

Examining the Influence of Security Perception on Customer Satisfaction: A Quantitative Survey in Vietnam

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Abstract

INTRODUCTION: This study explores the elements that impact consumer satisfaction in e-commerce settings, focusing on the perception of security. The prominence of e-commerce highlights the necessity of understanding customer satisfaction determinants, emphasizing the importance of creating a secure e-commerce environment.

OBJECTIVES: Four hypotheses focused on security perception, customer service, product information, and website design affecting customer satisfaction were established and tested. A sample of Vietnamese consumers was utilized to examine these relationships empirically.

METHODS: This study employed a quantitative research approach. The multiple linear regression analysis was used to test the research hypothesis. The SPSS (IBM) Version 26 software was used for statistical data treatment.

RESULTS: The results revealed that security perception, customer service, and product information significantly influenced customer satisfaction, whereas website design did not. Notably, security perception emerged as a critical determinant of customer satisfaction. The outcomes of this study augment the existing scholarly resources, offering substantiated data concerning the significance of security perceptions in influencing customer gratification.

CONCLUSION: Practical implications for online retailers include prioritizing enhancing security features, improving customer service, and providing comprehensive product information. However, this study may restrict the generalizability of the results, highlighting the need for additional research in various circumstances.

Keywords: Security perception, Customer satisfaction, E-commerce, Internet of Things

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1. Introduction

The adoption of the Internet and technological advancements have led to a significant expansion in online purchasing activities, offering organizations a unique platform to foster and sustain consumer relationships and interactions [1]. Many retailers are interested in developing online shopping or e-retailing to complement conventional offline retail channels [2], [3].

While online platforms may offer efficient and user-friendly shopping experiences [4], consumer adoption hinges on how much they meet consumer expectations. Satisfied customers are likely to exhibit loyalty to a company over a prolonged period [5], demonstrate increased purchasing behavior when new products are introduced, advocate for the company and its products, provide innovative ideas, show diminished interest in competing brands, and exhibit higher price tolerance [6]. Thus, customer satisfaction is pivotal in fostering purchases.

Customer satisfaction is crucial in attracting and retaining customers for a business and its offerings. Both online and offline organizations recognize the importance of customer satisfaction and retention. Hence, comprehending the elements that boost customer gratification is paramount for businesses.

Earlier studies have examined various characteristics that can improve consumer happiness. For example, research executed within the sphere of e-commerce in Greece determined that the primary elements influencing customer gratification encompassed the user interface, product information, service information, convenience of the purchase process, perceptions of security, and appeal of the product [7]. According to Trong et al. [8], website design, transactional ease, payment, security/privacy, product features, shipping, and customer service greatly impact customer satisfaction with online purchases. Furthermore, Tandon et al. [9] proposed that perceived usefulness and website functionality influence customer satisfaction in an online buying environment.

However, these results show some inconsistencies. For instance, Ranjbarian et al. [10] did not establish a substantial link between website design and customer satisfaction. In contrast, Chen et al. [11] identified website design as one of the most significant predictors of consumer satisfaction in online purchasing scenarios. Maditinos and Theodoridis [7] identified a significant link between product information and consumer happiness.

In Vietnam, online shopping is gaining rapid recognition and popularity among consumers, heralding a new era of purchasing culture poised to become habitual. Consumers can purchase desired items using an Internet-enabled device with a few clicks. Major corporations have reaped substantial profits from e-commerce platforms, with significant platforms such as Lazada, Sendo, Tiki, and Shopee emerging in Vietnam since 2010, paving the way for robust development [12]. Given the convenience of online shopping, it is anticipated that consumer shopping trends in Vietnam will align with global development norms in the coming years.

Therefore, this study investigates the factors influencing consumer satisfaction with e-commerce in Vietnam. Given the conflicting and inconsistent findings regarding customer satisfaction in previous studies, scholars lack consensus on the key determinants of customer satisfaction. This study seeks to bridge this knowledge gap by determining the crucial elements that shape consumer contentment in e-commerce, emphasizing the importance of security perception.

2. Conceptual framework

Given its capacity to retain and attract new consumers, customer satisfaction has been a primary focus in marketing research [9]. Kotler and Keller describe satisfaction as "an individual's sense of pleasure or disappointment that stems from comparing a product's or service's performance to their expectations" [6, p.128]. Oliver describes customer

satisfaction as the "consumer's fulfillment response" [13, p.8], a judgment that a product or service attribute has yielded satisfactory consumption-related fulfillment.

Customer satisfaction consists of three key components: an emotional or cognitive response towards a focal point (like the consumption experience) discerned at a particular time (such as post-consumption) [14]. This study defines customer satisfaction as a customer's pleasure derived from past e-commerce experiences. Flavián et al. [15] suggest that fulfilling consumer expectations forms the basis of customer satisfaction.

In this study, the concept of product refers to product differentiation. This promotional strategy sets a product apart from its rivals by leveraging a robust brand and diverse superior product lines [16]. This approach allows online retailers to compete and establish obstacles for conventional suppliers [17], thereby demonstrating the strength of online businesses. This distinction is discerned in the product information presented on e-commerce sites.

Website design concerns the visual appeal and functionality of the user interface. Both the aesthetics of the website and its operations significantly impact customer satisfaction [18]. Swift, clutter-free, and simple-to-navigate websites can augment the shopping experience, enhancing customer pleasure and satisfaction. As per Dharmesti and Nugroho [19], successful website design demands a clear information pathway, neat screen display, and quick data loading. Prolific research has explored the influence of website design on customer satisfaction, with studies by Kim [20] and Yaqub et al. [21] emphasizing the critical role of website design in molding customer satisfaction and initial impressions.

Security, including safety, personal data management, and transaction security, is a key consideration for online customers [22]. Online retailers must prioritize establishing a secure e-commerce environment [23]. Veybitha et al. [24] stated that customers expect detailed instructions to safeguard their personal and transactional information before purchasing online. The lack of perceived security can be a significant barrier for potential customers, who might hesitate to shop online because of concerns about sharing sensitive data, such as credit card information, over the Internet. Enhancing security measures on e-commerce sites can boost customer satisfaction [7].

Customer service, referred to as staff preparedness to address issues and offer timely responses to queries [22], has been demonstrated to have a positive impact on online customer satisfaction in several studies [11], [8], [19]. Bougie et al. [25] emphasized the importance of prompt responses to customer inquiries because neglecting customer queries can lead to dissatisfaction. High-quality customer services tend to yield high levels of customer satisfaction [26].

The conceptual framework of this study (Figure.1) posits that four factors influence customer satisfaction in e-commerce: website design, customer service, security perception, and product differentiation. Based on this framework, the following hypothesis was proposed:

Hypothesis 1 (H1): A positive relationship exists between website design (WD) and customer satisfaction (CSA).

Hypothesis 2 (H2): Security perception (SP) in online shopping positively influences customer satisfaction.

Hypothesis 3 (H3): Customer service (CS) positively correlates with customer satisfaction.

Hypothesis 4 (H4): Product information (PI) positively influences customer satisfaction.

This study emphasizes the role of security perception, given its critical importance in e-commerce. The investigation of these hypotheses will contribute to a more comprehensive understanding of the factors influencing customer satisfaction in e-commerce, particularly in the context of security perceptions.

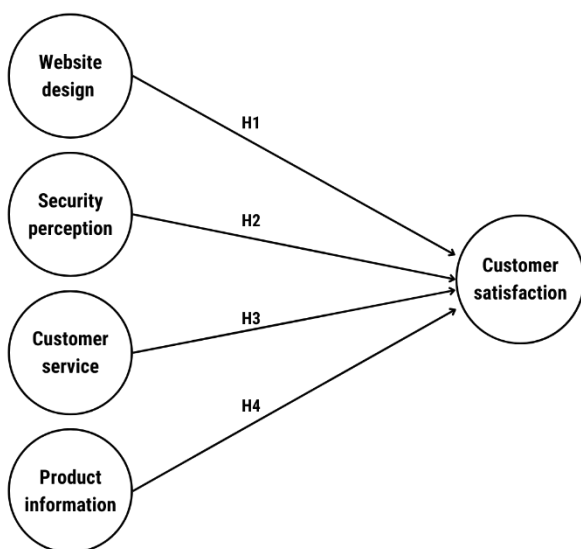


Figure 1. Conceptual framework.

3. Method

The questionnaire in this research was based on the study's conceptual framework, as well as earlier surveys from other studies [14], [17], [21], [24], [25]. The authors then changed and evaluated the appropriate questions before finalizing the questionnaire. Reliability testing will also be performed to confirm the fulfilment of the questionnaire. The questions were graded on a Likert scale with 1= dissatisfaction, 2= somewhat dissatisfied, 3= moderate, 4= satisfied, and 5= strongly satisfied. The sample in this study included all residents of Thai Nguyen city. We use regression analysis and four variables in this study. According to Tabachnick and Fidell [27], the minimal sample size for this research is:

$$n = 8m + 50 = 8 * 4 + 50 = 82.$$

m: number of independent variables

Consequently, the author gathered data using convenience sampling; therefore, the total number of questionnaires completed was 120. To evaluate the hypotheses in the conceptual framework model, SPSS

(IBM) Version 26 software was used for statistical treatment of the data.

4. Results

4.1. Demographic of respondents

There were 50 male respondents (41.7% of the total) and 70 female respondents (58.3%), indicating that women comprise the majority of online shoppers. The most significant proportion of respondents (1.7%) were under 18, 72.5% were between 18 and 30, and 25.8% were between 30 and 40. Most respondents had an annual income exceeding \$ 500\$ (43.3%), followed by those earning between \$ 300\$ and \$ 400\$ (28.3%). Lastly, income from 200\$–300\$ and less than 200\$ represented 18.3% and 10%, respectively. The nearly absolute percentage of respondents who had shopped online was 96.7%, while 3.3% of respondents had never. Of the respondents, 19.2% rarely buy online, 25.8% make less than 10 purchases, and 55.5% make 10 to 20 purchases.

4.2. Reliability statistics

The procedures for assessing the measurement quality are reviewed in this section. The reliability of each construct was evaluated. The item-total correlation of an indicator is then calculated for each of the four components in the proposed model. It was removed if a construct was unreliable, with a Cronbach's alpha below 0.7. Items with poor item-total correlations (less than 0.3) were also eliminated [28]. Table 1 presents the reliability results for each construct. Table 1 shows that all the alpha coefficients of the constructs were greater than 0.6 (WD = 0.835; CS = 0.980; SP = 0.781; PI = 0.976; CSA = 0.868), and the item-total of all items was greater than 0.3. The findings demonstrate the dependability of all constructs, which is suitable for Exploratory Factor Analysis.

Table 1. Questionnaire items, Cronbach's alpha, Factor loading.

Items	Questionnaire	Cronbach's Alpha / Item-total correlation	Factor loading
WD	Website Design	0.835	
WD1	The online store websites design is very convenient to search.	0.557	0.709
WD2	The online store websites are very convenient to order.	0.777	0.873
WD3	The layout of the online store websites is good.	0.660	0.794

WD4	The online store websites attract customers.	0.554	0.715
WD5	The online store websites are designed to be intuitive and easy to understand.	0.648	0.781
CS	Customer Service	0.980	
CS1	The online store website's customer service staff are always happy to help.	0.947	0.960
CS2	The online store websites respond to customer inquiries promptly.	0.943	0.971
CS3	The online store websites are ready and willing to respond to customers' needs.	0.978	0.981
SP	Security perception	0.781	
SP1	Personal information is securely managed on the online store websites.	0.635	0.840
SP2	Customers feel secure providing credit card information at these online store websites.	0.616	0.830
SP3	The online store websites are full of security features.	0.608	0.820
PI	Product information	0.976	
PI1	The online store websites ensure that product information is always up to date.	0.947	0.969
PI2	The online store websites give the product information sufficient.	0.968	0.972
PI3	The online store websites give consistent product information.	0.932	0.951
CSA	Customer satisfaction	0.868	
CSA1	Purchasing goods online makes it convenient for me to buy from anywhere.	0.680	0.812
CSA2	I buy goods through online store websites with many promotions and discounts.	0.742	0.863
CSA3	I can order my desired items quickly from online retailers.	0.812	0.906
CSA4	Buying through the online store websites met my expectations.	0.786	0.902

4.3. Exploratory Factor Analysis (EFA)

The methodology used in this study was the EFA used to identify underlying dimensions in multivariate data analysis [29]. Execute EFA exploratory factor analysis utilizing the factor extraction approach, stopping when extracting factors with an eigenvalue of 1 or above [30] to condense a group of interdependent observed variables into a smaller set of variables that are more meaningful but retain all the information about the original set of variables. This method is more accurate when principal components with varimax rotation are used to capture the data. The principal component approach was used for factor extraction. The scale was considered good and adequate when the overall extracted variance is 50%. To assess the applicability of the EFA, the KMO coefficient should fall between 0.5 and 1, in accordance with Bartlett's criteria and the KMO coefficient. The Bartlett test was used to examine the correlation between the observed variables in the factor analysis. If this test has a statistical significance of 0.05, then the observed variables in the factor analysis are correlated. The factor loading coefficient (factor weight) must be less than 0.5 to ensure the practical significance level of EFA [31].

EFA for independent variables

The EFA is suitable for the independent variables used in the study, with KMO value = 0.656 > 0.5 and the sig value of Bartlett's test = 0.000 < 0.05. A total cumulative variance of 78.432% > 50% and four extracted factors with eigenvalue criteria greater than 1 exist. Therefore, these four extracted factors can explain 63.357% of the data variation in the 14 observed variables used in the EFA. The 14 observed variables were categorized into four factors according to the results of the rotation matrix (Table 1), all of which had Factor Loading coefficients above 0.5, and these variables exhibited a high level of statistical significance.

EFA for the dependent variable

According to the EFA for the dependent variable analysis results, KMO value = 0.812, greater than 0.5, a component was retrieved with an eigenvalue of 3.037 > 1, and sig value of Bartlett's test = 0.000 < 0.05. This variable accounted for 75.926% of the data variation in the four observable variables involved in the EFA. In accordance with Table 1, there was no collinearity, separation, or factor aggregation because the factor loadings were greater than 0.5. This indicates that the scale of the dependent variable is guaranteed to be unidirectional and that the observed variables of the dependent variable converge satisfactorily.

4.4. Regression Analysis

The variance analysis (ANOVA) reveals the outcomes of the F-test (15.389), which examines the hypothesis on the suitability of the regression model; the model's suitability is confirmed as the F-test significance value is 0.000, which is less than 0.05. The fit of the model was evaluated using

adjusted R-squared values. In this study, an adjusted R-square value of 0.605 indicated that the independent variables explained 60.5% of the variance in the dependent variable. In contrast, the remaining 29.5% were attributed to random errors and factors that were not included in the

model. Furthermore, first-order serial correlation was evaluated using the Durbin-Watson statistic. The obtained DW value of 2.094, which lies between 1.5 and 2.5, indicates no deviation from the assumption of first-order autocorrelation [31].

Table 2. Regression analysis results and Hypothesis testing

Hypothesis		β	t	p	VIF	Decision
H1	WD -> CSA	-0.044	0.578	0.564	1.040	Not supported
H2	SP -> CSA	0.168	2.675	0.008	1.032	Supported
H3	CS -> CSA	0.338	4.413	0.000	1.034	Supported
H4	PI -> CSA	0.473	6.832	0.000	1.044	Supported

Table 2 displays the t-test results for the regression coefficient significance hypothesis, Variance Inflation Factor (VIF) index for multicollinearity, and regression coefficients. Given that the sig value of the WD variable is 0.564 (> 0.05), it is not considered significant in the regression model and has no bearing on the dependent variable CSA. The remaining factors, SP, CS, and PI affected the dependent variable CSA and were statistically significant ($\text{sig} < 0.05$).

Thus, hypothesis H1 is not supported; H2 ($t = 2.657$, $p < 0.05$), H3 ($t = 4.413$, $p < 0.05$), and H4 ($t = 6.832$, $p < 0.05$) are supported. Additionally, collinearity in the regression model was shown by the VIF. Multicollinearity is less likely to occur when VIF approaches 1. Because none of the independent variables in this investigation had VIF coefficients greater than 2, the data did not violate the multicollinearity assumption [29].

5. Discussion

The outcomes of this research offer valuable perspectives on the elements that shape customer satisfaction in e-commerce. The results of hypothesis testing revealed that website design does not significantly impact customer satisfaction. This finding contradicts previous research by Szymanski and Hise [18] and Dharmesti and Nugroho [19], who suggested that effective website design enhances the shopping experience, making it more enjoyable and satisfying for customers. This discrepancy may be attributed to the evolving nature of online shopping, where factors such as security perception, customer service, and product information may have gained prominence in influencing customer satisfaction.

The findings indicate that security perception, customer service, and product information significantly influence customer satisfaction. These results are consistent with those of previous studies. For instance, Maditinos and Theodoridis [7] found that enhancing security features on e-commerce websites significantly improved customer satisfaction. Evanschitzky et al. [32]

highly appreciate the quality of product information and online consumer happiness. Similarly, Ranjbarian et al. [10] and Bougie et al. [25] emphasized the importance of prompt responses to customer inquiries because neglecting customer queries can lead to dissatisfaction.

Thus, the impact of security perceptions on customer satisfaction deserves particular attention. The results of this study ($\beta = 0.168$, $p = 0.008$) indicated a significant positive relationship between security perception and customer satisfaction. This finding aligns with Qalati et al. [23] and Veybitha et al. [24], who highlighted the importance of perceived security in online shopping. The results underscore the necessity for online retailers to prioritize creating a secure online shopping environment because the absence of perceived security can deter potential customers.

Theoretically, this research enriches the prevailing scholarly resources by offering substantiated data on the significance of security perception in shaping customer gratification in e-commerce. It broadens the existing knowledge base by showing that security perception, customer service, and product information hold more importance than website design in influencing customer satisfaction.

These findings suggest that online retailers should enhance security features, improve customer service, and provide comprehensive product information to increase customer satisfaction. Considering the crucial role of security perception, online retailers should allocate resources to implement advanced security measures to safeguard customer data and ensure secure transactions [18]. This could involve implementing secure payment systems, encryption technologies, and regularly updating security protocols, such as blockchain [33], [34].

However, this study has some limitations. The sample was limited to Thai Nguyen City, Vietnam consumers, limiting our findings' generalizability to other geographical locations. Future research should replicate this study in different contexts to validate our findings. Additionally, this study focuses on four factors that influence customer satisfaction. Future research could

consider other potential factors such as price, delivery speed, and return policy to provide a more comprehensive understanding of customer satisfaction in e-commerce.

6. Conclusion

This study investigates the factors influencing customer satisfaction in e-commerce, emphasizing the role of security perception. The research objectives are addressed through the development and testing of four hypotheses. The results reveal that website design does not significantly impact customer satisfaction while security perception, customer service, and product informations have a significant influence. Notably, security perception has emerged as a critical factor in customer satisfaction in e-commerce, underscoring the importance of creating a secure online shopping environment.

This research enhances the established literature by introducing empirical proof of the impact of security perception on customer satisfaction, thereby broadening the current comprehension in this domain. These findings offer practical implications for online retailers, suggesting that they should prioritize enhancing security features, improving customer service, and providing comprehensive product information to increase customer satisfaction. Nonetheless, this study has limitations, including its geographic concentration on consumers in Thai Nguyen City, Vietnam, which may restrict the broader applicability of the results. Future research can replicate this study in various contexts and contemplate additional factors influencing customer satisfaction to achieve a more holistic understanding of this intricate phenomenon.

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