Determining the impact of e-commerce quality on customers' perceived risk, satisfaction, value and loyalty

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Abstract

Purpose

The quality assessment of e-commerce services is of particular research interest, as it has been widely found that quality is directly linked to customer satisfaction and loyalty, which in turn leads to improved sales results, the creation of reputation and enhanced competitiveness for active companies in the industry. The purpose of this paper is to investigate the quality in e-commerce and to examine the relationships developed among its individual dimensions and satisfaction, perceived value, perceived risk and customer loyalty.

Design/methodology/approach

Initially, exploratory factor analysis with the equamax rotation method was applied to identify the perceptions of consumers regarding quality, value, satisfaction, risk and loyalty. The effect of the factors that make up perceived quality of e-services on customer value, satisfaction, risk and loyalty was examined by using OLS regression analysis. Likewise, path analysis was applied to confirm the impact of perceived quality on total consumer satisfaction, perceived value and loyalty, utilizing perceived risk as a moderating variable.

Findings

The authors found that quality overall has a positive and statistically significant relationship with perceived value, satisfaction and loyalty and negative with perceived risk. From the individual dimensions of quality, it has been found that ease of use of websites, design, responsiveness and security lead to increased levels of perceived value, while ease of use, responsiveness and personalization lead to an increase in the overall satisfaction of consumers. Overall, it has been documented that high levels of quality lead to higher satisfaction and perceived value, mitigating perceived risk and positively impacting the adoption of desirable consumer behaviors as reflected in customer loyalty.

Research limitations/implications

In this respect, future research in the field of e-commerce can examine the quality of the respective electronic services taking into account different product

and business categories. In addition, the future research can focus on the impact of high satisfaction, perceived value and customer loyalty on various sizes of business performance, including sales, market share, competitiveness, financial efficiency and sustainability.

Practical implications

Given the clear relationship between quality, perceived value and satisfaction, e-commerce businesses have the potential to benefit significantly from improvements in the quality of their services, as this leads to increased levels of perceived value, high level of satisfaction and hence enhanced customer loyalty, which is in turn reflected in increased sales, positive word-of-mouth, improved reputation and brand loyalty. In this way, e-businesses will be able to improve their financial position, achieve higher market shares, maintain their competitive advantage, attract new development resources and become sustainable on a long-term basis.

Social implications

Businesses need to understand the factors that determine the quality in e-commerce to be able to achieve customer satisfaction and reduce perceived risk through improved quality. These factors, which consumers perceive as important for quality, are critical.

Originality/value

The concepts of quality, perceived value, risk, satisfaction and loyalty are considered to be interlinked in both traditional consumer research and e-commerce, as high levels of perceived quality are believed to lead to positive assessments of the cost-benefit and, hence, the perceived value (Cronin *et al.*, 2000; Sweeney and Soutar, 2001; Korda and Snoj, 2010) and loyalty. In this context, this study attempted to study the relationship of these five variables, through both regression and path analysis, resulting in similar results. According to the findings of the study, perceived quality of website services has a positive and statistically significant impact on perceived value, satisfaction and an

opposite effect on perceived risk, while the last is mitigating variable for and loyalty.

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Introduction

Consumers use certain features or dimensions to evaluate the quality of services provided on the internet when purchasing goods or services from an online store. These features may have a positive impact on perceived quality and help maintaining customers and also increase site traffic because they affect customers' intention to revisit the e-shop site and buy back from the same online store. It has been suggested that quality measurement is made by specific dimensions, and measurements are made on the basis of consumer perceptions and not on the basis of the difference between perceptions and expectations (Melian-Alzola and Padron-Robaina, 2006; Cronin and Taylor, 1994; Parasuraman et al., 1994). Ribbink et al. (2004) have recommended five dimensions of quality, such as ease of use, site design, personalization, response and safety, which have a direct positive impact on trust and, hence, reducing perceived risk. Kim et al. (2009) consider the following critical factors in understanding perceived quality of consumers: information quality, interface quality and a sense of security for the site. The aim of this paper is to look at e-commerce quality and potential relationships developed among individual quality dimensions and satisfaction, perceived value, perceived risk and customer loyalty. More specifically, it is examined whether perceived e-commerce quality is positively linked with customer satisfaction and value, favoring the adoption of desirable consumer behaviors as reflected in customer loyalty and allowing for potential effects of perceived risk. The empirical and theoretical research so far, while attempting to investigate the relationship between perceived quality and perceived value, risk, loyalty and satisfaction, does not outline the moderating effect of risk in the relationship between satisfaction and perceived value, which the present study considers to be positive, given the mediating negative impact of perceived risk. In addition, the sense of risk strengthens the uncertainty and the adverse consequences of a

purchase (Dowling and Staelin, 1994). There are various types of risks, including a company's performance, the financial risk and psychological and social risk. This study addresses the risk of performance of e-commerce companies, which is characterized by inertia and heterogeneity.

Literature review

E-commerce quality is defined, according to Zeithaml et al. (2002), as the extent to which the e-shop's internet site allows the consumer to make problem-free purchases in delivering products and services. Consumer perceived quality (CPQ) is defined by Grönroos (1984) as a confirmation or not of customer expectations for service at an online store, compared to the perception of the service that have in fact received. According to So and Sculli (2002), e-commerce quality is associated with customer satisfaction. This is confirmed by Jun et al. (2004) as they noticed that there is a statistically significant relationship between perceived quality and customer satisfaction. However, according to Udo et al. (2010), there is no consensus among researchers on whether quality leads to satisfaction and vice versa. Customer satisfaction initiates repetitive purchases, creating intimacy and trust between customers and the online business (So and Sculli, 2002). Intimacy and trust are developed upon experience from previous transactions and result in the reduction of customer uncertainty and perceived risk. Customer satisfaction is about fulfilling individuals' expectations, and it is required along with trust, to reduce customer uncertainty about creditworthiness and the ability of a business to deliver reliable goods and services, while its realization depends on the extent to which consumers perceive risks and costs in online purchases (San Martín and Camarero, 2009).

According to Ribbink et al. (2004), quality in e-commerce has a direct and positive impact on customer satisfaction. Satisfaction in turn directly affects trust, which reduces the likely risk of consumers. Therefore, quality in e-commerce indirectly affects the reduction of perceived risk. Also, the dimension of "safety" affects trust and, thus, reduces perceived risk, but the rest of quality dimensions identified by Ribbink et al. (2004) do not have a significant impact on trust. According to Zhang and Prybutok (2005), there is a negative correlation

between the perceived risk and perceived quality on e-commerce and also quality cause customer satisfaction. Udo et al. (2010) argue that the reduced perceived risk can lead to higher perceived service quality, but it does not necessarily lead to customer satisfaction or purchasing intent. Also, according to Lin (2003), customer satisfaction is a key factor in maintaining and improving competitive advantage as the result of a cumulative customer experience, rather than a single transaction. According to Sahadev and Purani (2008), perceived customer service quality enhances satisfaction and confidence between the customer and the online business. But satisfaction, according to the same authors, has shown that it does not involve consumer loyalty to the online business. Customer loyalty to an online business is very difficult to achieve, as competition is just a few clicks away. Customer satisfaction is hardly enough to create loyal customers, and the objective is to advance dedicated customers through their interaction with the e-shop. The website is the place where the customer first comes into contact with the business. Therefore, the experience that the client derives from it should be positive. If that first experience is negative, then it is very likely that customers will not visit the site again and, therefore, a client's interaction with the site is extremely significant (Sahadev and Purani, 2008).

Because the internet, as a channel of communication and as a means of contacting business, is impersonal and does not involve the human factor, the quality of a website, as perceived by consumers, automatically becomes the "moment of truth" (Cox and Dale, 2001). The fault tolerance interval is therefore relatively small, while internet consumers have developed more demanding, well-informed, more experienced and with more options, when they are serviced from the internet business (Melian-Alzola and Padron-Robaina, 2006). An equally important reason for the importance of quality in e-commerce is that word-of-mouth negative advertising travels faster in cyberspace than in the real world (Cox and Dale, 2001).

Earlier studies looked on at the perceived risk by mediating the relationship between perceptual quality and perceived value (Chen and Dubinsky, 2003; Sweeney et al., 1999), but there is no empirical study so far to examine the role of the consumer's risk while buying a service in mitigating the

relationship between loyalty and customer satisfaction, and the value of the service received by the customer . Sheth and Parvatiyar (1995) consider that the greater the perceived risk, the greater the tendency for consumers to manifest behavior. Perceived risk may play a role in limiting the relationship between satisfaction and dedication. If perceived risk is high, customers are more likely to revisit the same company when they are satisfied. But if it is low, satisfaction does not necessarily lead to devotion. Customers may prefer an alternative company to save more time if the risk of the alternative is low. We assume that the impact on customer satisfaction is stronger under high risk than under low. We also assume that perceived risk can have a similar impact on the relationship between perceptual value and loyalty. When the perceived risk is high, customers are more concerned about whether the service will be as efficient as they expect and what damage will arise. In this case, customers want to minimize the risk, and to do so, they tend to choose the same company again when the service is worth its money. But, when the risk is low, customers may change if they believe that an alternative service provider provides a better quality service or at a lower price.

Methodology

The conceptual framework on which the development of this empirical research was based on represents the summary of the relationships assumed and examined in this paper. The study focuses on interdependencies between the perceived quality of services, satisfaction, perceived value, perceived risk and loyalty. The perceived quality and value of a service are considered both cognitive structures, while customer satisfaction is an effective response to the assessment of a service. The causal relationships proposed between the perceived quality of services, value and satisfaction are based on the model of Bagozzi (1992), which suggests that evaluation can lead to an emotional reaction, and this can guide consumers' behavior. Thus, quality is considered a positive component in the value-determining process and is therefore considered to be fundamental.

In addition, perceived value is considered to be the result of a two-way relationship between what the consumer receives and what he/she gives to

receive a service. Value increases service quality and reduces the cost of getting it. There is empirical evidence that the perceived quality of service is value-related (Brady et al., 2005; Hume and Sullivan Mort, 2010; Teas and Agarwal, 2000). The more the perceived quality, the more likely are consumers to feel that money they spend worth it.

Still, based on the model of Bagozzi (1992) which suggests a cognitive-responsive causal relationship, perceived value is a determinant factor. According to Heskett's (2002) model, satisfied and dedicated employees create value for customers, and this leads them to be satisfied, which in turn creates loyalty. The more customers perceive the value of a service, the more likely are to feel satisfied. Earlier studies have shown that perceptual value has a positive impact on satisfaction (Hu et al., 2009; Lam et al., 2004; Tam, 2004).

The provision of superior value services to consumers is considered an underlying source of competitive advantage (Ravald and Grönroos, 1996; Sweeney and Soutar, 2001; Woodruff, 1997). The perceived value not only directly affects customer satisfaction, but it also loyalty (Brady et al., 2005). Previous studies have provided evidence of the positive effect of perceptual value on consumer intentions for repurchase or dedication (Chen and Dubinsky, 2003; Sweeney et al., 1999). Lai et al. (2009) also showed that perceived value has a greater impact on consumer loyalty than any other form of assessment (quality, satisfaction and corporate image) being considered. Therefore, the perceived value of the customer service is expected to have a positive impact on customer loyalty.

Customer satisfaction is the cornerstone of all marketing activities. The importance of customer satisfaction lies in the ability of a company to influence post-purchasing behavior. Satisfied customers are more likely to repeat purchases and share their positive impressions and experiences with other consumers. On the other hand, unhappy customers may harm companies' reputation by negative word-of-mouth activities or even by complaining to the press or to consumer protection organizations.

In the present research, perceived quality of e-commerce services is determined through five factors, namely, usability (five items), design (five items), responsiveness (six items), personalization (four items) and security

(five items). Items are measured on a five-point Likert scale (1: Strongly disagree – 5: Strongly agree), and the average scores of the five factors ascribes the overall level of perceived quality. In addition, perceived value is determined by four items evaluated on a ten-point Likert scale, while elements of perceived satisfaction (four items), risk (eleven items) and loyalty (five items) are assessed on a five-point Likert scale. The questionnaire was submitted online between September 2015 and September 2016. In total, 304 completed questionnaires were collected through convenience sampling on online customers in Greece, pointing out a response rate at 20.26 per cent.

Initially, exploratory factor analysis with the equamax rotation method was applied to identify perceptions of consumers regarding quality, value, satisfaction, risk and loyalty. The minimum acceptable value of loadings for each variable in the process was 0.5. In addition, the Cronbach α coefficient was used to capture the internal reliability of the factors with a minimum acceptable value of 0.7.

The effect of the factors that make up perceived quality of e-services on customer value, satisfaction, risk and loyalty was examined by using ordinary least squares (OLS) regression analysis. Likewise, path analysis was applied to confirm the impact of perceived quality on total consumer satisfaction, perceived value and loyalty, utilizing perceived risk as a moderating variable.

Results

In identifying the respondent's demographic characteristics in Table I, it is observed that 37.9 per cent are men and 62.1 per cent women. In addition, 25.4 per cent of the surveyed consumers are less than 25 years old, 45.2 per cent between 25 and 40 years old, 27.4 per cent from 41 to 55 years old and only 2 per cent of consumers over 55 years of age.

In relation to the level of education of the participants in the survey, 25 per cent are high school graduates, 51.2 per cent are university graduates, 21.9 per cent hold a postgraduate degree and 2 per cent a PhD. At the same time, 9.1 per cent of the respondents are civil servants, 40.8 per cent private employees, 17.4 per cent freelancers, 4.5 per cent entrepreneurs, 0.3 per cent retired and 24.4 per cent unemployed.

Table II summarizes the average scores on the five factors that consist the perceived quality in e-commerce construct, as well as the overall perceived quality level, which scored rather high (M = 3.97, SD = 0.57). Regarding the evaluation of websites in terms of design and usability, it is noticed that that the corresponding mean scores are also high (M = 4.10, SD = 0.62 and M = 4.36, SD = 0.49, respectively). The level of personalization of services offered by the sites is quite high (M = 3.84, SD = 0.56), while analogous is the level of perceived security provided (M = 3.87, SD = 0.70). However, the degree of responsiveness shown by the e-shops is marginally lower (MD = 3.68, TA = 0.68).

Overall, it can be argued that consumers using e-commerce services in Greece recognize satisfactory levels of quality in the online providers, especially in terms of ease of use of websites. It, therefore, appears that the rapid development of e-commerce in Greece has been combined with the implementation of business practices aimed at facilitating electronic transactions and creating an electronic environment characterized by user friendliness. However, relatively lower levels of perceived quality in personalization and responsiveness should be the basis for a qualitative upgrading of e-commerce in the future by targeting on actions that individualize these services and take into account the consumer specificities and increased customer needs.

Perceived value of consumers is documented high, as the corresponding average score is equal to 7.94 (SD = 1.22). The perceived risk of the survey participants from making e-purchases and transactions is low (M = 2.34, SD = 0.70), and there is a high degree of loyalty as the average score of the specific factor is equal to 3.93 (TA = 0.64). Finally, customer satisfaction is also reported high (M= 3.98 SD = 0.66).

According to the research findings, the perceived value in e-commerce is shaped by the perceived difference between benefits and costs but also in relation to the whole purchasing experience. Indeed, although the concept of perceived value has not been sufficiently explored in the e-commerce environment, previous studies have argued that this emerges as a reflection of the cost–benefit relationship of the purchasing process (Chen and Dubinsky, 2003; Xu and Cai, 2004; Lee and Overby, 2004; Chang and Tseng, 2013). Also, the previous literature found that the major dangers in e-commerce include the fear

of financial loss or non-delivery of products, the uncertainty about the quality of the products purchased, risk associated with the reliability of online businesses and the uncertainty as to the time required by the customer to complete the purchase (Lim, 2003; Soopramanien et al., 2007). Therefore, it is concluded that while the overall perceived risk is quite limited, the fear of loss of personal data, low product performance and economic loss are the most critical aspects of risk in e-commerce (Stone and Grønhaug, 1993; Yang et al., 2015). Moreover, the impact of satisfaction on consumer behavior in e-commerce is extremely important, as previous research has identified its impact on customer loyalty (Anderson and Srinivasan, 2003; Santouridis and Trivellas, 2010; Azam et al., 2012). Modern research suggests that high levels of perceived quality lead to an increased level of satisfaction and perceived value, limited perceived risk and, ultimately, positive consumer behavioral intentions (Table III).

The results from regression analysis suggest a positive and statistically significant effect of the level of usability of web pages on the level of perceived value ($b1 = 0.620$, $p < 0.001$), while the influence of the design factor is also positive because $b2$ equals to 0.502 ($p = 0.002$). In addition, there is a positive and statistically significant effect of the degree of responsiveness ($b3 = 0.244$, $p = 0.046$) and security ($b5 = 0.489$, $p < 0.001$). Regression analysis results show that increased ease of use, satisfactory design, high responsiveness and improved sense of security provided by websites produce increased levels of perceived value in the eyes of consumers.

On the opposite argument, it is observed that the higher the levels of usability of e-commerce websites, the more the perceived risk from the use of websites and vice versa ($b1 = -0.191$, $p = 0.019$). Also, it is noticed the level of responsiveness of the web pages negatively affects the level of perceived risk ($b3 = -0.211$, $p = 0.002$) and expected lower levels of security in the electronic purchasing process signals high levels of perceived risk ($b5 = -0.579$, $p < 0.001$). Examining the effects of the factors determining the perceived quality of commercial electronic services to the level of consumer loyalty, it was found that the extent to which the web pages exhibit increased ease of use has a positive influence on customers loyalty levels ($b1 = 0.254$, $p = 0.005$), while similar is the effect of the responsiveness of the web pages on loyalty ($b3 = 0.327$, $p < 0.001$).

Moreover, the increased degree of personalization of the services offered by the websites also leads to increased levels of consumer loyalty ($b4 = 0.275$, $p = 0.004$). Finally, usability is an important factor in determining overall customer satisfaction, as higher user-friendliness levels increase the level of overall user satisfaction ($b1 = 0.328$, $p < 0.001$). At the same time, increased responsiveness ($b3 = 0.284$, $p < 0.001$) and personalization of web page services ($b4 = 0.289$, $p = 0.003$) also result in higher consumer satisfaction level (Table IV).

Finally, as shown in the first path analysis through the standardized coefficients of the variables investigated, all resulting relationships are considered statistically significant. More specifically, perceived quality of services has a positive effect on the overall satisfaction of consumers and perceived value. On the contrary, perceived risk adversely affects both the overall satisfaction levels of the participants in the survey and the resulting perceived value. Finally, there is a positive effect of consumer satisfaction on the services they receive and perceived value to their level of loyalty (Figure 1).

The above results show that perceived quality exerts a positive influence on perceived value and consumer satisfaction, demonstrating a predictive power of quality in shaping perceptual value and satisfaction levels. The relationships between these three variables have been extensively investigated in the relevant research literature, with the findings of the present study being consistent with those of the respective studies. It has been widely argued that perceived value contributes to consumer satisfaction in the e-commerce environment, while customer satisfaction is largely influenced by perceived quality (Yang and Peterson, 2004; Milfelner et al., 2011; Hu, 2011; Kim et al., 2011). In addition, it has been found that perceived value and quality affects customer satisfaction in an online environment (Chang and Hsu, 2013; Afsar et al., 2013).

Also, the present study confirmed the positive impact of quality on customer loyalty through perceived value and satisfaction, as suggested by the relevant research literature. In particular, it has been found that in e-commerce, loyalty is related with the perceived value (Ligas and Chaudhuri, 2012). According to Hu (2011), perceived value significantly affects consumer satisfaction levels, while these two variables have a positive impact on customer

loyalty. In the same context, it has been found that high levels of quality lead to a high degree of satisfaction, resulting in the adoption of positive consumer behavior and attitudes, including loyalty, trust and commitment (Rodgers et al., 2005; Hu et al., 2009; Santouridis and Trivellas, 2010; Hsu and Lin, 2015).

Also, it has previously been found that the variables that determine quality in e-commerce have a reverse relation on perceived risk (Ramanathan, 2011). As the ease of use, technology, security and personal data protection processes improve, perceived risk reduces (Harridge-March), resulting in increased levels of trust (Schniederjans et al., 2004; Corbitt et al., 2003). According to Goldsmith et al. (2001), perceived risk has a negative impact to satisfaction and loyalty.

Conclusions

The concepts of quality, perceived value, risk, satisfaction and loyalty are considered to be interlinked in both traditional consumer research and e-commerce, as high levels of perceived quality are believed to lead to positive assessments of the cost-benefit and, hence, the perceived value (Cronin et al., 2000; Sweeney and Soutar, 2001; Korda and Snoj, 2010) and loyalty. In this context, this study attempted to study the relationship of these five variables, through both regression and path analysis, resulting in similar results. According to the findings of the study, perceived quality of website services has a positive and statistically significant impact on perceived value, satisfaction and an opposite effect on perceived risk, while the last is mitigating variable for and loyalty.

Quality in e-commerce is a critical issue for its further development, both in Greece and globally, given the intensification of competition and the rapid penetration of the internet in the everyday life. The aim of this research was to develop a framework for quality assessment in e-commerce based on the findings of contemporary research literature and related theoretical approaches that have been developed to date, while studying the relationships between it and the perceived risk, satisfaction, perceived value and consumer behavior, as assessed through customer loyalty. Contrary to the research efforts of the past, in this research, the evaluation of the quality of e-commerce services has been realized on the basis of the dimensions of satisfaction and perceived value, an

element in which its originality lies. Given the lack of information for e-commerce consumers and the partial ignorance of e-commerce businesses, the emergence of a specific and comprehensive quality assessment framework through satisfaction and perceived value can provide useful insights into the potential quality upgrading of e-commerce, as well as a modern perspective for comparative analyses in this research field.

Businesses need to understand the factors that determine the quality in e-commerce to be able to achieve customer satisfaction and reduce perceived risk through improved quality. These factors, which consumers perceive as important for quality, are critical. Given the clear relationship between quality, perceived value and satisfaction, e-commerce businesses have the potential to benefit significantly from improvements in the quality of their services, as this leads to increased levels of perceived value, high level of satisfaction and, hence, enhanced customer loyalty, which is in turn reflected in increased sales, positive word-of-mouth, improved reputation and brand loyalty. In this way, e-businesses will be able to improve their financial position, achieve higher market shares, maintain their competitive advantage, attract new development resources and become sustainable on a long-term basis.

In this respect, future research in the field of e-commerce can examine the quality of the respective electronic services taking into account different product and business categories. In addition, the future research can focus on the impact of high satisfaction, perceived value and customer loyalty on various sizes of business performance, including sales, market share, competitiveness, financial efficiency and sustainability.

Figures
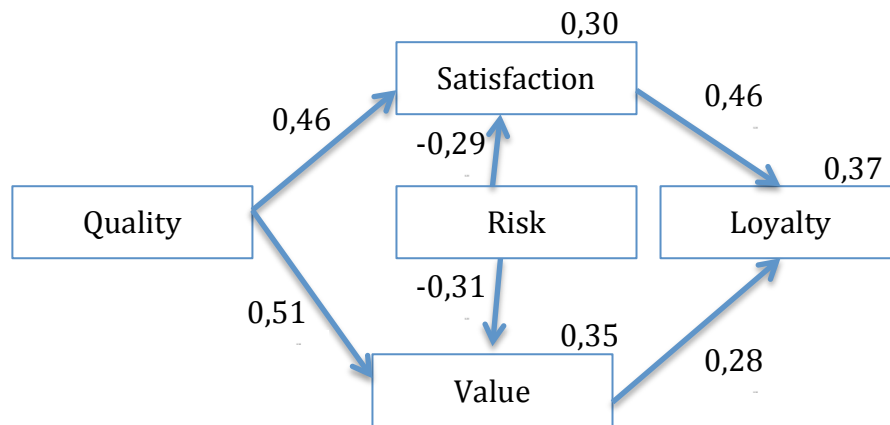
Figure 1. Path analysis results

Table I. Demographics

	Count	Column N (%)
Sex		
Male	113	37.9
Female	185	62.1
Age (years)		
< 25	76	25.4
25-40	135	45.2
41-55	82	27.4
> 55	6	2.0
Education level		
High school graduate	75	25.0
University graduate	154	51.2
MSc	66	21.9
PhD	6	2.0
Profession		
State employee	26	9.1
Private employee	117	40.8
Freelancer	50	17.4
Entrepreneur	13	4.5
Retired	1	0.3
Unemployed	70	24.4
Engaged in household	10	3.5

Table II. Quality factors' assessment

	M	S.D.
Usability	4.36	0.49
Design	4.10	0.50
Responsiveness	3.68	0.68
Personalization	3.84	0.56
Security	3.87	0.70
Perceived quality	3.97	0.57

Table III. Perceived value, risk, satisfaction and loyalty assessment

	M	S.D.
Perceived value	7.94	1.22
Perceived risk	2.34	0.70
Loyalty	3.93	0.64
Perceived satisfaction	3.98	0.66

Table IV. OLS regressions results

	Perceived value		Perceived risk		Perceived loyalty		Perceived satisfaction	
	b	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Constant	−0.703	0.239	5.612	<0.001	0.060	0.875	−0.222	0.525
Usability	0.620	<0.001	−0.191	0.019	0.254	0.005	0.328	<0.001
Design	0.502	0.002	0.096	0.288	0.072	0.461	0.116	0.224
Responsiveness	0.244	0.046	−0.211	0.002	0.327	<0.001	0.284	<0.001
Personalization	0.272	0.272	0.052	0.052	0.052	0.052	0.052	0.052
Security	0.489	<0.001	−0.579	<0.001	0.036	0.036	0.036	0.726
R^2	0.557		0.536		0.451		0.514	

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