of the measurement constructs upon the guideline on the use of structural equation modeling in practice proposed by Anderson and Gerbing (1988). We first conducted confirmatory factor analysis (CFA) on AMOS 22 to test for the convergent validity of measurement items used for each construct. Based on CFA results as shown in Table 4, we found that there was no item that loaded less than 0.5. Therefore, we retained all measurement items for further exploratory factor analysis (EFA) on SPSS. The final pool of items as shown in Table 4 measuring customer satisfaction, personalization, communication, perceived risk, switching costs and customer loyalty were subjected to an EFA with principal factor as extraction method followed by varimax rotation. The EFA results revealed six factors in accordance with our initial measurement of each construct, thereby, confirmed the construct validity and demonstrated the measures' unidimensionality (Straub, 1989). Table 4 and Table 5 present the mean value, standard deviation, reliability coefficients and correlation of constructs.

A CFA on the six-factor model was conducted and revealed a good model fit (CMIN/df = 1.847; RMR=0.026; GFI=0.930; CFI = 0.943; AGFI= 0.899; RMSEA=0.047; PCLOSE=0.756). The CFA results also indicated that all factor loadings were statistically significant and higher than 0.4 which is the cut-off value recommended by Nunnally and Bernstein (1994). We, therefore, concluded that all measurement items achieved convergent validity. Table 4 shows details of CFA results with factor loadings and t-value. However, among average variance extracted values (AVE) calculated as shown in Table 6, the AVE for perceived risk and customer loyalty were smaller than the recommended threshold of 0.5 demonstrating lower convergent validity.

Table 6 shows that the shared variance between each pair of the constructs was always smaller than the respective AVE indicating discriminant validity.

Overall, the results from EFA and CFA confirmed the unidimensionality of the constructs as well as their significant convergent and discriminant validity. All measurement items as shown in Table 4 were qualified to undergo further analysis for hypothesis testing.

In order to test the hypothesized relationships as shown in Figure 1, a path analysis recommended by (Oh, 1999) was conducted on AMOSS 22 so that both direct and indirect relationships are simultaneously estimated and tested for their significance. The indicators of model fit calculated by AMOSS 22 indicated that the proposed model demonstrates a reasonably good fit to the data.

Table 7 shows the path coefficients in the original proposed model and modified models in which switching costs perceived risk or both of switching costs and perceived risk were removed from the original model to test their mediating effects.

Table 4 Confirmatory factor analysis results

Construct	Construct items	Mean	Standard deviation	Factor loading	t-value
Customer satisfaction (CS)	CS1.	3.76	0.783	0.570	___
	CS2.	3.29	0.836	0.794	9.531
	CS3.	3.15	0.849	0.703	9.326
Personalization (PZ)	PZ1.	2.75	0.682	0.775	13.150
	PZ2.	2.97	0.728	0.725	12.722
	PZ3.	2.76	0.753	0.783	___
Communication (CM)	CM1.	3.24	0.883	0.738	9.028
	CM2.	3.21	0.805	0.779	9.199
	CM3.	3.11	0.839	0.642	8.460
	CM4.	3.42	0.798	0.514	___
Perceived risk (PR)	PR1.	2.85	0.676	0.589	9.082
	PR2.	2.85	0.680	0.730	10.456
	PR3.	2.71	0.661	0.748	10.605
	PR4.	2.79	0.657	0.655	9.772
	PR5.	2.85	0.681	0.719	10.360
	PR6.	3.05	0.692	0.576	___
Customer loyalty (CL)	CL1.	3.59	0.725	0.706	___
	CL2.	3.27	0.715	0.599	9.544
	CL3.	3.68	0.730	0.661	10.258
Switching costs (SC)	SC1.	3.28	0.804	0.766	___
	SC2.	3.31	0.810	0.800	13.522
	SC3.	3.16	0.841	0.701	12.476

Notes: Measurement model fit details: CMIN/df = 1.847; p=.000; RMR=0.026; GFI=0.930; CFI = 0.943; AGFI= 0.899; RMSEA=0.047; PCLOSE=0.756; "___" denotes loading fixed to 1

Table 5 Mean, SD, reliability and correlation of constructs

	CS	PZ	CM	PR	CL	SC	Reliability
CS	1						0.719
PZ	0.271	1					0.804
CM	0.492	0.149	1				0.762
PR	-0.488	-0.336	-0.515	1			0.829
CL	0.554	0.289	0.648	-0.555	1		0.695
SC	0.325	0.458	0.341	-0.461	0.528	1	0.797

Table 6 Average Variance Extracted and Discriminant validity test

	CS	PZ	CM	PR	CL	SC
CS	0.561					
PZ	0.073	0.673				
CM	0.242	0.022	0.504			
PR	0.238	0.113	0.265	0.482		
CL	0.307	0.084	0.412	0.308	0.476	
SC	0.106	0.210	0.116	0.213	0.279	0.618

Figure 2 Model 2

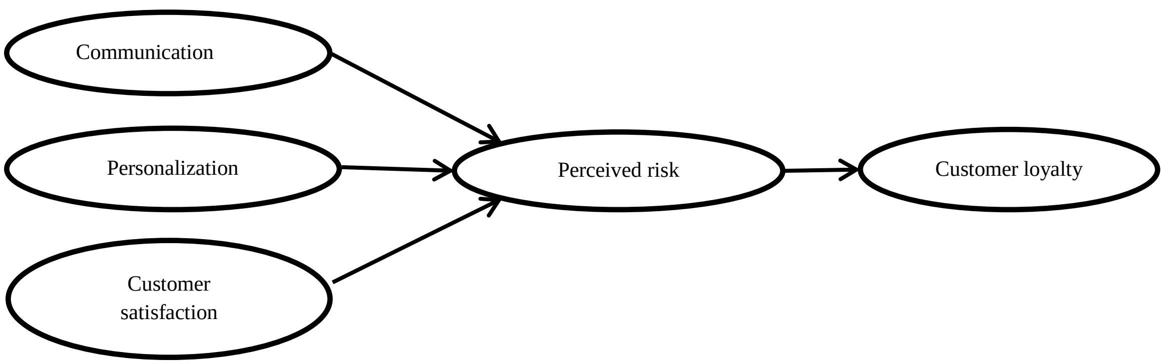


Figure 3 Model 3

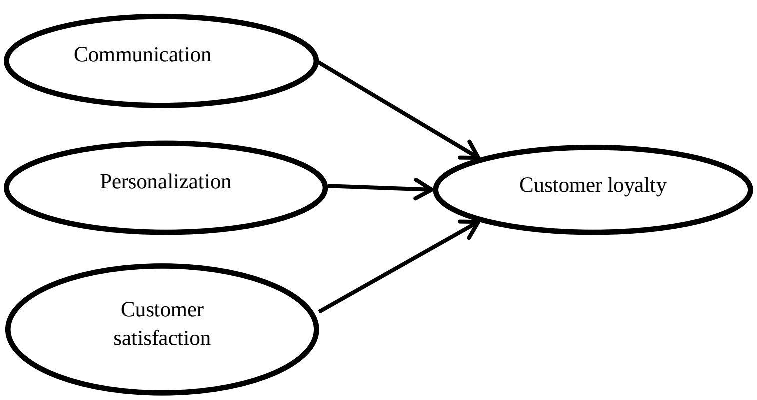


Figure 4 Model 4

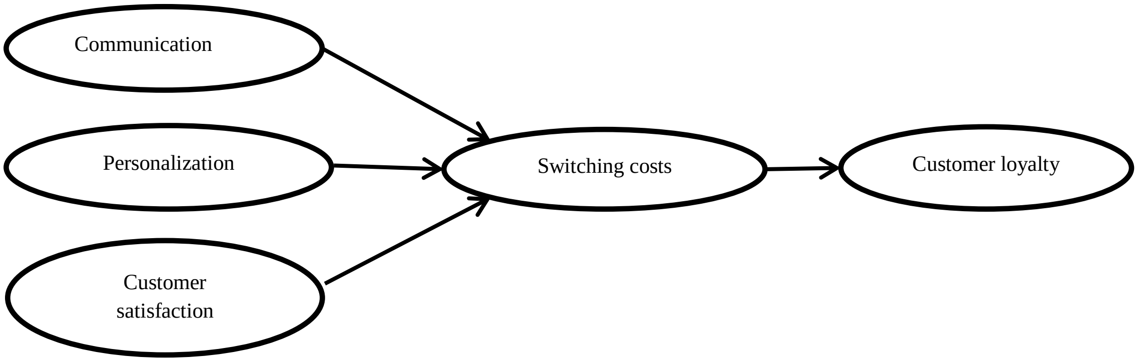


Table 7 Path coefficients

Construct path	Model 1 (original)	Model 2 (without SC)	Model 3 (without PR)	Model 4 (without SC, and PR)
CS to SC	0.056		0.145	
PR to SC	-0.396*			
CM to SC	0.207*		0.345*	
PZ to SC	0.355**		0.415*	
SC to CL	0.219**			
CS to CL	0.244*	0.250*	0.278*	0.308**
PR to CL	-0.164	-0.245*		
CM to CL	0.483**	0.506**	0.545*	0.604**
PZ to CL	0.008	0.08	0.023	0.119*
CS to PR	-0.226**	-0.228**		
CM to PR	-0.349**	-0.349**		
PZ to PR	-0.145**	-0.146**		
Fit indices				
CMIN/df	1.847	1.854	2.014	1.989
CFI	0.943	0.949	0.952	0.960
GFI	0.922	0.936	0.944	0.958
AGFI	0,899	0.914	0.919	0.935
RMR	0.026	0.024	0.028	0.026
RMSEA	0.047	0.047	0.051	0.050
PCLOSE	0.756	0.709	0.415	0.457

Notes: *p < 0.05 and **p < 0.001

The path analysis results for the original model shown in Table 8 indicate that among paths to customer loyalty, the significant direct effects of communication, customer satisfaction and switching costs on customer loyalty were affirmed in accordance to previous findings in which the greater perceived effectiveness of communication, switching costs or customer satisfaction are, the more customer loyalty achieved (support H1, H2 and H4). However, both perceived risk and personalization have no direct effect on customer loyalty in the original full model (reject H3 and H5)

In addition, all of the three factors, namely customer satisfaction, communication and personalization have significant negative effects on perceived risk. Therefore, we continue to test the mediating effect of perceived risk in the relationship between each of customer satisfaction, communication and personalization and customer loyalty.

Among the paths to switching costs, it is found that while both communication and personalization positively affect switching costs and perceived risk has significant negative effect on switching costs, the influence of customer satisfaction on switching costs is not statistically significant. Even when perceived risk is removed so that the total direct impact of customer satisfaction on switching costs is tested according to Model 3, there is still no relationship between customer satisfaction and switching costs found. Therefore, we conclude that switching costs do not mediate the effect of customer satisfaction on loyalty (reject H7) and continue to test the mediating effect of switching costs in the relationship between each of communication, personalization and perceived risk and customer loyalty.

In order to test the mediating roles of switching costs and perceived risk as hypothesized in Model 1, we removed switching costs, perceived risk and both switching costs and perceived risk resulted in Model 2, Model 3 and Model 4 accordingly and run path analysis for each of these models. Model 2, 3 and 4 are shown in Figure 2, 3 and 4.

The path coefficients resulted from Model 2 after removing switching costs was compared with that in Model 1 (the original model) to test the mediating role of switching costs. In the comparison between the two models as shown in Table 8, we found that:

- In Model 1, both of switching costs and communication have positive direct effects on customer loyalty while communication positively influences switching costs. In the absence of switching costs (Model 2), the effects of communication on customer loyalty is significantly higher than that in the presence of switching costs (Model 1)

- In Model 1, perceived risk has no effect on customer loyalty while switching costs positively affects customer loyalty. In the absence of switching costs (Model 2), perceived risk has a significant negative effect on customer loyalty

According to the mediating conditions suggested by Baron and Kenny (1986), we can conclude that the relationship between communication and customer loyalty is partially mediated by switching costs (support H8). In addition, the effect of perceived risk on customer loyalty is not direct; instead, such effect is totally mediated by switching costs (support H6)

Next, Model 3 that excludes perceived risk was compared with Model 2 to test the mediating role of perceived risk. In the comparison of the path coefficients between Model 2 and Model 3, we found that:

- In Model 2, both customer satisfaction and communication have direct significant effect on customer loyalty and perceived risk while perceived risk significantly and negatively affects customer loyalty.
- In the absence of perceived risk (Model 3), the effects of customer satisfaction and communication on customer loyalty are significantly higher than that in the presence of perceived risk (Model 2)

Therefore, we can conclude that the relationship between either communication and customer loyalty or customer satisfaction and customer loyalty is mediated partially by perceived risk (support H10 and H11)

Finally, Model 4 that excludes both switching costs and perceived risk was compared to Model 1, Model 2 and Model 3 to test the mediating role of perceived risk and switching costs in the relationship between personalization and customer loyalty. In the comparison of the path coefficients amongst Model 1, Model 2 and Model 3, we found that:

- In the original model, personalization has a direct significant effect on both switching costs and perceived risk while both switching costs and perceived risk have direct significant effects on customer loyalty
- Personalization has also no significant effect on customer loyalty in the presence of either switching costs or perceived risk. However, in the absence of both switching costs and perceived risk (Model 4), there is a significant relationship between personalization and customer loyalty

We, therefore, conclude that the effect of personalization and customer loyalty is partially mediated by each of switching costs and perceived risk while totally mediated by both switching costs and perceived risk at the same time (support H9 and H12)

Discussions and implications

The study has revealed some important findings. Firstly, regarding the relationships among switching costs, perceived risk and customer loyalty, the study found that perceived risk does not directly affect customer loyalty in online retailing context; instead, the effect of perceived risk on customer loyalty is totally mediated by switching costs. That means the presence of perceived risk in e-commerce does not directly make customers loyal but that strengthen customers' perceived switching costs, thereby, build more barriers to switch and enhance customer loyalty. This finding is in line with the study of Yen (2015) which investigated the interrelationship between perceived risk, switching costs and customer loyalty in Taiwan e-retailing environment. The underlying reason may be due to the popularity and rapid growth of e-commerce that make Vietnamese online consumers have many experience in e-commerce. Moreover, online shopping has gradually become a popular habit among Vietnamese shoppers. As a result, perceived risk may not be the direct determinant of customers' decision to stay with the current e-tailer or switch to the alternatives. However, this study extends previous research to treat switching costs and perceived risk as endogenous variables instead of exogenous ones when investigating the interrelationships between switching costs, perceived risk and customer loyalty. Specifically, the findings reveal that switching costs and perceived risk stem from customer satisfaction, communication and personalization which are formed by customers' previous experience with the e-tailer and mediate significantly the effect of these variables on customer loyalty. These findings help draw more detailed and helpful implications about enhancing customer loyalty through managing switching costs and perceived risk.

The mediating role of switching costs in the relationship between perceived risk and customer loyalty implies an important strategy in retaining customers that is reducing perceived risk while increasing switching costs at the same time. Since switching costs only exist after a customer has already made a purchase, reducing perceived risk plays a key role in encouraging purchase intention when the e-tailer wants to acquire a new customer. Moreover, the study has affirmed the direct negative effect of customer satisfaction on perceived risk, it can be concluded that how customers are satisfied with the e-tailers' offerings will increase or decrease perceived risk, thereby, reduce or enhance switching costs and loyalty. Therefore, strategies to lower perceived risk should be also implemented even after a new customer is acquired.

The findings regarding the relationships of customer satisfaction, communication and personalization on switching costs and perceived risk as well as the significant mediating roles of switching costs and perceived risk in the relationship between each of customer satisfaction, communication and personalization and customer loyalty have implied important strategies to reduce perceived risk and increase switching costs. Contrary to previous studies which indicated a direct positive relationship between customer satisfaction and switching costs, this study found that customer satisfaction has no effect on switching costs. The reason is possibly that the advanced development of technology, the high speed of Internet and the widespread availability of alternative online retailers with similar offerings have been minimizing switching costs in e-commerce. As a result, it is highly likely that even satisfied customers have tendency to switch. However, since customer satisfaction has a significant negative effect on perceived risk which, in turn, influences customer loyalty through switching costs, improving customer satisfaction is still a vital strategy. In general, e-tailers should enhance customer satisfaction, implement effective communication activities while personalizing products and services as much as possible so as to manage customer loyalty. In which, customer satisfaction can be achieved and improved by delivering reliable service right from the first time, implementing some customer policies to create chances for service recovery in case of service failure as well as exceeding customer expectation by providing them extra benefits (Berry and Parasuraman, 1991). The study has provided a new perspective regarding the path between customer satisfaction and customer loyalty in which customer satisfaction not only directly affect customer loyalty but also help build customer confidence, therefore, reduce perceived risks as well as raise more barriers to switch. Moreover, since customer expectation is affected much by what and how the company communicates, delivering up-to-date, clear, helpful and trustworthy information to customers are crucial to managing customer expectation, thereby, enhancing customer satisfaction. In addition, encouraging two-way communication through online chatting via the website, email, social networks and so on with customers also helps e-tailers nurture good relations with customers, thereby, increases switching costs. The findings of this study have suggested that the more effectively the e-tailers communicate with their customers, the fewer risks of engaging with the e-tailer are perceived. Besides, through communication with customers, the retailer can understand customers' needs better to personalize products and services for customers more effectively (Ball et al., 2006). Furthermore, this study also implies that the more personalized products and services customers receive, the less risk and more switching costs they perceive. The possible reason is that customers perceive personalization as a sign of respect and trustworthiness from the online retailers. Besides, they feel regret and uncertain about whether the new e-tailer can provide similar personalized offerings as they currently have. Moreover, time and costs related to "training" the new e-tailer in providing equivalent personalized products and services also raise switching costs. In online retailing platform with the support of technology, there are many ways to help e-tailers personalize their products and services, such as, encouraging more customer interaction and communication through which customers will disclose their needs themselves, manipulating website facilities and tracking customer transaction history.

In e-commerce where competition is increasingly intense, market practitioners should focus on managing customer loyalty through strategies to reduce perceived risk and increase barriers for switching in which improving customer satisfaction while enhancing effectiveness and application of communication and personalization are crucial hints.

Limitations and future research

Despite important findings and implications, this study has some limitations. Firstly, the sample of this study includes young online customers whose risk propensity in general and perceived risks in e-commerce in particular may be different from that of other customer segments (Chang and Chen, 2008). A larger sample size with wider age ranges may be more helpful to draw more meaningful managerial implication. Secondly, the study intentionally simplified the conceptual model. The interrelationship between customer satisfaction, communication and personalization has been affirmed in previous researches (Ball et.al., 2006), however, this study considered all of them as exogenous variables to focus more on the mediating roles of switching costs and perceived risk. Thirdly, a limited set of measurement items were used due to concerns about model parsimony and data collection efficiency. For example, switching costs can be measured upon a scale of 5 items (Yen, 2015) instead of 3 items (Yen, 2011) while personalization in e-commerce can be enlarged with information personalization, presentation personalization and navigation personalization (Desai, 2016). Further research should look at switching costs and personalization from more comprehensive perspective. Fourth, the levels of perceived switching costs and perceived risk may considerably fluctuate during the life cycle of purchase behavior (Gremler, 1995; Stone and Gronhaug, 1993; Yen, 2010). However, this study ignored the purchasing phase in sampling and analysis when investigating the causal relationship between switching costs, perceived risk and customer loyalty. Further studies should examine the research model using a longitudinal research method so that such relationships are investigated in a long-term period, allowing comparison to be made and thereby different findings and implications to be provided.

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Annex 1 Measurement items

Construct	Variable items	
Customer satisfaction (CS)	CS1.	Overall I am happy with the online retailer
	CS2.	I feel good about my decision to choose the online retailer
	CS3.	Overall, how much satisfied are you with the online retailer (very satisfied to very dissatisfied)
Personalization (PZ)	PZ1.	The online retailer offers me products and services that satisfy my specific needs
	PZ2.	The online retailer offers products and services that I could not find in another e-stores
	PZ3.	If I changed from online retailers I wouldn't obtain products and services as personalized as I have now
Communication (CM)	CM1.	The online retailer establishes an easy and satisfactory relationship with me
	CM2.	The online retailer keeps me constantly informed of new products and services that could be in my interest
	CM3.	Level of advice provided by the online retailer (very poor to very good)
	CM4.	Clearness and transparency of information provided by the online retailer (very poor to very good)
Perceived risks (PR)	PR1.	My expected monetary loss resulting from purchasing products from the online retailer is high.
	PR2.	My expected failure of product performance if I buy products from the online retailer is high
	PR3.	If I buy products from the online retailer, I think I will experience high difficulty in gaining social reorganization (from family, friends etc.)
	PR4.	I will feel uneasy psychologically if I buy products from the online retailer.
	PR5.	I do not think it is safe to buy products from the online retailer.
	PR6.	I feel uncertainty as to whether the online retailer is time efficient in terms of dealing with the order and delivery
Switching costs (SC)	SC1.	Overall, it would cost me a lot of time and energy to find an alternative retailer
	SC2.	I would lose a lot of information about my transaction history if I change
	SC3.	If I switch to the other retailer, the service offered by the new retailer might not work as well as expected
Customer loyalty (CL)	CL1.	I am committed to maintaining my purchasing at the website of this online retailer
	CL2.	I will encourage friends and relatives to patronize this online retailer
	CL3.	I will consider this online retailer my first choice for buying the products I need.

About the authors

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