

# Exploring the effects of e-service quality and e-trust on consumers' e-satisfaction and e-loyalty: insights from online shoppers in Pakistan

Insights from  
online  
shoppers in  
Pakistan

Received 25 September 2023  
Revised 19 November 2023  
Accepted 20 November 2023

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## Abstract

**Purpose** – The purpose of this study is to investigate the impact of e-service quality and e-trust on customer e-satisfaction and, subsequently, on customer e-loyalty towards a website in the online shopping environment of Pakistan.

**Design/methodology/approach** – The research employed a quantitative approach and utilised structural equation modelling to investigate the relationship between e-service quality and e-trust on consumers' e-satisfaction and e-loyalty. The data were collected from 250 individuals who actively use online shopping websites to purchase products in Pakistan.

**Findings** – The findings revealed that e-service quality and e-trust offered on e-commerce websites significantly impacted customer e-loyalty. However, it was found that both e-service quality and e-trust do not have a significant impact on customer e-satisfaction. In addition, the findings showed that customer e-satisfaction positively impacts e-loyalty.

**Research limitations/implications** – Overall, these findings emphasise the importance of e-service quality, e-trust and customer e-satisfaction and their role in cultivating customer loyalty within the context of the online shopping environment in Pakistan.

**Originality/value** – This study contributes to the existing literature on online shopping in Pakistan by exploring the factors influencing consumer behaviour in this context. The findings add to the academic understanding of consumer behaviour and provide valuable insights for e-commerce businesses in Pakistan.

**Keywords** E-service quality, E-trust, E-satisfaction, E-loyalty, Online shopping

**Paper type** Research paper

## 1. Introduction

In developing countries like Pakistan, despite the accelerating growth of online marketplaces in recent years, consumer confidence in e-commerce platforms remains a significant challenge. This is primarily due to the need for greater trust and the prevalence of security and privacy concerns in the online shopping environment, which hinder customers from fully embracing online transactions. Pakistan presents a distinctive business environment with its own set of challenges and opportunities. Investigating the interplay between e-service



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Journal of Electronic Business &  
Digital Economics  
Emerald Publishing Limited  
e-ISSN: 2754-4222  
p-ISSN: 2754-4214  
DOI 10.1108/JEBDE-09-2023-0019

quality, e-trust, e-satisfaction, and e-loyalty in this context allows to shed light on how local business practices and challenges influence consumer perceptions and behaviours (Hussain & Ijaz, 2019). Prior research has confirmed that the quality of e-service on a website significantly influences consumers' perceptions and cultivates trust. Considering the findings of prior research, the current study aims to investigate how customer e-satisfaction and e-loyalty can be achieved by providing e-service quality on e-commerce websites.

Understanding customers' perceptions of e-service quality is necessary for aligning customer expectations with the actual delivery of e-services. Despite the increasing significance of e-commerce in Pakistan, there is a need for more studies specifically tailored to this context. This study addresses this gap by comprehensively examining the factors influencing e-satisfaction and e-loyalty amongst online shoppers in Pakistan, meeting the pressing demand for localised knowledge.

Existing studies from Pakistan have examined the impact of e-service quality on various fronts, including business-to-consumer (B2C) sites (Hair, Risher, Sarstedt, & Ringle, 2019b), e-learning systems (Iqbal, Bhatti, & Khan, 2020; Anser, Tabash, Nassani, Aldakhil, & Yousaf, 2021); the online banking sector (Ahmad, Bhatti, & Hwang, 2020; Jiang, Jun, & Yang, 2016); and e-commerce websites (Jameel, Hamdi, Kareem, & Raewf, 2021). Within the context of online shopping, all of these studies have examined the impact of e-service quality on customer e-satisfaction and e-loyalty. Going a step further, to the best of our knowledge, the present study is the first to investigate the relationship between e-service quality and e-trust on customer e-satisfaction and e-loyalty within the online shopping context in Pakistan. To better understand the dynamics of these relationships, the current study addresses the following research questions:

- RQ1. How do e-service quality and e-trust impact customer e-loyalty towards e-commerce platforms in Pakistan?
- RQ2. Does customer e-satisfaction act as a mediating factor in the relationship between service quality, e-trust, and e-loyalty towards e-commerce platforms in Pakistan?

By exploring these questions, the present study contributes to the existing body of knowledge by offering a thorough investigation of these questions. This study offers valuable insights for e-commerce businesses to improve their e-service quality, thereby building trust, improving customer satisfaction, and ultimately fostering customer loyalty.

In summary, this research focuses on Pakistan to contribute to the understanding of the Pakistani e-commerce sector as well engage in the broader academic discourse on e-trust, e-satisfaction, e-loyalty, and e-services quality. By adopting this approach, research findings become more relevant and applicable, providing insightful information to researchers, practitioners, and policymakers alike.

While this research is grounded in the Pakistani context, it is believed that the insights gained can contribute to the broader understanding of e-commerce phenomena. By offering a detailed examination of factors influencing online shopping in Pakistan, this study aims to provide valuable perspectives from a developing country, contributing insights that may inform global discussions on e-commerce trends.

## 2. Literature review

### 2.1 Definition of e-commerce

The term "electronic commerce" (e-commerce) was coined in the early 1990s (Laudon & Traver, 2017) and used to define the activity of buying and selling goods and services on the Internet in exchange for money and data for executing these transactions (Chaffey, 2015). Despite the lack of a universally acceptable definition of e-commerce, there is a consensus amongst scholars that e-commerce is about conducting business activities electronically

(Rayport & Jaworski, 2002). The simplest definition of e-commerce was put forth by Turban and King (2003), who defined e-commerce as “the process of buying, selling or exchanging product and services, and information via computer networks” (p. 3). This is the definition under which this study operates.

## 2.2 E-service quality and its dimensions

E-service quality is defined as customers’ overall evaluations and opinions related to the quality of service in the virtual marketplace (Ojasalo, 2010). According to Piercy (2014) and Shi *et al* (2018), e-service quality in an e-commerce context encompasses the entire customer journey, including pre-purchase evaluation, product purchasing, and post-purchase activities. In their view, when consumers conduct different activities on the website, including seeking information, searching for and selecting desired products, making purchases, and sharing feedback, they expect a certain level of e-service quality, as its presence can significantly impact their satisfaction. This aligns with a recent study (Olaleye *et al*, 2021) which confirms that improved e-service quality leads to increased customer satisfaction and retention and, ultimately, customers’ loyalty to a brand. The SERVQUAL model developed by Parasuraman, Zeithaml, and Berry (1988) has been used predominantly in academic literature to measure and evaluate service quality. This model estimates the service quality across five dimensions, including tangibles, reliability, responsiveness, assurance and empathy. Over time, measurements have been introduced to measure service quality, including security (Rita, Oliveira, & Farisa, 2019) and convenience (Eryigit & Fan, 2021).

The present study uses two of the original dimensions from the SERVQUAL model that are: reliability and responsiveness (Parasuraman *et al*, 1988) with addition of security (Rita *et al*, 2019), and convenience (Eryigit & Fan, 2021) to measure the e-service quality on e-commerce websites.

The decision to utilise two of the original dimensions from the SERVQUAL model, namely reliability and responsiveness, along with the addition of security and convenience, is based on evaluating the literature on e-service quality and the specific context of online shopping in Pakistan. Firstly, reliability and responsiveness are widely acknowledged as fundamental pillars of e-quality service provision on online platforms. Secondly, with the increasing importance of secure online transactions and the emphasis on user-friendly interfaces and experiences, these dimensions of security and convenience have emerged as critical factors influencing customer perceptions and satisfaction (Rita *et al*, 2019; Eryigit & Fan, 2021).

In the context of online shopping in Pakistan, where trust and security are critical factors (Ur Rahman, Khan, & Iqbal, 2018), focussing on these four dimensions ensures a comprehensive evaluation of e-service aspects, acknowledging the priorities and unique challenges of online consumers in this region.

Next, each of these dimensions are explained:

**2.2.1 Reliability.** Parasuraman *et al* (1988) define reliability as an “ability to perform the promised service dependably and accurately” (p. 23). In the context of e-commerce, reliability refers to the ability of an online shopping website to meet the diverse needs of buyers, whilst ensuring the security of their personal information (Semeijn, Van Riel, Van Birgelen, & Streukens, 2005; Jiang *et al*, 2016). This dimension emphasises that e-service providers must give comprehensive product information to customers and deliver quality services to facilitate informed decision-making, thus increasing customer satisfaction (Smith, 2006).

A study by Jiang *et al* (2016) stated that reliability significantly impacts customers’ perceived value of an e-commerce website, resulting in increased customer satisfaction. This was also confirmed in the context of Pakistan (Zia, Rafique, Rehman, & Chudhery, 2022). However, contrary to these findings, Dhingra, Gupta, & Bhatti (2020) study on determining the e-service quality on e-commerce websites found reliability to have no significant impact

on overall e-service quality. This accentuates the need to conduct further research to confirm the significance of reliability in e-service quality on e-commerce websites.

*2.2.2 Responsiveness.* Responsiveness is the “willingness to help customers and provide prompt service” (Parasuraman *et al.*, 1988, p. 23). According to Li and Suomi (2009), the critical attributes of responsiveness include providing adequate contact information, as well as prompt and timely responses to customers to ensure quick resolutions of problems. Previous studies on e-service quality confirmed that responsiveness is the critical factor in influencing customers’ perceptions of the quality of e-service and leads to increased customer satisfaction (Ighomereho, Afolabi, & Oluwakoya, 2022; Zemblytė, 2015). Iqbal *et al.* (2020), assessing the e-service quality of e-commerce websites in Pakistan, found that website providers ensured they promptly responded to consumers’ concerns and questions to improve the e-service quality.

*2.2.3 Security.* According to Guo, Ling, and Liu, (2012), security is measured by the website attributes which protect personal data and information from unauthorised access during transactions. Mustafa (2011) asserts that security is critical for consumers when buying products and services online. This is because e-commerce systems require consumers to enter their private information, such as name, contact number, address and bank card details. Sharing personal information increases concerns amongst consumers regarding safeguarding their private data on websites and the threat of misuse. Hence, security and privacy are the critical determinants of e-service quality (Rita *et al.*, 2019).

Previous research in the context of Pakistan has also confirmed that concerns about security and privacy in online transactions are one of the key factors that negatively impact consumers’ intentions to use e-commerce websites (Ahmed & Lodhi, 2015; Ur Rahman *et al.*, 2018; Bhatti, Saad, & Gbadebo, 2018). Therefore, it is crucial to consider the security dimension to effectively measure the e-service quality on an e-commerce website, as done in the present study.

*2.2.4 Convenience.* Convenience is another critical dimension of e-service quality on e-commerce websites (Eryigit & Fan, 2021). It refers to the perceived ease, flexibility and speed provided to consumers when making purchases through online platforms (Jiang *et al.*, 2016), as cited in (Eryigit & Fan, 2021). Prior studies on e-commerce have confirmed that one of the significant benefits of e-commerce websites is the convenience of service in terms of accessibility, timesaving, wider product selection, ease of comparison and global reach (Zhang & Prybutok, 2005; Sattar and Ameer, 2014; Bhagat, 2015; Sabou, Avram-Pop, & Zima, 2017). Convenience has been found to have a positive impact on e-service quality and, subsequently, consumers’ intentions to shop online (Nasser, Islam, Zainal Abidin, Azam, & Prabhakar, 2015; Khan, Zubair, & Malik, 2019).

### 2.3 E-trust

Trust is defined as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party” (Mayer, Davis, & Schoorman, 1995, p. 72). In an earlier attempt to explain e-trust, Ba, Whinston, and Zhang (1998) as cited in Taddeo (2009) described e-trust as happening in environments where physical contacts do not take place, where moral and social influences can be perceived differently and where interactions are done through digital devices. While insightful, this definition is broad as it encompasses all digital environments rather than specifying a particular context.

Gefen (2002) in his seminal paper argued that trust is more important in an e-commerce context because of a less controllable and less verifiable business environment.

Therefore, establishing a focused understanding of trust in e-commerce websites becomes pertinent. Several authors have attempted to define the concept of trust in this specific context. For instance, Lin (2007) defined trust on e-commerce websites as “consumer perceptions of the level of trust mechanisms provided by an online retailer” (p.68). Similarly, Hwang and Kim

(2007) characterised e-trust as a mechanism aimed at reducing social complexity, that fosters customers' willingness to rely on e-vendor. These earlier definitions indicate the trust is a matter of perception. Building on this, a recent study by (Wu, Hwang, Sharkhuu, & Tsogt-Ochir, 2018) argued that trust can be viewed as a belief, sentiment, expectation, and confidence that customers hold towards an e-commerce website when purchasing online. It encompasses customers' reliance on the ability of the website to provide a secure and satisfactory shopping experience. Upon reviewing the extant literature, it is apparent that there is no distinct definition of e-trust. Instead, the literature predominantly focuses on dimensions of trust on in an e-commerce environment. It is the unique context of this environment that differentiates the construct of e-trust from trust. Considering this, the broader definition proposed by Wu *et al.* (2018) is adopted to define e-trust in the current study.

Earlier research has confirmed that trust is a critical factor in the adoption of e-commerce (Gefen, 2002; Mcknight, Choudhury, & Kacmar, 2002; Yang, Lin, Chandlrees, & Chao, 2009; Bauman & Bachmann, 2017) and plays an important role in the development and maintenance of customer-business relationships (Kim, Ferrin, & Rao, 2009; Huang & Wilkinson, 2013). This is also reiterated in previous research within the context of Pakistan (Mazhar, Jam, & Anwar, 2012; Ur Rahman *et al.*, 2018). As a result, building trust in e-service quality on e-commerce platforms is crucial for businesses as it directly impacts customer satisfaction and, ultimately, loyalty, a key argument presented in this paper.

#### 2.4 E-satisfaction

Satisfaction is defined as “*an affective state resulting from a transaction’s affective and cognitive assessment process*” (Jameel *et al.*, 2021, p. 2). In the e-commerce environment, satisfaction refers to “*the contentment of the customer with respect to his or her prior purchasing experience with a given electronic commerce firm*” (Anderson and Srinivasan, 2003, p. 125). Due to the increasing importance of e-service delivery, customer satisfaction must be assessed through continuous monitoring and regulation of service quality (Chen, Rodgers, & He, 2008; Jameel & Ahmad, 2019; Jameel *et al.*, 2021).

#### 2.5 E-loyalty

Loyalty as defined by (Oliver, 1999) is “*a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior*” (p. 34).

The concept of e-loyalty extends traditional notion of loyalty to encompass the online consumer experience in the context of technology-mediated online shopping. In their systematic review of e-loyalty literature, Valvi and Fragkos (2012) argued that the researchers have used different concepts to measure e-loyalty including re-purchase intention, commitment, customer retention and word of mouth. According to Valvi and Fragkos (2012) three approaches to understand loyalty includes, behavioural, attitudinal and integrated. The first one examines consumers' tendency to revisit and make repeat purchases, the second one focusses on customers' psychological involvement including goodwill and favouritism, while the integrated one combines these approaches, to create a new idea of loyalty. This idea of e-loyalty aligns with the definition of loyalty presented earlier (Oliver, 1999) as it comprises of both types of features.

However, more recent definitions of e-loyalty are focused on the dimensions of re-purchase intention and commitment to make repeat purchases from the website. For example Ilsever, Cyr, and Parent (2007) defined e-loyalty as perceived loyalty to an e-commerce website that involves revisiting the website and the intention to make future purchases from it. In a similar vein, Afsar, Nasiri, and Zadeh (2013, p. 548) defines e-loyalty as “*a desirable tendency of the customer towards e-retailing and its result in the repetition of buying behaviour*”.

For this study, we adopt the integrated view of e-loyalty that, which combines both behaviour and attitudes. This is because the extant literature confirms increased loyalty from customers not only results in increased sales and high profitability for the businesses but also transforms customers into brand advocates (Khristianto & Suyadi, 2012).

E-loyalty is an outcome of the process that begins with accessing the e-service quality and incorporating trust to increase customer satisfaction, which ultimately leads to e-loyalty (Ting, Ariff, Zakuan, Sulaiman, & Saman, 2016). Increased loyalty from customers not only results in increased sales and high profitability for the businesses but also transforms customers into brand advocates (Khristianto & Suyadi, 2012). In the context of online retailing in Pakistan, previous research (Khan *et al.*, 2019, Khan, Zubair, Khurram, & Khan, 2020; Gull, Tanvir, Zaidi, & Mehmood, 2020) affirmed that e-service quality is a crucial driver of customer e-satisfaction and e-loyalty.

### 3. Research Model and hypothesis

The conceptual model shown in Figure 1 was based on the well-established constructs in the e-commerce context, which are: e-service quality (Parasuraman *et al.*, 1988; Wu *et al.*, 2018), e-satisfaction (Jameel *et al.*, 2021) and e-loyalty (Khan *et al.*, 2019).

Firstly, the model examined the direct effect of e-service quality and e-trust on the e-loyalty of customers. Secondly, it examined the indirect effect of e-service quality and e-trust as independent variables on e-loyalty, a dependent variable, when e-satisfaction works as a mediator. The proposed relationships and the hypotheses are discussed next.

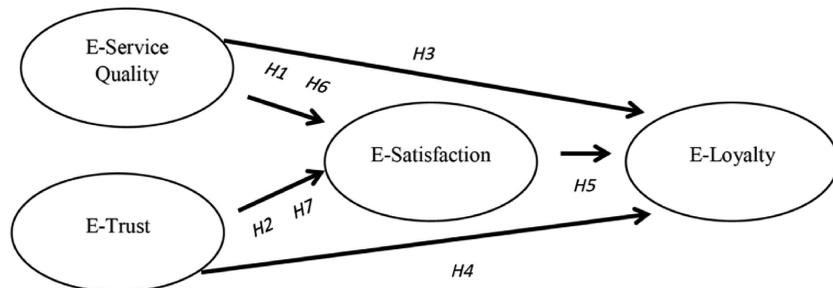
#### 3.1 Relationship between e-service quality and e-satisfaction

To deliver excellent e-service quality in an e-commerce setting, it is important to ensure customer satisfaction (Ighomereho *et al.*, 2022). Previous research (Rita *et al.*, 2019) has confirmed that the provision of e-service quality by an online store significantly impacts customer e-satisfaction. This is also re-iterated in the context of Pakistan in recent studies (Khan *et al.*, 2020, Khan, Arshad, & Munir, 2023), which affirm that e-service quality plays a crucial role in attaining customer e-satisfaction. Based on the evidence from the literature, the following hypothesis is formulated:

*H1.* E-service quality on online shopping websites has a positive effect on customer e-satisfaction.

#### 3.2 Relationship between consumer e-trust and e-satisfaction

Trust is paramount for building and maintaining strong business-customer relationships (Kim *et al.*, 2009; Huang & Wilkinson, 2013). Examining the impact of trust on customer



**Figure 1.**  
Research model for the current study

**Source(s):** Figure by authors

satisfaction confirmed that consumer e-trust in an online platform positively influences their satisfaction with the online experience (Kundu & Datta, 2015; Tran & Vu, 2019; Juwaini *et al.*, 2022). As the level of customer e-trust increases, so does customer e-satisfaction. This is because customers feel more confident and secure in online transactions, which contributes to a positive shopping experience online (Ur Rahman *et al.*, 2018). Building customer e-trust in online platforms to cultivate positive business-customer relationships and foster e-satisfaction becomes very important. Based on this argument, the following is hypothesised:

*H2.* E-trust on online shopping websites has a positive effect on customer e-satisfaction.

### *3.3 Relationship between e-service quality and e-loyalty*

The relationship between e-service quality and e-loyalty is mutually reinforcing (Ting *et al.*, 2016). Previous research (Jiang *et al.*, 2016; Olaleye *et al.*, 2021) established that when high-quality e-services are provided to customers online, customers are likely to develop a sense of trust and satisfaction. This positive experience increases consumer e-loyalty towards the businesses, potentially increasing repeat purchases and engagement with the brand. Reaffirming this, recent studies from Pakistan (Khan *et al.*, 2020; Gull *et al.*, 2020) also showed that e-service quality on e-commerce websites positively influences customer e-loyalty. Therefore, it is hypothesised:

*H3.* E-service quality on online shopping websites has a positive effect on the customer e-loyalty.

### *3.4 Relationship between e-trust and e-loyalty*

Trust in online platforms is pivotal in driving the e-loyalty of customers (Anser *et al.*, 2021). Previous research has confirmed a significant positive relationship between e-trust and e-loyalty (Al-dweeri, Obeibat, Al-dwiry, Alshurideh, & Alhorani, 2017; Anser *et al.*, 2021; Juwaini *et al.*, 2022). The findings of these studies support the argument that an increased level of trust can result in increased e-loyalty amongst customers. When customers trust online platforms, they develop a sense of satisfaction, which can positively impact their e-loyalty (Juwaini *et al.*, 2022), benefiting businesses in terms of increased sales and advocacy. Thus, the following hypothesis is formulated:

*H4.* E-trust on online shopping websites has a positive effect on the customer e-loyalty.

### *3.5 Relationship between e-satisfaction and e-loyalty*

Previous research has confirmed that e-satisfaction positively influences e-loyalty (Anderson & Srinivasan, 2003; Khristianto and Suyadi, 2021; Kaya, Behraves, Abubakar, Kaya, & Orus, 2019; Khan *et al.*, 2019). The findings of these former studies asserted that when customers experience higher satisfaction on online platforms, they are more likely to exhibit loyalty towards the business. Hence, it is hypothesised:

*H5.* E-satisfaction on online shopping websites has a positive effect on the customer loyalty.

In addition, with e-satisfaction acting as a mediator, the following statements have been hypothesised:

*H6.* E-satisfaction mediates a positive relationship between e-service quality and e-loyalty.

*H7.* E-satisfaction mediates a positive relationship between e-trust and e-loyalty.

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#### 4. Research methodology

The current study employed a quantitative research approach rooted in the positivist paradigm (Kivunja & Kuyini, 2017) and relies on deductive logic (Clark & Ivankova, 2016). This approach allows for systematic hypothesis testing to uncover the relationship between theory and research (Bryman, 2016). This type of research inquiry advocates for objectivity in the research process. It involves the collecting of structured data composed of variables, which are analysed and interpreted using statistical procedures and presented in numerical form (Matthews & Ross, 2010). As such, *a researcher begins with a theory and collects data that either supports or refutes the theory* (Creswell, 2003, p. 7) to draw inferences and generalisations about the subject matter (Bryman, 2016).

The correlation research design was used to investigate the link and relationship between variables of interest without any intervention from the researcher (Williams, Wiggins, Vogt, & Vogt, 2022). Typically, a correlation reveals the strength and/or direction of the relationship between two or more variables, which could be either positive or negative (Walker, 2005). By utilising this approach, the present study established a framework for determining the relationship between e-service quality and e-trust on customer e-satisfaction, as well as subsequent exploration of their collective impact on customer e-loyalty.

##### 4.1 Sampling

According to Hair, Page, and Brunsveld (2019a), the sampling procedure requires determining the target population, sampling unit, sampling method and size. This study's target population was identified as active internet users in Pakistan, and the sampling unit consisted of individuals with prior experience in using e-commerce or other online platforms for buying products and services online.

Convenience sampling, a non-probability sampling technique (Creswell & Creswell, 2018), was used as a sampling method. In this type of sampling, the participants are recruited based on their proximity and convenient accessibility to the researcher (Bryman, 2016). This method allowed gathering data from readily available participants, ensuring cost and time efficiency. In conformity with the rule "*the larger the sample size, the more accurate your estimates*" (Kumar, 2014, p. 247), a substantial sample of 250 participants was obtained for the study.

##### 4.2 Data collection methods

Data was collected using a structured questionnaire (Creswell & Creswell, 2018). The questionnaire was divided into two parts. The first part obtained demographic information from the participants, including gender, age, education, income, and family status (Bryman, 2016). The second part featured Likert scale questions related to variables and the specific hypotheses being investigated. These questions required participants to indicate their level of agreement or disagreement with statements on factors such as e-service quality, e-trust, e-satisfaction, and e-loyalty. The items used to assess these factors were adapted from measurement scales and questionnaires used in prior research (Wolfenbarger & Gilly, 2003; Zemlytė, 2015; Kaya *et al.*, 2019; Anser *et al.*, 2021) (Refer to Appendix).

The questionnaire was administered using the online survey tool "Google Forms". The survey link was shared on different social media platforms and mobile messaging applications, including Facebook, LinkedIn, and WhatsApp.

##### 4.3 Data analysis

The data was analysed using inferential statistics (Williams *et al.*, 2022). First, reliability and validity tests were conducted to assess the accuracy and reliability of the measurements

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obtained from the questionnaire. Second, both exploratory and confirmatory factor analyses were employed. Exploratory factor analysis helped identify underlying variables that explained the pattern of correlations within the data, while confirmatory factor analysis validated the appropriateness of the measurement model. By carrying out these analyses, the potential errors in data collection were minimised (Saunders, Lewis, & Thornhill, 2015; Creswell & Creswell, 2023).

Finally, the proposed hypotheses were tested using regression analysis. This analysis allowed the examination of the relationship between the variables under investigation and determined whether the formulated hypotheses were accepted or rejected (Creswell & Creswell, 2023).

## 5. Results

The impact of e-service quality on customer trust and satisfaction with an online shopping service is driven by complicated underlying factors. There exists a need to attain a comprehensive and authoritative analysis of the constructs identified and integrated into the proposed conceptual framework (Section 3, Figure 1). The results obtained from the survey will thus pertain to the associations, influence, and impact of change of one construct relative to the other. The following section discusses the results of the role of e-service quality and e-trust on the e-loyalty of a customer when e-satisfaction acts as a mediator.

### 5.1 Measurements

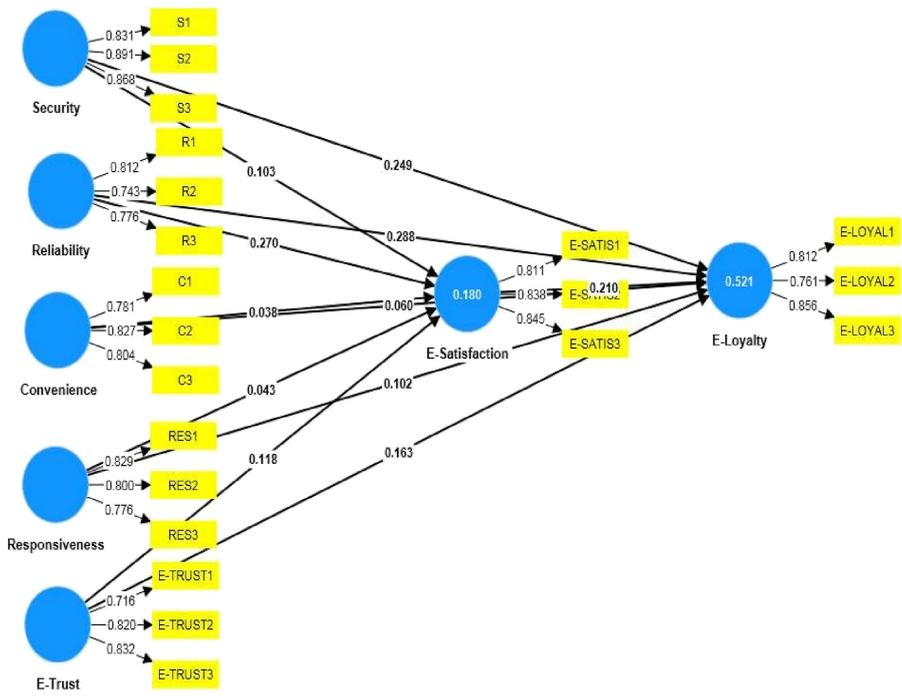
The questionnaire used in this study is provided in the Appendix. The questionnaire comprises twenty-one statements (three statements for each of the seven variables). A sample size of 250 participants yielded a dataset of 5,250 data points. Hays (2018) suggests that quantitative analyses increase their accuracy and precision with the increase in the number of data points included relative to the assessed constructs.

As discussed in the previous section, the quantitative analysis for the present research has been conducted via a multivariate analysis. This implies that multi-linear regression, correlation, and multilinear ANOVA (MANOVA) were performed using the SmartPLS software. These analytical tools offer a rapid, robust, and simple means of data analysis from which theory can be developed and tested (Stevens, 2012). The Partial Least Squares Structural Equation Modelling (PLS-SEM) has been applied to conduct the quantitative analysis as Hair (2018) suggested. Using the PLS-SEM improves data prediction precision, reliability and factor indeterminacy. A reliability and validity measurement were performed to ascertain the reliability of the dataset collected. Subsequently, the factor loadings, quality criteria, co-linearities and discriminant validities were determined. Ultimately, a hypothetical validation was performed to test the 'trueness' of the model.

### 5.2 Outer loadings (confirmatory fact analysis – CFA)

The confirmatory factor analysis (CFA) tests the measures of a construct's consistency with other constructs within a proposed or theoretical model. Practically, the CFA estimates the covariance (or correlation) between various items (group variables) in relation to a single common factor. The CFA pre-determines the factor structure or 'loads' the covariance, correlation, and test statistics. The CFA then performs a hypothetical validation to ascertain the trueness of the impact of a unit change in the factor against all items in the model (Hair et al., 2019b). The CFA is typically given by outer loadings, which are presented in Figure 2 and summarised in Table 1 below.

By utilising CFA, we were able to review the reliability of the questionnaire by analysing our questions separately (Hair et al., 2019b). This helps in evaluating each question and



**Figure 2.**  
Factor loadings for the present study

Source(s): Figure by authors

checking how reliable the responses of the respondents are. The value of outer loading should be  $> 0.7$ , which indicates that the responders read the questionnaire thoroughly before responding. All the variables from outer loading are greater than 0.7, which suggests that the questionnaire is reliable with valid responses. The satisfactory outer loadings (0.72–0.89) between the construct variables imply a strong significance of the association between the constructs and the other items in the model. This means that the covariance and correlations between the constructs provide strong positive associations with appreciable significance. This validates the questionnaire of the research with reliable responses. In this research, the independent variable is e-service quality and e-trust, with the mediator that is e-satisfaction and the dependent variable that is e-loyalty.

### 5.3 Reliability and validity

Reliability refers to the measure of internal consistency within a dataset, whereas validity refers to the accuracy of this measure (Middleton, 2019). In SmartPLS, the reliability estimation can be performed using three distinct reliability parameters, namely Cronbach's Alpha, the composite reliabilities ( $\rho_a, c$ ) and the Average Variance Extracted (AVE). In the present work, all three reliability parameters have been considered. Cronbach's Alpha is a simple, conservative measure of internal data consistency and is typically based on correlations obtained from the data (Surucu & Maslakci, 2020). The composite reliabilities are dependent on the outer loadings of the dataset and typically provide a measurement of how well latent variables are measured (Hair *et al.*, 2019b). Reliability also includes AVE, which makes data more reliable. The AVE also improves the reliability assessment, which measures

	Convenience	E-loyalty	E-satisfaction	E-trust	Reliability	Responsiveness	Security
C1	0.781						
C2	0.827						
C3	0.804						
E-LOYAL1		0.812					
E-LOYAL2		0.761					
E-LOYAL3		0.856					
E-SATIS1			0.811				
E-SATIS2			0.838				
E-SATIS3			0.845				
E-TRUST1				0.716			
E-TRUST2				0.820			
E-TRUST3				0.832			
R1					0.812		
R2					0.743		
R3					0.776		
RES1						0.829	
RES2						0.800	
RES3						0.776	
S1							0.831
S2							0.891
S3							0.868

Source(s): Table by authors

**Table 1.**  
Factor Loadings for the  
present study

the variance-related consistencies in the data set. Reliability for the constructs in the proposed model of the study is presented in [Table 2](#).

The Cronbach's Alpha and composite reliabilities should possess a value greater than 0.7 to be considered reliable ([Hair, 2018](#)). The standard value of AVE that is greater than 0.5 shows that the data is more reliable. For the present study, the reliability parameters are reliable for all constructs except for *reliability* (0.676) and *responsiveness* (0.687), which give relatively lower-than-optimal reliability estimates. Regardless, the AVE and composite reliability provide a reliable measure for their data consistency.

#### 5.4 Co-linearity statistics VIF analysis

Co-linearity refers to the correlation between two or more predictor variables within a multivariate regression model. High correlations between the predictors can result in

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Convenience	0.727	0.728	0.846	0.647
E-loyalty	0.741	0.755	0.852	0.657
E-satisfaction	0.779	0.793	0.870	0.691
E-trust	0.705	0.730	0.833	0.626
Reliability	0.676	0.687	0.821	0.605
Responsiveness	0.734	0.764	0.844	0.644
Security	0.831	0.841	0.898	0.747

Source(s): Table by authors

**Table 2.**  
Reliability for the  
constructs in the  
proposed model of  
the study

problems in attaining an appropriate goodness-of-fit and interpreting the regression model (Shrestha, 2020). To ascertain the individual impacts of change in one of the predictors on the model, the Variance Inflation Factor (VIF) provides a reliable estimate for detecting multicollinearity. The VIF also measures the correlation and strength of the correlation amongst the predictors in the multivariate regression model (Miles, 2014). The VIF outcomes for the present study are presented below in Table 3.

For  $1 < VIF < 5$ , there is moderate co-linearity amongst the predictors, and for  $VIF \leq 1$ , there is no co-linearity. For  $VIF > 5$ , there is high co-linearity (Daoud, 2017). Thus, the predictors have moderate links in the present case, as observed in the readings. All variables are moderately correlated together as  $1 < VIF < 5$ .

5.5 Quality criteria

The quality criteria for the data is typically assessed in terms of deviations from the predicted values provided by a theoretical/regression model. Hays (2018) states that this pertains to the regression analysis, which is characterised by the coefficient of determination  $R^2$  and the adjusted  $R^2$ . For the coefficient of determination,  $0.5 < R^2 < 1.0$ , the regression is said to be ‘good’, and there is minimal error compared to the predicted values. For  $R^2 = 0.5$ , the data is said to have a fair regression, and there is a moderate error with the predicted model (Hair, 2018). The former case is more applicable to the present study, where e-loyalty ( $R^2 = 0.581; \geq 0.5$ ) indicates a fair regression with the multilinear regression model, whereas e-satisfaction yields poor regression ( $R^2 = 0.18; < 0.5$ ). These results are shown in Table 4 below:

The multicollinearity identified in the VIF analysis indicates a moderate correlation between the study constructs, which can interfere with accurate and precise fitting and prediction (Miles, 2014). However, a reliable approximation of the impact of e-service quality on customer trust and satisfaction in online shopping can still be obtained.

	VIF
C1	1.344
C2	1.503
C3	1.489
E-LOYAL1	1.373
E-LOYAL2	1.514
E-LOYAL3	1.740
E-SATIS1	1.697
E-SATIS2	1.577
E-SATIS3	1.583
E-TRUST1	1.327
E-TRUST2	1.453
E-TRUST3	1.376
R1	1.297
R2	1.294
R3	1.365
RES1	1.297
RES2	1.590
RES3	1.641
S1	1.858
S2	2.290
S3	1.819

**Table 3.** Co-linearity VIFs of the constructs in the proposed model of the study

**Source(s):** Table by authors

### 5.6 Discriminant validity HTMT

Hair (2018) defines discriminant validity as the degree to which a construct is differentiated with respect to another in a predictive model. The data can only be considered adequate for a generalisable interpretation should the discriminant validity establish this difference; otherwise, the result would be convoluted (Rönkkö & Cho, 2020). HTMT is used as a measure of similarity between latent values. The discriminant validity is generally assessed using the heterotrait-monotrait (HTMT) ratio. The HTMT ratio measures the similarity between latent variables (inferred from the model). Discriminant validity, in terms of HTMT, should be  $0 < \text{HTMT} < 1$  to establish discriminant validity. The HTMT ratios of the constructs in the proposed model of the study are presented in Table 5.

For HTMT ratio  $\geq 0.85$ , the results are considered to establish a highly reliable and distinguished discriminant validity; i.e., the constructs are different from each other, and the regression fit is not entirely convoluted (Henseler, Ringle, & Sarstedt, 2015). For the present study, the HTMT ratios are in the 0.13 to 0.8 range for all the constructs (i.e., within  $0 < \text{HTMT} < 1$ ). Thus, a relative discriminant validity is confirmed.

### 5.7 Hypothesis testing

The hypothesis testing and validation for the present work is based on the use of inferential statistics (t-statistics and p-values), as Hair *et al.* (2019b) suggest. The probability values provide the likelihood of the success of an event's occurrence at a given confidence level (typically 95%; 0.05 significance). This means that for  $p < 0.05$ , the tested hypothesis (alternate) is accepted, and the phenomenon observed is true. For the present study, event(s) and/or phenomena refer to the influence of e-service quality constructs on e-satisfaction and e-loyalty. As the conceptual framework shows (Section 3, Figure 1), these e-service quality constructs are convenience, reliability, e-trust, responsiveness, security factor, e-satisfaction, and e-loyalty, where the latter two are the dependent variables. The inferential statistics for the present study are provided below in Table 6 and have been estimated using MANOVA.

5.7.1 *Specific indirect effect.* The specific indirect effect measures the mediation characteristics of a construct on a path or relationship between two other constructs (Hair, 2018). The specific

	R-square	R-square adjusted
E-loyalty	0.521	0.508
E-satisfaction	0.180	0.162

Source(s): Table by authors

**Table 4.**  
Quality criteria  
(regression  
coefficients) of the  
constructs in the  
proposed model of  
the study

	Convenience	E-loyalty	E-satisfaction	E-trust	Reliability	Responsiveness
Convenience						
E-loyalty	0.275					
E-satisfaction	0.161	0.596				
E-trust	0.159	0.688	0.400			
Reliability	0.228	0.802	0.504	0.691		
Responsiveness	0.092	0.393	0.214	0.390	0.415	
Security	0.281	0.636	0.339	0.619	0.498	0.138

Source(s): Table by authors

**Table 5.**  
HTMT ratios of the  
constructs in the  
proposed model of  
the study

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t-statistics ((O/STDEV))	P-Values
Convenience → E-loyalty	0.060	0.064	0.053	1.135	0.256
Convenience → E-satisfaction	0.038	0.049	0.071	0.536	0.592
E-satisfaction → E-loyalty	0.210	0.210	0.053	3.969	0.000
E-trust → E-loyalty	0.163	0.167	0.056	2.914	0.004
E-trust → E-satisfaction	0.118	0.120	0.085	1.393	0.164
Reliability → E-loyalty	0.288	0.286	0.063	4.556	0.000
Reliability → E-satisfaction	0.270	0.270	0.082	3.293	0.001
Responsiveness → E-loyalty	0.102	0.101	0.050	2.018	0.044
Responsiveness → E-satisfaction	0.043	0.049	0.071	0.606	0.544
Security → E-loyalty	0.249	0.247	0.063	3.938	0.000
Security → E-satisfaction	0.103	0.099	0.077	1.324	0.185

**Table 6.** MANOVA results for the present study

**Note(s):** The above significances pertain to the individual correlations and covariances identified for the proposed model  
**Source(s):** Table by authors

indirect effects of all the independent variables are convenience, responsiveness, e-trust, and security, which do not significantly affect the dependent variable (E-loyalty) through the e-satisfaction working as a mediator (all have  $p < 0.05$ ). Conversely, the reliability factor is significantly impacting E-loyalty when customer E-satisfaction is taken as a mediator ( $p = 0.014$ ;  $<0.05$ ). MANOVA results for the mediated effects observed in the present study can be seen in [Table 7](#) below:

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-Statistics ((O/STDEV))	P-Values
Convenience → E-satisfaction → E-loyalty	0.008	0.010	0.016	0.505	0.614
Responsiveness → E-satisfaction → E-loyalty	0.009	0.011	0.016	0.558	0.577
Reliability → E-satisfaction → E-loyalty	0.057	0.057	0.023	2.455	0.014
E-trust → E-satisfaction → E-loyalty	0.025	0.025	0.019	1.340	0.180
Security → E-satisfaction → E-loyalty	0.022	0.020	0.017	1.241	0.215

**Table 7.** MANOVA results for the mediated effects observed in the present study

**Source(s):** Table by authors

5.7.2 *Summary of hypotheses.* The summary of the hypothetical validation can be seen in Table 8.

The e-service quality factor of security ( $p = 0.185$ ;  $>0.05$ ) does not indicate an appreciable significance value, thus proving that its impact on e-satisfaction is insignificant. Similarly, responsiveness ( $p = 0.544$ ;  $>0.05$ ) and convenience ( $p = 0.592$ ;  $>0.05$ ) also do not indicate significances as e-service quality factors influencing e-satisfaction. Only reliability ( $p = 0.001$ ;  $<0.05$ ) asserts a significant impact on e-satisfaction. In contrast, the e-service quality factor of security ( $p = 0.000$ ;  $<0.05$ ) indicates an appreciable significance regarding its impact on e-loyalty. Similarly, responsiveness ( $p = 0.000$ ;  $<0.05$ ) and reliability ( $p = 0.004$ ;  $<0.05$ ) also indicate significances as e-service quality factors influencing e-loyalty. Only convenience ( $p = 0.256$ ;  $>0.05$ ) asserts an insignificant impact on e-loyalty. The e-satisfaction mediated relationships between e-trust ( $p = 0.215$ ;  $>0.05$ ) and e-service quality ( $p = 0.180$ ;  $>0.05$ ) with e-loyalty yield significant values.

### 5.8 Herman's single-factor test

After conducting Harman's Single-Factor Test on the collected data, a single common factor emerged, albeit with a very low percentage of variance explained. The negligible contribution of this factor led this study to the conclusion that the collected data did not exhibit a significant issue of common method bias.

## 6. Discussion

The outcome of this research shows that e-service quality and customer e-trust maintained a significant and positive relation with customer e-loyalty, but not with customer e-satisfaction. On the other hand, e-satisfaction influenced the customer's e-loyalty significantly and positively. These findings pertain to what has been observed in existing literature (Shi *et al.*, 2018; Piercy, 2014). Therefore, the results conclude that e-trust and e-service quality provided by the business are successfully influencing customer e-loyalty when it comes to online business.

The component of e-service quality that does not significantly impact customer e-loyalty is convenience. However, responsiveness, reliability, and security all influence customer

Hypotheses	<i>p</i> -values	Decisions
H1: E-service quality on online shopping websites has a positive effect on customer e-satisfaction. ( <i>via</i> )		
H1.1: Security → E-satisfaction	0.185	Rejected
H1.2: Reliability → E-satisfaction	0.001	Accepted
H1.3: Responsiveness → E-satisfaction	0.544	Rejected
H1.4: Convenience → E-satisfaction	0.592	Rejected
H2: E-trust on online shopping websites has a positive effect on customer e-satisfaction	0.164	Rejected
H3: E-service quality on online shopping websites has a positive effect on the customer e-loyalty. ( <i>via</i> )		
H3.1: Security → E-loyalty	0.000	Accepted
H3.2: Reliability → E-loyalty	0.000	Accepted
H3.3: Responsiveness → E-loyalty	0.004	Accepted
H3.4: Convenience → E-loyalty	0.256	Rejected
H4: E-trust on online shopping websites has a positive effect on the customer e-loyalty	0.004	Accepted
H5: E-satisfaction on online shopping websites has a positive effect on the customer loyalty	0.000	Accepted
H6: E-satisfaction mediates a positive relationship between e-service quality and e-loyalty	0.180	Rejected
H7: E-satisfaction mediates a positive relationship between e-trust and e-loyalty	0.215	Rejected

Source(s): Table by authors

**Table 8.**  
Hypothetical testing  
summary

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e-loyalty. Therefore, it is recommended that online businesses prioritise delivering quality service by ensuring a reliable and secure experience on their website. A user-friendly customer experience, marked by responsiveness and ease of use, is essential.

In addition to e-trust, relationships with customer e-loyalty play a vital role. Trust has always played a vital role in gaining customers' loyalty and brings the brand sustainability, as if a brand is no longer trusted by its customers, it becomes difficult for a brand to gain a huge market and to attract customers. This study shows that customers are trusting online websites when it comes to purchasing, so companies should maintain customers' trust by trying to provide convenience to the customer more effectively and to deliver the service more efficiently.

The results also show that e-service quality and e-trust did not significantly influence customer e-satisfaction. One plausible interpretation of this result is that the relation between e-service quality, e-trust and customer e-satisfaction is more nuanced than hypothesised. Other factors, which were not explicitly considered in this study, may contribute to consumer satisfaction within the online shopping environment. For example, the overall market reputation of the brand, promotional activities, or specific customer preferences not included in our model could have influenced the levels of satisfaction.

While service quality plays an important role for businesses in increasing or decreasing sales through online platforms, the satisfaction of customers is equally indispensable. Therefore, for online businesses to attain customer e-satisfaction, the role of service quality can be played strategically by providing the customer with reliable and truthful information regarding the products (Olaleye *et al.*, 2021; Shi *et al.*, 2018). This can also bring convenience and security to the experience of online shopping. Therefore, online users can easily trust websites which bring a level of satisfaction to their online shopping experience.

The online study is limited, and there is an opportunity for further research in the future. Future studies can explore different e-service quality factors and mediators not included in the theoretical model to analyse their effects more effectively. Additionally, given the insignificant relationship between e-service quality, e-trust, and customer e-satisfaction found in the study, future research can delve deeper into the intricate dynamics of e-satisfaction. This exploration will contribute to a more comprehensive understanding of the factors influencing customer e-satisfaction in the e-commerce domain.

While this study is generalised, future studies can be conducted to examine a specific sector or company. Future research can also use a different method of collecting the data from any specific group of online shopping users. The study is further limited by its time limitations, and the findings attained herein are limited to a finite period, or until a significant event leads to a dramatic shift in consumer preferences. Moreover, to this end, future research could concern a more cross-sectional analysis of online consumer behaviour as it unfolds in the current geopolitical and socio-economically-changing era.

## 7. Conclusion

The study's findings have established a clear significance of the impact of reliability as a significant e-service quality indicator for customer e-satisfaction in online shopping. Furthermore, the role of security, reliability, and responsiveness in e-loyalty for online consumers has also been observed in the present study. E-trust and e-loyalty are intercorrelated; therefore, this offers critical insight for e-commerce businesses that efforts to sustain and improve one will have a similar impact on the other. It is further determined that the mediation of either e-satisfaction on the effect of e-service quality or e-trust on e-loyalty is of no appreciable significance. This implies that online shopping behaviour and consumption patterns are predominantly driven by a preference for loyalty to a brand/platform, rather than satisfaction with it.

The practical implications of this study for Pakistani online businesses are substantial. Firstly, online businesses should prioritise providing reliable product information and ensuring the security of customer data, as these measures can help build trust, particularly in a market with weaker legal protection for consumers. The findings offer insights into online consumer behaviour and suggest that loyalty in the Pakistani e-commerce context is not dependent on customer satisfaction but is closely tied to trust and e-service quality. Hence, online businesses should focus their efforts on building trust and providing high-quality e-services to sustain customer loyalty. Through investing in user-friendly interfaces and open and transparent communication, these online businesses can attract and retain a loyal customer base in the long run. Consequently, these strategic measures can contribute to the growth of the e-commerce sector in Pakistan, providing consumers with a reliable and satisfactory online shopping experience, and driving economic progress.

The study makes an original contribution to academic literature in the specific context of Pakistan by investigating the relationship between e-service quality and e-trust, which has not been previously explored to understand its impact on customer e-satisfaction and e-loyalty.

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(The Appendix follows overleaf)

**Gender**

1. Male
2. Female
3. Prefer not to say.

**Age**

1. Less than 21
2. 21 to 30
3. 31 to 40
4. 41 to 50
5. Above 50

**Education:**

1. Matriculation/O level
2. Intermediate/A level
3. Undergraduate
4. Graduate
5. Doctorate

**Occupation:**

1. Employee
2. Business Owner
3. Other, please specify.

Please indicate your preference by selecting the appropriate number.		References	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
1. Strongly Agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly Disagree							
<b>Variable 1: Security</b>		(Rita, <i>et al.</i> , 2019; Wolfinbarger and Gilly, 2003; Anser <i>et al.</i> , 2021)					
01	I feel secure in providing personal information for online purchases.		1	2	3	4	5
02	I feel my privacy is protected by online shopping websites.		1	2	3	4	5
03	I feel safe while completing transactions on online shopping websites.		1	2	3	4	5
<b>Variable 2: Reliability</b>		(Parasuraman <i>et al.</i> , 1988; Zembylté, 2015; Kaya <i>et al.</i> , 2019)					
01	Online shopping websites provide useful and reliable information.		1	2	3	4	5
02	Information available on online shopping websites is well-organised, accurate and up to date.		1	2	3	4	5
03	Online shopping websites provide information about product and services, including price, detailed description and instruction on ordering and return process, etc.		1	2	3	4	5

(continued)

<b>Variable 3: Convenience</b>		(Eryiğit and Fan, 2021; Zembyltė, 2015; Kaya <i>et al.</i> , 2019)					
01	Online shopping websites make it easy to find what I need.		1	2	3	4	5
02	The online shopping websites are available 24/7 for shopping from any location.		1	2	3	4	5
03	Completing a transaction on online shopping websites is quick and easy.		1	2	3	4	5
<b>Variable 4: Responsiveness</b>		(Parasuraman <i>et al.</i> , 1988; Anser <i>et al.</i> , 2021; Kaya <i>et al.</i> , 2019)					
01	I can interact with the online shopping website to obtain information tailored to my specific needs.		1	2	3	4	5
02	Online shopping websites are willing and ready to respond to customer needs.		1	2	3	4	5
03	When you have a problem, online shopping websites show a sincere interest in resolving it.		1	2	3	4	5
<b>Variable 5: E-trust</b>		(Wu <i>et al.</i> , 2018; Wolfinbarger and Gilly, 2003)					
01	I trust that online shopping websites will not misuse my personal information.		1	2	3	4	5
02	I feel I can trust online shopping websites.		1	2	3	4	5
03	I feel very confident about online shopping websites.		1	2	3	4	5
<b>Variable 6: E-Satisfaction</b>		(Anderson and Srinivasan, 2003; Wolfinbarger and Gilly, 2003; Kaya <i>et al.</i> , 2019)					

(continued)

01	I am confident that my decision to place an order on the online shopping website will lead to satisfaction.		1	2	3	4	5
02	I am satisfied with my decision to choose online shopping websites for purchasing.		1	2	3	4	5
03	My overall experience of purchasing through online shopping websites was very satisfying.		1	2	3	4	5
<b>Variable 7: E-Loyalty</b>		(Oliver, 1999; Anser et al., 2021)					
01	I make repeat purchases on online shopping websites.		1	2	3	4	5
02	I recommend the online shopping websites for purchasing from someone who seeks my advice.		1	2	3	4	5
03	I say positive things about online shopping websites to other people.		1	2	3	4	5

**Thank you for your participation.**

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