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## Article

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# Perception of Indian customers towards e-service quality and its effect on consumer happiness, retention, and loyalty

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## ABSTRACT

This study aims to understand the attributes of electronic service quality and tries to build the connection between the quality of electronic service, the happiness of consumers, their retention, and loyalty in the context of the consumer e-commerce industry in India. The attributes chosen to understand the impact on service quality were reliability, website design, trust, and responsiveness. They were then used to assess the association of quality with consumer happiness, retention, and loyalty in the e-commerce industry. A survey of 202 e-commerce users was conducted. Most participants were working millennials and students in India as they are frequent consumers of online services. Data analysis was done using factor analysis and structural equation modeling. The results showed that responsiveness is the only attribute that significantly impacts the overall quality of service. A significant association was found between the quality of service and consumer happiness, and a significant relationship between retention and loyalty. This study will help managers of online stores and e-commerce businesses focus on important factors and provide services that meet customer expectations. This study suggests that to meet the desired satisfaction levels of consumers in India, e-commerce businesses should implement actions that improve responsiveness.

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## SUBJECTS

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## Introduction

The entire globe and businesses have changed thanks to the Internet. According to the 'Internet and social media users in the world 2023 | Statista' (n.d.), Internet usage surpassed 5.03 billion people worldwide by July 2022, and globally India has internet users of up to 658 million as of February 2022 (Kemp, 2022). The Internet is at the heart of the current business environment, as seen by the exponential growth of online users and online transactions. Nearly every business in this technology era uses an online platform to connect with clients and offer various services and items. As the convenience, availability, and usability of electronic commerce sites are provided, people's propensity to purchase items online has multiplied in recent years as they have less time to visit businesses offline. One of the speedily growing e-commerce markets worldwide is India. International Trade Administration pointed out that India's e-commerce market in 2020 was worth \$46.2 billion, and by 2026, the e-commerce market is predicted to grow to \$136.47 billion, an 18.29 per cent increase (India - Online Marketplace and E-Commerce, 2024).

At the beginning of the COVID-19 pandemic lockdowns, there was a sharp fall in e-commerce, but it gradually experienced growth as the situation normalized. The speed of recovery was due to the adoption of virtual payment options. With a good amount of consumer base, diverse background of people, affordable digital infrastructure, and good supply chain infrastructure, India became a desirable option for suppliers targeting online sales. Many firms have opted to go online due to a notable rise in online shoppers' numbers and spending power in India. According to International Trade Administration,

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customers in India prefer making purchases online for items like consumer electronics, apparel, footwear, personal care products, and accessories. 'Topic: E-commerce in India' (n.d.) reported that India has 76.7 per cent active penetration for e-commerce. The E-commerce market was expected to enjoy a corresponding rise as the Internet and online infrastructure grew exponentially in India. Robust internet infrastructure provided a solid foundation for e-commerce, leading to an expanding organized sector dominance in retail markets.

Additionally, governmental initiatives reinforced the market even more, and digital payments recorded an increase of 118 per cent in capacity and beyond 98 per cent rise in Quarter 2 of 2022, reaching a total of 20.57 billion transactions and earning value of Rs. 36.08 trillion as reported by 'India saw 20.5 billion online transactions worth Rs 36 trillion in Q2' (n.d.) (Ians, 2022). Indian Consumers most frequently choose digital payment methods such as Visa, Google Pay, Paytm, and Mastercard. Thus, rising demand and building infrastructure are boosting the e-commerce market in India.

In India, an incredible number of online businesses are functioning, including Amazon.in, Flipkart, Myntra, AJIO, Pepperfry, eBay, Nykaa, Snapdeal, Firstcry, IndiaMart, GoMechanic, and many more. The expansion of e-commerce businesses can also result from the development of the Internet, the increased use of electronics, the rise in social media use, and India's overall digitalization.

Growth in these areas has dramatically benefited e-commerce businesses and helped companies recognize the critical elements of a successful online company. Businesses that have been successful in electronic commerce for a long time have realized that success and failure in this industry depend on more than just website aesthetics, price, and variety offered. Entire e-service quality, or the total interaction that clients have with the website, is crucial in determining the success of the products or services sold. Jessica Santos (2003) described E-service quality as the total evaluation and judgment of delivery done by the customers in the virtual environment. Researchers are increasingly recognizing the idea of e-service as one of the crucial factors in effective e-commerce. Parasuraman et al. (1988) created SERVQUAL to gauge the quality of service as perceived by consumers. SERVQUAL has five factors: reliability, tangibility, assurance, responsiveness, and empathy.

SERVQUAL is heavily used to understand the quality of service. However, there is a difference in the parameters that must be used to examine the service quality offered by electronic commerce businesses and that by any physical business such as a restaurant or a hair salon. As online services have no tangibility parameter, the most important factor becomes a sophisticated user interface that serves as the customer's first point of contact. Since online firms lack physical outlets or capable salespeople, engaging website design is essential to keep customers interested and encourage them to make purchases.

According to 'India ranks 2nd for global investment in digital shopping' (1998n.d.), India is the world's second-largest venture capital investment center for online shopping. With 658 million active internet users in India, as reported by 'India: digital population by type 2023 | Statista' (n.d.) and the e-commerce sector booming in India, there is enormous potential for the e-commerce market to develop and contribute significantly to India's GDP. As significant growth can be seen in the e-commerce sector, with more people opting for online shopping, it is critical to understand how to quantify the quality of service and consumer happiness of online stores in India. Hence, this research looks into what aspects affect the quality of e-commerce website services and how those aspects affect customer satisfaction, loyalty, and retention. A modified version of the SERVQUAL model is employed to understand how the electronic quality of service factors impact the total quality of service, consumer happiness, buying behavior, and loyalty. Data from two hundred and two internet users were obtained to demonstrate the research's effectiveness. The results obtained from this study are helpful for decision-makers in online stores, online (e-commerce) businesses, and researchers interested in internet marketing and services.

## **Motivation**

The motivation to perform this analysis is to measure the effect of attributes of ESERVQUAL on the quality of e-service that affects consumer happiness, retention, and loyalty. The study was conducted to help managers of e-commerce businesses to understand which factors are essential for customers and what areas they need to focus on. Even though numerous studies are done taking SERVQUAL dimensions and

understanding its impact on e-commerce, a limited number of studies are available taking Indian customers' perspectives on e-commerce websites/apps.

An objective of the study was to understand how e-commerce companies can provide better services. One way was through improving website quality and enhancing features. However, understanding the attributes that are important to the customers is necessary to provide enhanced features that are considered significant by the customers. Hence, the research attempts to help e-commerce businesses and service providers gain insights into the factors important to Indian customers while using e-commerce websites/apps.

## **Scope**

This research aims to measure the degree to which attributes such as website UI/UX, responsiveness, reliability, and trust & security affect the overall quality of service that impacts consumer happiness, retention, and loyalty. Different researchers have selected several attributes for the quality of e-service and different dimensions. Through the literature review, the four most common dimensions have been selected which are relevant to the e-commerce industry. Most respondents are working millennials and students, as this is the population with the most usage of e-commerce websites. Only four dimensions have been considered for analysis, and the research focuses only on e-commerce websites/apps available in India.

## **Literature review**

### **Electronic service quality**

Santos (2003) described electronic service quality as the total consumer evaluation of electronic service delivered in the online market. Quality of electronic service is when sophisticatedly designed UI provides efficient purchasing and buying experience (Zeithaml et al., 2002). Thus, it can be seen that the way customers perceive electronic service quality depends on the UI/UX experience and the value provided after interacting with the website. Hence, businesses must focus on every factor, from website navigation to post-transaction operations.

Ataburo et al. (2017) recommended that businesses offering increased quality electronic services are increasingly likely to make their consumers happy, influencing their intention to purchase and repurchase. Currently, an increasing number of businesses operate through online stores, offsetting the starting price edge and thereby necessitating the search for new strategic ways to perform in the business environment (Sohn and Tadisina, 2008). Thus, e-commerce companies must provide sophisticated quality services. As products can be compared free of cost online and technological features of the other websites are provided to the customers, service quality has become even more critical.

Massad et al. (2006) investigated the aspects of online transactions in electronic retail, which were likely to cause satisfaction or dissatisfaction. The study found that most dissatisfactions were related to the behavior and characteristics of the customer contact employees.

The objective of the study by Zeithaml et al. (2002) was to create a framework for evaluating website quality, considering the user perspective and perceptions. The study found that the Kano model of quality can be used to identify quality expectations. It brought out the important features applicable to websites in 6 business domains.

There was a positive impact of service quality on increasing the customer's satisfaction in the e-supply chain (Abdirad and Krishnan, 2022). Organizations' resources must be focused on service quality and customers' needs. Companies must therefore train their employees accordingly. E-Service quality of websites positively impacts the loyalty (Ashiq & Hussain, 2023). Online Businesses should give due importance to service quality so that customers get a safe and secure experience. Service quality plays an important role in increasing sales for a business in the online mode.

### **Dimensions of service quality**

'Service quality' is the gap between expectations kept by the consumers from a service and the value actually received (Parasuraman et al., 1988). They developed a five-scale SERVQUAL model. However, in terms of the quality of e-service, there is a distinction between the already existing

physical and online structures. Service Quality has significant effect on customer satisfaction while customer satisfaction has a significant effect on loyalty (Mubarok et al., 2023). Expectations that customers have before the service and the actual service they get result in the perception about service quality.

Parasuraman et al. (2005) created two distinct measurements to understand the quality of online services. Various research has been undertaken utilizing the measurement of the models to assess the service quality in various sectors such as banking, tourism, e-commerce, etc.

Carlson and O'Cass (2010), Hsu et al. (2011) and others have conducted studies and suggested an association between quality of service, customer happiness, and intention to purchase.

Ataburo et al. (2017) surveyed 318 students and recommended that there is an effect of e-service quality on the frequency of usage through the satisfaction of consumers. They suggested the quality of e-service impacts consumer satisfaction.

An association exists between the quality of service of internet banking, consumer happiness, and its effect on loyalty (Amin, 2016).

The study by Dai et al. (2022) identified factors affecting online sales through various internet platforms. These will help companies understand the factors that influence sales. Consumer ratings were an important factor affecting online sales in an e-commerce setting. Their finding suggested that the mechanism of the factors works differently for B2B, B2C, and O2O platforms.

### ***Customer satisfaction, retention, and E-loyalty***

E-quality of the website significantly impacts buying, which supports happiness and thereby affects loyalty (Oliver, 1999; Yoo et al., 2015). Wu (2013) tried to find out the intentions as to why consumers complain, which depends upon their levels of happiness with the website.

Bilgihan et al. (2015) looked into loyalty using a model that combines complex and generally acceptable attributes, security, and reputation of the company in online stores for booking.

Ladhari and Leclerc (2013) investigated the impact of gender roles on e-loyalty, trust, and satisfaction with online financial service providers.

Llach et al. (2013) examined the significance of e-service quality on consumers' loyalty in the airline ticketing business.

Kim et al. (2011) tried to find the indirect effect of happiness and trust on consumer loyalty utilizing variables such as navigation, performance functionality, perceived overall security, and transaction costs.

Behavioral, attitudinal, and methods that combine both, are the correct approaches to assess customer loyalty (Bowen and Chen, 2001). The number of times a purchase is made or the volume of purchases indicates behaviors that affect loyalty but fail to explain the factors that motivate consumers to buy. Repurchase does not always happen because of the customer's emotional attachment. Repeat purchases can also occur because of some offers or loyalty programs.

Papadomichelaki and Mentzas (2012) have conducted studies on loyalty and suggested a framework for doing better research on loyalty.

Olsen (2002) discovered a significant positive impact of quality on satisfaction and loyalty

Martínez (2015) investigated the association between security, brand equity, consumer happiness, and loyalty in the hospitality sector. By improving service quality, organizations can influence customer trust, satisfaction, value and loyalty (Thaichon et al., 2014). Keeping a focus on customers in the daily operations is essential for the long-term success of a company. It is vital for companies to obtain accurate information about their service quality.

Venkatakrishnan et al. (2023) brought out the importance of e-service quality, web design, and trust in influencing customer satisfaction. The study suggested e-retailers to discover the methods of building and improving customer trust and create a web design that is appealing to the customer and thereby enhance satisfaction and loyalty.

A mismatch between what a customer wanted and what he gets leads to customer dissatisfaction (Kansal, 2013).

While purchasing products online, E-service quality is still an important factor which influences customer's decision making (Syah & Olivia, 2022). The study found a positive effect of value co-creation on customer satisfaction.

The customer's anxiety levels present a challenge to building lasting relationships for the online businesses (Khoa & Huynh, 2022). Their study found out that perceived mental benefit, hedonic value, online trust, and electronic loyalty were responsible for maintaining lasting relationships between companies and their online customers.

## Methods

### Primary research

The questionnaire's measurement items were adapted with reference from earlier studies (Ho and Lee, 2007; Jeon and Jeong, 2017). After learning from the existing literature, four dimensions with various things to measure them were adopted for total service quality. A five-pointer Likert scale was utilized having a scale of 1 that is 'strongly disagree' to 5 that is 'strongly agree'.

### Data

The survey was divided into seven sections. Questions to determine the respondents' demographics made up the first section. A total of 26 measurement items were selected to assess website quality, reliability, responsiveness, trust & security, quality of service, consumer happiness, retention, and loyalty. The current survey has five questions about website design, four questions about reliability, four questions about responsiveness, and four questions about trust. Additionally, two items were used to gauge the general level of quality of service, three questions were used to assess consumer happiness, and two questions were used to assess retention.

Two hundred two surveys in total were given out to participants; the bulk of them were millennials in their 20s and workers. The Tables 1–5 summarize the respondents' demographic characteristics. The usage of e-commerce apps by respondents is summarized in Table 6.

### Demographic profile

**Table 1.** Gender.

Variables	Categories	Frequency	Percentage
Gender	Female	86	42.4%
	Male	116	57.6%

Source: Author's Analysis.

**Table 2.** Education.

Variables	Categories	Frequency	Percentage
Education	12 <sup>th</sup> / Diploma	6	3%
	Graduation	93	46.3%
	Masters	94	46.3%
	Doctoral	9	4.4%

Source: Author's Analysis.

**Table 3.** Age.

Variables	Categories	Frequency	Percentage
Age	Up to 24	58	28.6%
	25–34	121	60.1%
	35–44	13	6.3%
	45 & above	10	5%

Source: Author's Analysis.



**Table 4.** Profession.

Variables	Categories	Frequency	Percentage
Profession	Student	111	55%
	Homemaker	4	2%
	Salaried Individual	71	35.1%
	Business Owner	7	3.5%
	Freelancer	6	3%
	Fellowship	1	0.5%

Source: Author's Analysis.

**Table 5.** Annual family income.

Variables	Categories	Frequency	Percentage
Annual Family Income	Less than 5,00,000	20	9.9%
	5,00,001–10,00,000	47	23.2%
	10,00,001–15,00,000	44	21.7%
	15,00,001–20,00,000	36	17.7%
	Above 20,00,000	55	27.6%

Source: Author's Analysis.

### ***The most frequently used e-commerce website/app***

**Table 6.** The most frequently used E-commerce website/app.

Variables	Categories	Frequency	Percentage
Ecommerce website / app	Amazon	128	63.1%
	Flipkart	18	8.9%
	Myntra	26	12.8%
	Ebay	0	0%
	IndiaMart	1	0.5%
	Snapdeal	0	0%
	Nykaa	13	6.4%
	AJIO	7	3.4%
	BookMyShow	5	2.5%
	MakeMyTrip	4	2%
	Others	1	0.5%

Source: Author's Analysis.

### ***Consent to participate statement***

Informed written consent for data collection was obtained from all individual participants included in the study.

### ***Ethics approval***

The study was approved by the ethics committee of K.J Somaiya Institute of Management, Somaiya Vidyavihar University, Mumbai in Aug 2022.

## **Results and analysis**

### ***Research questions***

#### ***Research question H1***

H1: Website Design (UI/UX) 'has a favorable effect on the overall quality of e-service'

Wolfenbarger and Gilly (2003) stated that designing of websites (UI/UX) involves all factors of the user experience in a website. These factors include website UI, search information, navigation, true personalization, order processing, and proper product selection. Zeithaml et al. (2002) and Wolfenbarger and Gilly (2003) have given significance to website design in affecting how consumers see the services being



provided. Customer satisfaction and website UI/UX design have a definite association (Kassim and Asiah Abdullah, 2010) research.

### **Research question H2**

H2: 'Reliability has a favorable effect on the overall quality of e-service.'

Santos (2003) describes reliability as the ability to provide the agreed-upon offers reliably, which incorporates keeping the website up to date frequently, acknowledging consumer queries rapidly, and precisely processing virtual payments and bills. The most important dimension of quality of service, in the belief of numerous authors, is dependability. Wolfinbarger and Gilly (2003) stated that the dependability of service providers greatly influences a website's quality. Lee and Lin (2005) research states that reliability is a vital attribute of the overall quality of e-service, consumer happiness, and buying intent in online purchases. Parasuraman et al. (1988) state that this attribute shows a company provides the facilities correctly and maintains its promises.

### **Research question H3**

H3: 'Responsiveness has a favorable effect on the overall quality of e-service.'

As per Yang et al. (2004), responsiveness is frequently mentioned in the dimensions' list of service quality. Olorunniwo et al. (2006) supported this by citing responsiveness as evidence to be comparatively more significant and impactful than other factors when assessing service quality. According to Zeithaml et al. (2002), responsiveness is described as an e-commerce website's capacity to offer answers to customers in the event of an unexpected incident, a system for resolving issues, and the provision of online assurances.

### **Research question H4**

H4: Trust has a favorable effect on the overall quality of e-service

Because of the intangibility of services provided by e-commerce, trust is crucial to virtual enterprises. People are concerned about providing their personal details as they have suspicions regarding the confidentiality of the data. Madu and Madu (2002) stated that it is essential to gain clients' trust by being incredibly trustworthy and committed to addressing client questions and complaints. Oliver (1999) described trust as the people's faith in the online store and that there should not be any risk or uncertainty during the transaction and consists of proper privacy. As per Lee and Lin (2005) research, customer satisfaction, and overall service quality for online retailers were most highly impacted by trust.

### **Research question H5 and H6**

H5: Overall quality of e-service has a favorable effect on Consumer Happiness

H6: Overall quality of e-service has a favorable effect on Consumer Retention

The consumer is happy when their expectations are met or exceeded. Several researchers tried to examine how the overall quality of service affects consumer happiness. The e-commerce business can damage its reputation when consumers face difficulty finishing transactions, not getting deliverables on time, or having their problems solved late. Several scholars found an association between consumer satisfaction and quality of service (Herington and Weaven, 2009; Rod et al., 2009; Yang et al., 2004). Amin (2016) examined the survey from 520 users and discovered a substantial link between e-customer happiness and the caliber of the internet banking service. The impact of the overall quality of e-service on consumer retention can also be checked.

### Research question H7 and H8

H7: Consumer Happiness has a favorable effect on Consumer Retention

H8: Consumer Happiness is a significant mediator between the Overall Quality of Service and Customer Retention

In this stage of loyalty, consumers are typically dedicated to a brand or product (Oliver, 1999). Customer satisfaction is a precursor to e-loyalty and is based on how customers evaluate the quality of the services provided. It can be evaluated based on the number of each consumer's requirements and satisfaction with website services getting fulfilled. Customers remain loyal as a result rather than looking up competitors' information. The consensus is that customer happiness enhances the link between perceived website service quality and customers' inclination to return.

### Research question H9 and H10

H9: Consumer Retention has a favorable effect on Consumer Loyalty

H10: Consumer Retention is a significant mediator between Consumer Satisfaction and Consumer Loyalty

Consumers in this loyalty stage are ready to purchase more (Oliver, 1999). A consumer's intention to return is a crucial indicator of consumer happiness, a forerunner to loyalty. Research on website quality has aimed to provide frameworks that assess the causes and effects of perceived website service quality that influence users' purchases (Ho and Lee, 2007; Wolfenbarger and Gilly, 2003). In this analysis, consumer loyalty is viewed as a stage before return intention. In other words, it is believed that a client's intention to return to a hotel website determines their level of customer loyalty.

### Assessment of reliability

Reliability of the scale was checked using Cronbach's alpha ( $\alpha$ ). The reliability analysis results for the constructs are shown in Tables 8–11: The Cronbach's alpha ( $\alpha$ ) for website design is 0.792,  $\alpha$  for reliability is 0.757,  $\alpha$  for responsiveness is 0.745, and  $\alpha$  for trust & security is 0.788. Nunnally & Bernstein (1994) suggested the lowest permissible amount as 0.700. Since all of these results obtained are greater than 0.700, it indicates that the scale has a high satisfactory level.

### Conducting factor analysis

Hair (1998) stated that before factor analysis is completed, data must be confirmed suitable and valid for the determined structure and that there is appropriate variation within the correlation matrix. The amount of variation can be determined, using the test for Kaiser-Meyer-Olkin (KMO) along with Bartlett's tests of sphericity (BTOS). As indicated in Table 7, the KMO test resulted in a value of 0.939, and the BTOS was discovered to be significantly impactful at  $p=0.000$ , which means that factor analysis can be done using the data.

Varimax rotation was used to load variables. Factor loading values for the provided attributes varied from 0.518 to 0.811. Out of all the attributes, three were discovered to be loaded on more than 1 factor and were hence removed. The values for factor loading should be more than 0.500, according to Hair et al. (2010).

**Table 7.** Factor analysis.

KMO measure of sampling adequacy		0.939
Bartlett's Test of Sphericity	Approx Chi-Square	3440.806
	Degree of Freedom	325
	Significance	0.000

Source: Author's Analysis.

## Measurement scales summary

**Table 8.** Measurement scales summary.

Factor	Reliability scales	Questions	Mean	Std Dev	Factor loading
Website Design	0.792	The E-commerce Website/App is visually attractive	3.61	0.982	0.811
		The user interface of the E-commerce Website/App appears to be properly organized	3.85	0.885	0.775
		Transactions on the E-commerce Website/App is quick and simple	4.18	0.767	0.549
		The layout of E-commerce Website/App helps me in browsing and selecting the right products	3.90	0.817	0.584
Reliability	0.757	The E-commerce Website/App loads immediately on my device in no time	3.64	0.963	0.545
		An E-commerce Website/App meets its promise to deliver a product or service on a given date	4.09	0.826	0.810
		You face no errors while doing transactions on an E-commerce Website/App	3.35	1.064	0.615
		The E-commerce Website/App accurately delivers products and services on the first go	3.92	0.868	0.636
		The E-commerce Website/App keeps my records and displays them accurately	4.05	0.926	0.672

Source: Author's Analysis.

**Table 9.** Measurement scales summary.

Factor	Reliability scales	Questions	Mean	Std Dev	Factor loading
Responsiveness	0.745	When a service is poor, the E-commerce Website/App provides other alternatives to reduce inconvenience.	3.28	1.085	0.699
		The E-commerce Website/App quickly solves problems you face.	3.29	0.992	0.749
		The E-commerce Website/App provides faster delivery services	3.91	0.890	0.625
		The E-commerce Website/App promptly updates the status of the product and you can track it correctly	4.12	0.783	0.617
Trust and Security	0.788	You can pay for your purchases on the E-commerce Website/App using authentic payment portals.	4.34	0.731	0.652
		The E-commerce Website/App is safe and trustworthy.	4.02	0.852	0.518
		The E-commerce Website/App ensures that the customer's personal information is not exploited.	3.35	1.060	
		I feel safe in providing sensitive information (e.g. credit card number) for online transactions	3.45	1.060	0.518

Source: Author's Analysis.

**Table 10.** Measurement scales summary.

Factor	Reliability scales	Questions	Mean	Std Dev	Factor loading
Service Quality	0.833	Overall the services provided by the E-commerce company were excellent in quality	3.65	0.829	
Satisfaction	0.789	The E-commerce company offered the exact service quality I desired	3.65	0.946	.567
		Overall I am very satisfied with the products/services offered by the E-commerce company	3.82	0.821	
		I did not think I have to search on any other E-commerce Website/App for more information to purchase a product/service	2.96	1.207	0.721

Source: Author's Analysis.

**Table 11.** Measurement scales summary.

Factor	Reliability scales	Questions	Mean	Std Dev	Factor loading
Retention		I prefer this E-commerce company	3.28	1.085	0.669
		I will use the same E-commerce Website/App again	4.12	0.783	0.778
Loyalty		I recommend this E-commerce Website/App to others	4.34	0.712	0.652
		I want to reuse the same E-commerce Website/App to purchase a product/service	3.35	1.060	0.799
		I want to revisit the same E-commerce Website/App to search for product/service information	3.45	1.060	0.783

Source: Author's Analysis.

## Measurement model

**Table 12.** Measurement model.

Factors	Chi-square fit statistics/Degree of freedom (CMIN/DF)	Comparative fix index (CFI)	Root mean square error of approx. (RMSEA)
Suggested Value	< 3	>= 0.90	<= 0.08
Actual Value of Measurement Model	2.460	0.9	0.08

Source: Author's Analysis.

**Table 13.** Shows the outputs of structural parameter ( $\alpha=0.05$ ).

From	To	Hypothesis	Standardized $\beta$ value	P-value	R-square	Significance
Website Design	Overall Service	H1	0.16	0.231	0.91	Not Favorable
Reliability	Quality	H2	0.24	0.284		Not Favorable
Responsiveness		H3	0.92	0.023		Significant
Trust & Security		H4	0.11	0.713		Not Favorable
Overall Service Quality	Consumer Satisfaction	H5	0.99	***	0.98	Significant
Overall Service Quality	Consumer Retention	H6	1.08	0.577	0.82	Not Favorable
Consumer Satisfaction	Consumer Retention	H7	0.17	0.929		Not Favorable
Overall Service Quality	Consumer Satisfaction - Retention	H8	0.99–(0.17)	***–0.929	–	Not Favorable
Consumer Retention	Consumer Loyalty	H9	0.99	***	0.88	Significant
Consumer Satisfaction	Retention - Loyalty	H10	(0.17)–0.99	0.929–***	–	Not Favorable

The Table 13 shows the results of the hypothesis.

Source: Author's Analysis.

CMIN/DF (Table 12) was found to be 2.460, which is less than 3.00, as advised by Kline (1998). The CFI value also indicates that the model is a fit, as it meets the Byrne (2016) suggested level of 0.900. Browne and Cudeck (1992) mention the cut-off value to be 0.08 for RMSEA which is exactly met, and thus demonstrate that the model is fit as per the sample provided.

### Structural equation model

The conceptual model was subjected to structural equation modelling (SEM) using AMOS 26 to determine the power of the link among variables. As already seen, the model fits with the indices obtained in Table 13. All of the given hypotheses were evaluated to assess the link according to the suggested model once the model was determined to be statistically fit.

The Table 13 shows the results of the hypothesis.

From the results (Table 13), it can be seen that only responsiveness is the dimension that has a favorable effect on the overall 'quality' of e-service ( $p < 0.05$ ). The other three factors (website designing, reliability, Trust & Security) were discovered to be not significant and do not affect the overall service quality.

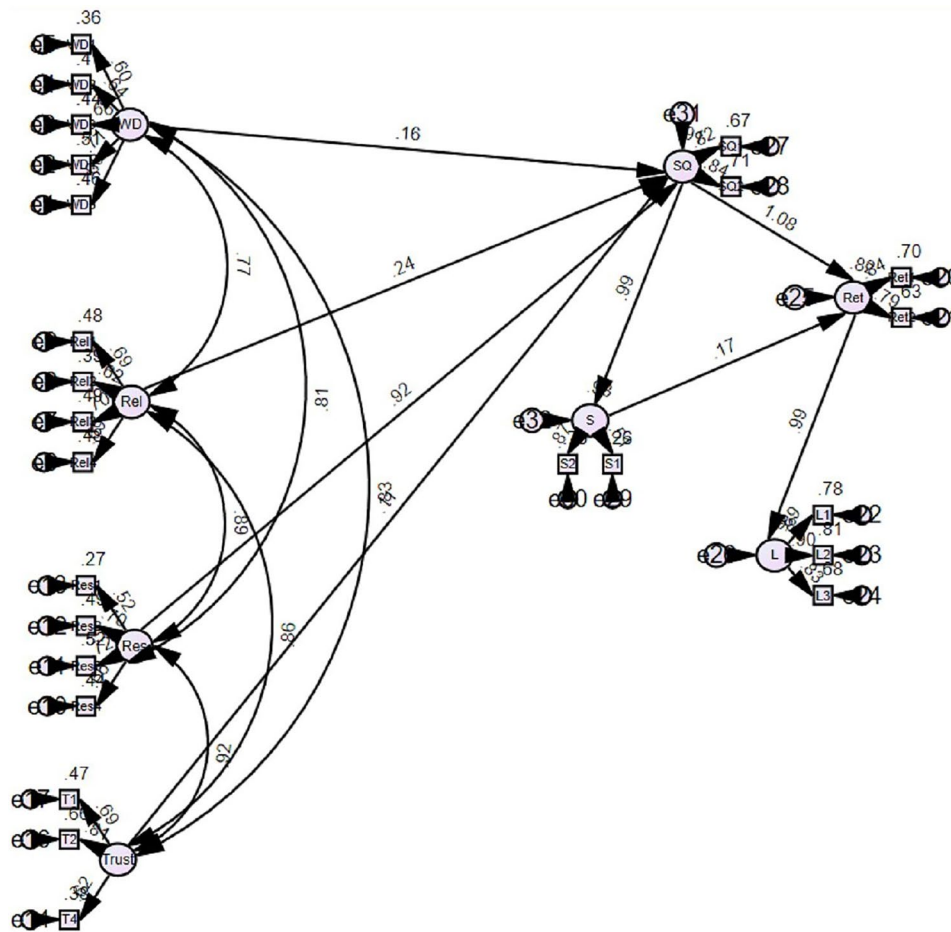
The value of R square for the complete quality of service is 0.91, which shows that 91 per cent of the variation in the complete quality of e-service is understood by these factors (website design, responsiveness, reliability, trust & security). Out of these dimensions, responsiveness has the highest contribution to overall service quality, with  $\beta = 0.92$ . Thus, only hypothesis H3 was supported.

Also, the overall quality of electronic service has a high effect on consumer happiness with standardized ( $\beta$ ) = 0.99 and P-value < 0.05. with R squared value to be 0.98, which indicates that 98 per cent of the variation in consumer happiness can be understood by overall service quality. Thus, hypothesis H5 is supported. Even though consumer satisfaction does not have any significance on customer retention, it was seen that consumer loyalty was highly affected by consumer retention with standardized ( $\beta$ ) = 0.99 and  $p < 0.05$ . with R squared value to be 0.88, which indicates that 88 per cent of the variation in consumer loyalty can be understood by customer retention. This provides support for hypothesis H9.

The Figure 1 shows the structural equation model obtained.

### Discussion

Using data from earlier research conducted in the same setting, four characteristics of the quality of e-services have been discovered in this paper. UI/UX (website) design, Responsiveness, Reliability, Trust & Security, are the variables chosen for understanding the quality of service of online retail websites. Structural equation modeling, a combination of multiple regression and factor analysis, was utilized to analyze the association among the attributes and complete quality of service. Furthermore, the significance of overall quality of service on consumer happiness which also impacts retention, and the significance of retention on loyalty were studied.



**Figure 1.** Structural equation model.  
Source: Author analysis.

As per the results shown in Table 13, only Responsiveness is the attribute that has an effect on the overall quality of service out of the four dimensions. Responsiveness is the capability to help consumers and provide faster delivery of service. It is critical to acknowledge the customer's problems immediately. According to Saad Andaleeb & Conway (2006), consumer happiness is favorably impacted by timeliness. Thus, as responsiveness increases, consumer happiness also increases. Responsiveness is affected by the willingness and promptness of staff to give services to consumers without them making requests. This will significantly impact the overall service quality, which aligns with the results obtained from the analysis. Online retailers must therefore carry out their services quickly and efficiently if they want to develop a relationship with their customers and have a positive impact.

Through this research, it was found that the attributes such as site/app quality (0.231), reliability (0.284), and trust (0.713) do not have a high enough impact on the overall quality of service. However, this does not mean that the other dimensions do not play a significant role or do not have an effect on the overall quality of service. The reason is that the above attributes may have already been focused on and taken care of by the online stores. As the Internet is becoming easily accessible and more people shop online, online stores have focused on providing better quality websites and engaging UI. This has resulted in satisfying results in terms of website design quality. Every person gives different importance to different factors. For some, the graphics and UI design must be important, and for some, the security of the transaction is important, for which they are willing to tolerate slower websites if they are getting what they need in exchange.

Further analysis from Table 13 reveals a high enough impact of overall quality of service on consumer happiness as well as a significant relationship between customer retention and loyalty. The significance of the overall quality of service on consumer happiness found in this research aligns with the results obtained by Hamzah et al. (2017), Amin (2016), and Tzavlopoulos et al. (2019).

## Conclusion

Measuring the attributes that affect the complete quality of service and the customers' attitude regarding these factors is crucial. This will help the managers make sound decisions regarding what they need to give importance to satisfy customers and retain them. In e-commerce, as the first point of contact for the customers is through websites, it is important to consider the intangible aspects to increase customer satisfaction levels. Based on the literature review, this paper has found four important dimensions affecting overall service quality. These dimensions are website quality, responsiveness, reliability, and trust. From the analysis, it can be seen that only responsiveness dramatically impacts the overall quality of service. Apart from this, a strong positive influence was found between overall quality of service and consumer happiness and between consumer retention and loyalty.

Through this study, valuable insights can be drawn, which can help managers of online stores focus on the parameters that are considered to be most important by customers. This can help e-commerce businesses to increase customer satisfaction levels and retain customers. This research paper suggests that to meet the desired satisfaction levels of consumers, e-commerce businesses should implement actions that improve the responsiveness factor for consumers. The chances for satisfied customers to become loyal customers are highly likely, and they can make repeat purchases, which will benefit online businesses.

Even though responsiveness has the highest effect on the overall quality of service, the impact of other factors, such as UI/UX design, reliability, and trust & security cannot be disregarded. Website design determines the user experience and, as the first point of contact, shapes the customers' perception of the online store. Similarly, reliability will significantly affect the consumer's attitude towards the company, and trust will enable the customers to share personal information and will impact the overall reputation of the business.

Thus, this study aims to help online business managers focus on the factors that can enhance the overall performance of e-commerce websites and provide services that meet the customers' expectations, thereby increasing the satisfaction levels and increasing retention and loyalty of the customers to the e-commerce company.

## Limitations and future scope

The results analyzed had more participants from working millennials and students as they are more frequent consumers of online retail stores. Also, most participants belonged to metropolitan cities. To find the suitability of the results across all business sectors, cities, and age groups, the same model can be used to test the findings. Also, since only four dimensions (reliability, trust & security, website design, and responsiveness) were used to test the impact on complete quality of service, further studies can be performed by taking in other dimensions and understanding the extent to which these factors affect the overall quality of service and the perception of consumers towards it.

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## Authors' contributions

Ipsa Bhattacharya- conception and design, analysis and interpretation of the data, the drafting of the paper.

Rahul Mulay- conception and design, revising the manuscript critically for intellectual content; and the final approval of the version to be published.

## Declaration of Interest Statement

1. No potential conflict of interest was reported by the authors.
2. The authors report there are no competing interests to declare.



3. Informed consent for data collection was obtained from all individual participants included in the study.
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## Data availability statement

The data used in this article is available in the Harvard Dataverse repository; however, they will be made available to researchers upon request to the corresponding author.

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## Appendix A

**Table 14.** Survey questionnaire.

Factor	Questions
Web Site Design	<p>The E-commerce Website/App is visually attractive</p> <p>The user interface of the E-commerce Website/App appears to be properly organized</p> <p>Transactions on the E-commerce Website/App is quick and simple</p> <p>The layout of E-commerce Website/App helps me in browsing and selecting the right products</p> <p>The E-commerce Website/App loads immediately on my device in no time</p>
Reliability	<p>An E-commerce Website/App meets its promise to deliver a product or service on a given date</p> <p>You face no errors while doing transactions on an E-commerce Website/App</p> <p>The E-commerce Website/App accurately delivers products and services on the first go</p> <p>The E-commerce Website/App keeps my records and displays them accurately</p>
Responsiveness	<p>When a service is poor, the E-commerce Website/App provides other alternatives to reduce inconvenience.</p> <p>The E-commerce Website/App quickly solves problems you face.</p> <p>The E-commerce Website/App provides faster delivery services</p> <p>The E-commerce Website/App promptly updates the status of the product and you can track it correctly</p>
Trust and Security	<p>You can pay for your purchases on the E-commerce Website/App using authentic payment portals.</p> <p>The E-commerce Website/App is safe and trustworthy.</p> <p>The E-commerce Website/App ensures that the customer's personal information is not exploited.</p> <p>I feel safe in providing sensitive information (e.g. credit card number) for online transactions</p>
Service Quality	<p>Overall the services provided by the E-commerce company were excellent in quality</p> <p>The E-commerce company offered the exact service quality I desired</p>
Satisfaction	<p>Overall I am very satisfied with the products/services offered by the E-commerce company</p> <p>I did not think I have to search on any other E-commerce Website/App for more information to purchase a product/service</p>
Retention	<p>I prefer this E-commerce company</p> <p>I will use the same E-commerce Website/App again</p>
Loyalty	<p>I recommend this E-commerce Website/App to others</p> <p>I want to reuse the same E-commerce Website/App to purchase a product/service</p> <p>I want to revisit the same E-commerce Website/App to search for product/service information</p>

Source: Author's Analysis.