Impact of logistic flows of service quality and delivery dimension towards customer satisfaction: an empirical study

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Department of Management,
Birla Institute of Technology,
Mesra, Ranchi-835215, India
Email: nehacdbg@gmail.com
Email: anand.pd.sinha@bitmesra.ac.in
Email: smukherjeebit@bitmesra.ac.in
*Corresponding author

Abstract: E-commerce is a reality that is becoming more and more commonplace as a result of the internet's explosive expansion. E-commerce technology suggests what may be offered to clients, but only they can select which options will be used. It is essential for businesses to ensure that clients are satisfied so that they will continue to do business with them because of the minimal human interaction and the fact that both service delivery and service quality impact customer happiness and loyalty. The current study aims to investigate consumer satisfaction in e-commerce while also examining the industry's infrastructure, which includes the availability of delivery services and logistical flow systems for the benefit of clients. This research also discussed service quality, which is one of the indicators of a consumer's pleasure with the delivery of goods, and how it might boost client contentment and boost client loyalty.

Keywords: delivery system; customer satisfaction; e-commerce; service quality.

Biographical notes: Neha Choudhary is a PhD scholar in Marketing at Birla Institute of Technology, Mesra, Ranchi. She holds a Master of Business Administration (MBA) and Bachelor of Business Administration (BBA), specialising in marketing and human resource management. Prior to her academic pursuits, she gained professional experience as an Assistant Manager at HDFC Bank, where she worked for two years. Currently, she serves as an Assistant Professor at Amity University, Ranchi. Her research interests encompass services marketing, logistics and supply chain management.

Anand Prasad Sinha is currently working as an Assistant Professor in Department of Management, BIT Mesra, Ranchi. He joined as a Senior Research Associate since 2002 in Department of Management, BIT Mesra, Ranchi, assisted Government Sponsored Project on Department of Scientific and Industrial Research (DSIR) Ministry of HRD, Government of India. He has

attended and presented paper in national and international conference and several national and international research papers published in reputed and indexed journals to his credit. His areas of expertise are marketing management, service marketing, technology management, and business research. He currently has taken an additional responsibility as an Associate Dean, Research Innovation and Entrepreneurship from 2023 to till date.

Somnath Mukherjee is an Assistant Professor in the Management Department of Birla Institute of Technology (City Centre, Ranchi, India). He is a professional with rich industry and academic experience. He has been engaging with MBA and BBA students both in the class as well as guide to their Research projects, as also PhD students. He also has the experience handling Government of India funded research project. His areas of expertise are brand management, marketing of services, and CSR. He is well known as an excellent professor and has done some remarkable publications in his field.

1   Introduction

The Industry 4.0 era has adopted a new and improved way of doing business by using innovative digital technology worldwide, which has led to a shift in customer behaviour and e-commerce has become a very popular online platform in this era. Through these online platforms, exchange of goods and services are done via Internet. For online shoppers, e-commerce provides a stage to carry out different tasks like online shopping and online payment. These days, many online shoppers prefer online platform as it is more convenience, and online shoppers can access this platform anywhere. Accordingly, enterprises have adapted to this change in customer purchasing patterns. For example, in 2016, the world's largest retailer, Walmart, began to acquire retail e-commerce companies to expand both its business and customer reach online. The COVID-19 pandemic had also increased digitalisation. Lockdowns and social exclusion have compelled consumers and retail businesses to use an expanding range of e-commerce platforms and has had a significant impact on e-commerce growth. For example, Amazon, the world's largest e-commerce retailer, reported $108.5 billion in sales in the first three months of 2021, a 44% increase from 2020. It also saw a profit of $8.1 billion, a 220% increase from the same period in 2020.

Numerous online retailers, payment processors, logistics companies, and other service providers have entered the e-commerce market. Due to the development of online payment processors like Paytm, PhonePe, GooglePay, BHIM, and UPI, the e-commerce industry has grown increasingly well-known. As a result of technological advancements, increased internet and smartphone usage, numerous businesses from a variety of industries have seized the chance to launch their own e-commerce websites, including Zomato, Swiggy, Ola, Urban Clap, and many others. Online shopping is a part of e-commerce where consumers can directly buy products or services from Internet retailers via computers, smartphones and tablets. E-commerce helps customer browse on the popular online sites, where they can choose, compare and buy their product in one click (Al-Adwan and Al-Tarawneh, 2017). Today, many new e-commerce succeed or failed or struggling for survival in this industry. The failure or struggling in this industry is due to the negligence of logistics services and its factors by the e-commerce

companies. Logistics services play important role in delivery of products or services to its customers. Many e-commerce companies outsource their logistics services and focus mainly on providing quality products and services to the customer. They take help of logistics service provider who perform logistics services on behalf of others like Flipkart outsource its logistics services to E-kart. The satisfied customer will make additional purchases and will recommend its products to others; this will result in increase in market share. The consolidation of e-commerce logistics has altered operations as well as the kinds of stock that businesses use. Pallets are rapidly being replaced by boxes as the primary unit load at facilities with several SKUs nowadays (a phenomenon known as SKU proliferation). The storage, preparation, and delivery of these products are made more challenging by the smaller and more diversified orders that are being placed. On the other hand, an unsatisfied customer will spread negative words about its products and services to others. So, it becomes very important for E-commerce companies to use right type of logistics services and provide quality products which will result in satisfied customer. The present study analyses the influence of different delivery service factor on the satisfaction of customer.

The major aim of this article is to understand the various influences and the types of relationships between dependent and independent components. If the quality of the service in this case is one of the success factors in assuring a consumer's pleasure for the delivery of goods, it may raise customer satisfaction, which can promote customer loyalty. The purpose of this study is to demonstrate how customer loyalty and happiness are impacted by logistical flows and service quality (SQ). In addition to exploring the various delivery service factors that affect customer satisfaction, this study used quantitative research methods to analyse the data using a variety of parameters, including reliability tests, descriptive tests, regression analyses, and conceptual models.

1.1   Need of the study

While numerous studies have examined the role of logistics in customer satisfaction and loyalty, many have focused on isolated dimensions or generalised frameworks, leaving gaps in understanding the intricate interplay between service delivery and SQ dimensions. This study uniquely integrates constructs such as product attributes, performance measurement, and deliverable attributes with SQ factors like responsiveness, customisation, and assurance. It provides a comprehensive framework to assess how these interconnected dimensions shape customer satisfaction and loyalty in the fast-evolving e-commerce landscape.

Furthermore, existing research often overlooks the role of emerging challenges such as the demand for real-time communication, secure digital payment systems, and seamless return mechanisms in influencing customer perceptions. By addressing these critical aspects and incorporating recent trends, this study captures the nuances of contemporary e-commerce logistics. Its focus on a holistic approach, contextualised within the competitive e-commerce environment, ensures its relevance and significance for both academia and industry, making a meaningful contribution to the existing body of knowledge.

2   Research problem

Making clients happy and providing high-quality services is not difficult because many rivals can do so; rather, the challenge is in acquiring lucrative and devoted consumers. When a consumer is loyal, they purchase and utilise a particular service structure over an extended period of time and have favourable opinions of the business and its products. Businesses are often faced with the challenge of how to attract genuine, devoted clients. Everyone agrees that client loyalty is mostly dependent on SQ and satisfaction. If a customer is happy, it makes sense that he will purchase or continue to utilise the company's services. That does not always happen, though, as loyalty has other requirements in addition to satisfaction. In the online buying environment, logistic services are inextricably linked to customers. Logistics has been identified as a critical instrument for connecting an organisation's internal operations with supply chain procedures in order to improve customer satisfaction. The impact of logistics service policies on customer happiness is investigated in this study, as well as techniques for improving satisfaction. The gap area is to find gap between customer's expectations of delivery service performance and actual delivery service performance.

3   Literature overview

The rapid expansion of e-commerce, driven by technological advancements, globalisation, and the significant impact of the pandemic, has transformed the logistics sector, particularly in service delivery. E-commerce platforms have become pivotal in shaping customer expectations, especially concerning logistics services. Research indicates that physical delivery plays a crucial role in customer satisfaction, with logistics SQ depending heavily on meeting customer expectations (Esper et al., 2003; Kull et al., 2007; Gajewska et al., 2019). Challenges in 'last mile' delivery are frequently identified as a primary cause of failure among dot-com companies, with common dissatisfaction stemming from issues such as order inaccuracies, damaged goods, and delivery delays. To stay competitive in this rapidly changing environment, businesses must enhance logistics service delivery and quality to boost customer satisfaction and foster loyalty (Ramanathan, 2010; Dhingra et al., 2020).

This literature review will examine the dimensions of logistics service delivery, the quality of logistics services, and their impact on customer satisfaction and loyalty within the e-commerce sector (Zeithaml et al., 1996). The review is structured to provide a thorough understanding of these aspects and their interrelationships. It will begin by analysing the dimensions of logistics service delivery, followed by a discussion on logistics SQ and its influence on shaping customer perceptions and experiences. Finally, the review will explore the direct impact of these logistics elements on customer satisfaction and how they contribute to enhanced customer loyalty.

3.1   Service delivery dimensions

3.1.1   Product attributes

The characteristics of products and services offered on e-commerce platforms play a vital role in shaping overall SQ and logistics delivery dimensions. Key elements include

detailed product information, order visibility, and pricing offerings. Product information pertains to clear and comprehensive descriptions that improve customer understanding and provide support (Chong et al., 2021). Order visibility refers to the ability to deliver real-time updates on order status, ensuring seamless and transaction-focused services (Rezaei et al., 2021). Finally, pricing offerings includes attractive price points, discounts, and shipping incentives, which help e-commerce platforms stand out from both online and offline competitors (Fernández et al., 2023).

Figure 1   Ecommerce logistic process (see online version for colours)
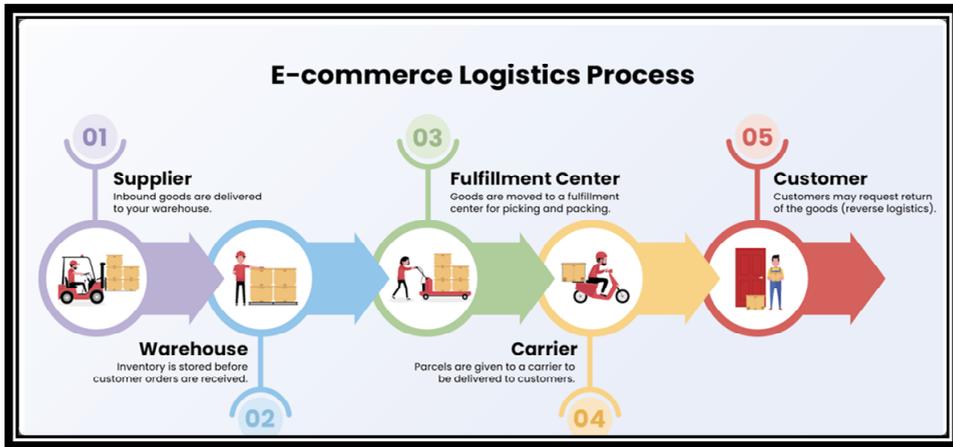

3.1.2   Performance measurement

Performance measurement in e-commerce involves three key components: the purchase process, service level, and return handling policy. The purchase process generally entails a one-way interaction, with online customer service representatives available to address issues, whereas offline businesses provide face-to-face support (Lee et al., 2020). Service level focuses on the efficiency and quality of service delivered, ensuring customer needs are met throughout the transaction (Nguyen and Tran, 2022). Return handling policies are also crucial, offering customers convenient options and transparent guarantees for returns, facilitating effective management of product returns (Hsiao et al., 2023). Together, these factors significantly impact the logistics service delivery dimensions in e-commerce.

3.1.3   Deliverable attributes

Deliverable attributes in e-commerce focus on three critical aspects: timeliness of delivery, order accuracy, and delivery condition. Timeliness of delivery reflects the supplier's ability to meet customer expectations for preferred delivery times, making it a crucial factor in the success of e-commerce operations (Vasić et al., 2020). Fast and dependable delivery, regardless of the customer's location, is essential for ensuring satisfaction. Order accuracy, which entails delivering the exact items ordered, significantly influences customer satisfaction, as customers can only verify their order upon receipt (Lin et al., 2022). Furthermore, Delivery condition, ensuring that products

arrive intact and in excellent condition, plays a key role in shaping the overall delivery experience (Petrovic et al., 2022). These factors collectively span the first mile, middle mile, and last mile of the delivery process.

Figure 2 Process of delivery items hands of the customer (see online version for colours)
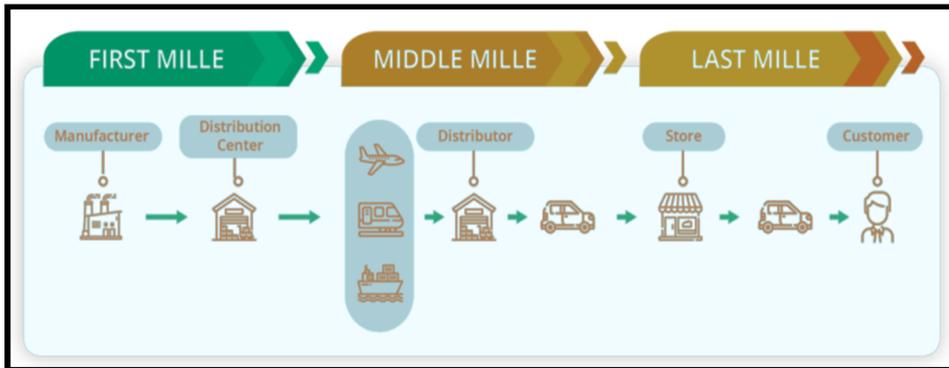
3.2 Service quality

SQ plays a pivotal role in the success of e-commerce businesses by ensuring timely, accurate, and reliable delivery services that meet customer expectations. Research suggests that SQ is a critical determinant of customer satisfaction and loyalty, directly impacting e-commerce performance (Liu et al., 2020). According to a 2020 survey by McKinsey & Company, over 70% of online shoppers ranked delivery speed as a key factor influencing their purchase decisions, with 56% willing to switch brands for faster delivery options

In Indian context, the growing e-commerce market has underscored the importance of logistics services, especially during the COVID-19 pandemic, when timely and contactless deliveries became crucial. A report by the Indian Brand Equity Foundation (2024) highlighted that 65% of customers reported dissatisfaction due to delayed deliveries, emphasising the need for improved SQ in the country.

The evolution of logistics in e-commerce has also brought about advancements in tracking technologies, which enhance transparency and customer communication (Tseng and Liao, 2015). Additionally, the rise of third-party logistics (3PL) providers has been crucial for businesses to scale operations while maintaining high SQ (Hofmann and Osterwalder, 2021). As customer expectations rise, e-commerce companies must prioritise SQ as a strategic tool to enhance customer satisfaction and build long-term loyalty.

Several studies have emphasised the importance of maintaining high SQ in the e-commerce environment, as it is closely tied to customer satisfaction and retention. For instance, when customers feel that their logistics provider can be trusted to handle their deliveries with care and efficiency, they are more likely to continue using that service and recommend it to others (Nag et al., 2023).

Blut (2015) describes SQ as customers' overall perception of a service provider's superiority or inferiority, often reflecting customer behaviour. To achieve customer satisfaction, businesses must manage the quality of their systems, employees, and

suppliers (Cox and Dale, 2002). Parasuraman et al. (1985) defined SQ using the SERVQUAL model, which measures the gap between customers' expectations and perceptions. Developed in the early 1980s, the SERVQUAL model includes five dimensions: Reliability, Assurance, Tangibles, Empathy and Responsiveness, highlighting the perceived gap between expected and actual SQ.

Based on the above SERVQUAL model, literature suggests that SQ encompasses both tangible and intangible elements of service delivery. It goes beyond the physical delivery of goods to include elements such as responsiveness, customisation, and assurance (Yu and Xie, 2016; Yang et al., 2017).

Figure 3   Dimensions of SQ of SERVQUAL model (see online version for colours)
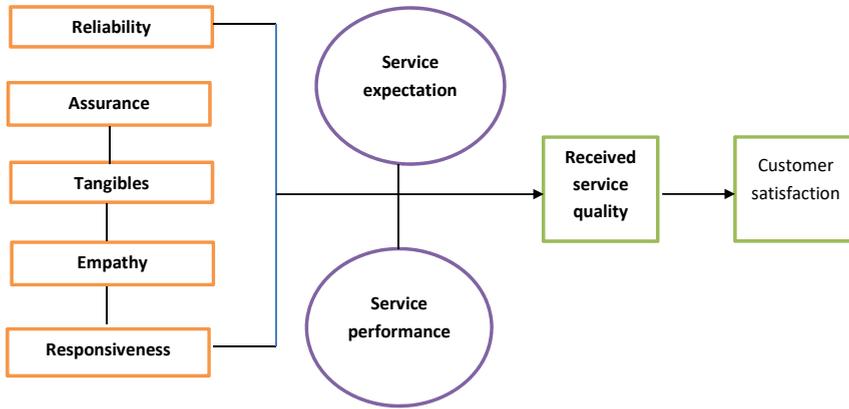
3.2.1 *Responsiveness*

Responsiveness, the ability of logistics providers to quickly and efficiently address customer needs, is vital for customer satisfaction. It encompasses timely responses to inquiries, effective problem-solving, and prompt delivery (Parasuraman et al., 1988). Strongly linked to delivery speed, order tracking, and communication, responsiveness plays a crucial role in meeting heightened e-commerce expectations (Park and Kim, 2021). Inefficiency or delays can diminish satisfaction and loyalty (Hoang et al., 2023). Advanced technologies, like real-time tracking and AI-powered customer service, enhance responsiveness by enabling order monitoring and swift issue resolution. Ultimately, responsiveness boosts operational efficiency and fosters trust in e-commerce platforms.

3.2.2 *Customisation*

Customisation in logistics refers to adapting services to meet individual customer preferences, such as specific delivery times, packaging, and payment options. This personalised approach has become a key differentiator in the competitive e-commerce landscape (Gracia et al., 2017). Personalised logistics services significantly enhance the customer experience, boosting satisfaction and loyalty (Hofmann and Osterwalder, 2021). Companies like Amazon and Alibaba use advanced algorithms to provide tailored delivery solutions based on factors like location, order size, and delivery preferences.

Customisation also includes flexible return options, improving the post-purchase experience. Studies reveal that tailored services can increase customer satisfaction by up to 20%, particularly in industries like fashion and electronics.

3.2.3 Assurance

Assurance reflects customers' confidence in a logistics provider's ability to deliver goods securely, on time, and undamaged. It includes reliability, professionalism, and perceived safety during transit (Liao and Keng, 2013). Key drivers of assurance are delivery accuracy, secure packaging, and transparent communication. Meng et al. (2021) found that 40% of customer dissatisfaction stemmed from order inaccuracies or damaged deliveries. Enhancing assurance involves training logistics staff, improving packaging, and employing tracking systems. During the COVID-19 pandemic, assurance gained prominence with heightened concerns about safety, contactless delivery, and reliability (Biswas and Das, 2020). Providers offering secure and timely services achieved greater customer satisfaction and loyalty, especially in handling high-value or fragile items (Zhang et al., 2022).

3.3 Customer satisfaction

Customer satisfaction in logistics refers to the extent to which a logistics provider meets customers' needs and expectations. Research consistently shows that high-quality logistics service delivery directly impacts customer satisfaction. Companies that effectively address customer needs through efficient logistics services tend to achieve higher satisfaction levels, fostering customer loyalty (Choshin and Ghaffari, 2017).

The COVID-19 pandemic underscored the vital role of logistics in sustaining customer satisfaction. During lockdowns and supply chain disruptions, many e-commerce platforms faced delivery delays, leading to decreased customer satisfaction (Cai et al., 2020). This emphasises that quality logistics services are essential, particularly during crises.

3.3.1 Digital payment security

The rise of e-commerce has made digital payment systems a critical aspect of the logistics process. Secure and reliable payment methods are essential for customer satisfaction, as concerns about payment security can negatively affect the customer experience. Bhattacharjee et al. (2021) found that over 60% of customers prioritise secure payment options, feeling more confident with businesses that offer secure gateways. Trust in digital payments enhances satisfaction and encourages repeat purchases. Logistics companies that implement advanced encryption and offer diverse payment options create a sense of safety, improving SQ perceptions and fostering customer loyalty (Liu et al., 2023).

3.3.2 Better communication

Effective communication between logistics providers and customers is crucial for enhancing the overall customer experience. It involves offering real-time updates on order status, delivery times, and potential delays. Transparent communication helps

manage customer expectations, and companies providing real-time tracking, quick responses, and accurate delivery forecasts achieve higher satisfaction levels. Tseng and Liao (2015) found that strong communication is directly linked to customer trust and satisfaction, especially in last-mile deliveries. With technology, logistics providers now use SMS, email, and app notifications to keep customers informed, reducing anxiety about delivery schedules and improving service perceptions (Hwang et al., 2022).

3.3.3 Returning mechanism

The return process, often underestimated in the logistics chain, plays a critical role in customer satisfaction. A hassle-free and convenient return mechanism boosts customer confidence in online shopping. Research shows that 63% of customers prefer retailers with clear and simple return policies (Koutsoumanis et al., 2021). Key factors such as free return shipping, flexible return windows, and straightforward procedures significantly impact post-purchase satisfaction. Ferreira et al. (2023) highlight the importance of transparency in returns, including shipment tracking and timely refunds or exchanges. E-commerce companies that optimise return processes and collaborate effectively with logistics providers can enhance customer loyalty and retention.

3.4 Customer loyalty

Customer loyalty is the result of sustained customer satisfaction and refers to a customer's intention to repurchase products or services from the same provider and recommend the provider to others. Studies have consistently shown that logistics performance is a key driver of customer loyalty in e-commerce (Ramanathan, 2010). When customers are satisfied with their logistics experience-especially in terms of delivery reliability, responsiveness, and flexibility-they are more likely to remain loyal to the e-commerce provider (Gajewska et al., 2019).

   Logistics service providers that invest in improving their delivery processes and maintaining high-quality logistics services are better positioned to foster customer loyalty. This is particularly important in the highly competitive e-commerce landscape, where customer retention can be a significant challenge. Loyalty is not solely about repeated transactions but is also influenced by various service dimensions such as information quality, time-saving, and customer attitudes and behavioural intentions. These dimensions collectively create a holistic service experience, ensuring that customers return to the same service provider over time.

3.4.1 Information quality

Information quality in logistics encompasses the accuracy, timeliness, and relevance of order-related information provided to customers. Real-time shipment tracking, precise delivery updates, and clear product details significantly improve the customer experience (Kassim and Asiah Abdullah, 2010). Yang et al. (2017) found that detailed and timely information builds trust, a key factor in fostering loyalty. Keeping customers informed reduces uncertainty and boosts confidence in the service. Accurate information also aids customer decision-making, such as planning based on delivery updates. Investing in advanced information systems to ensure transparency and reliability in logistics processes is essential for enhancing customer satisfaction and loyalty (Park and Kim, 2021).

3.4.2 Time-saving

Time-saving is a vital element influencing customer loyalty, as quick and efficient logistics services enhance satisfaction and retention (Ramanathan, 2010). Customers appreciate time-saving solutions, such as fast delivery and streamlined processes, which improve their overall shopping experience (Gounaris et al., 2010). Companies like Amazon, offering same-day or next-day delivery, have successfully strengthened loyalty by minimising the time between purchase and product delivery.

Ramírez et al. (2021) highlight that time-efficient logistics not only boost satisfaction but also drive customer retention and advocacy. By consistently meeting or exceeding delivery expectations, logistics providers build reliability, fostering repeat purchases and long-term loyalty in e-commerce.

3.4.3 Attitude and behavioural intention

Customer attitudes and behavioural intentions toward logistics services play a crucial role in shaping loyalty. Positive attitudes are influenced by the quality of logistics services, including accurate deliveries, effective communication, and post-purchase support (Reinartz et al., 2019). A positive service experience often leads to favourable behavioural intentions, such as repeat purchases and recommendations. Behavioural intention, which reflects the likelihood of future transactions, is typically driven by previous service experiences (Liao et al., 2021). Poor logistics, such as delays or errors, can create negative attitudes, undermining loyalty. Thus, companies must consistently deliver high-quality logistics services to foster positive attitudes and ensure future business.

Figure 4 Proposed conceptual model (see online version for colours)
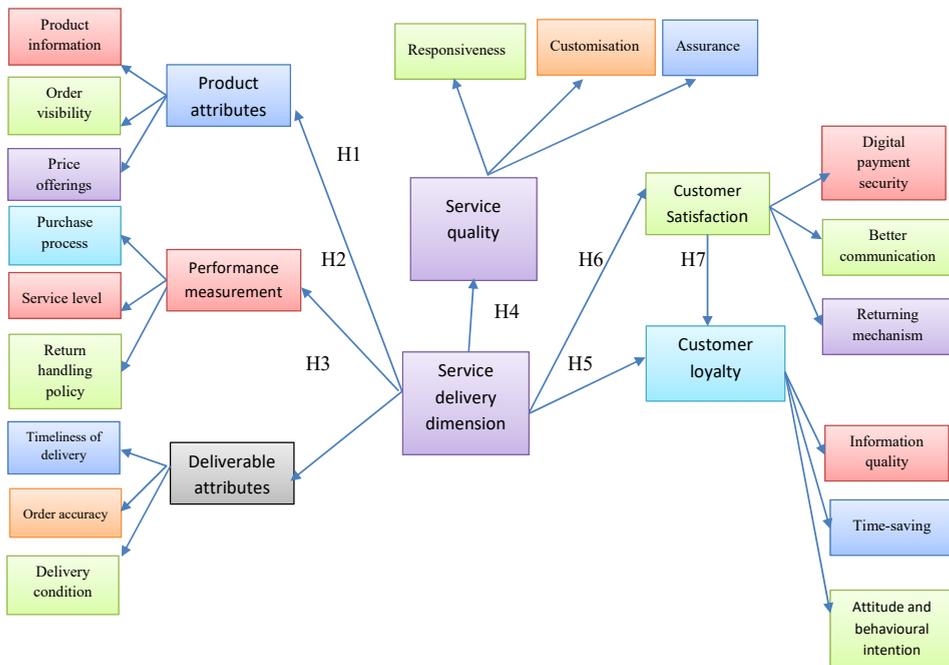
A conceptual framework model has been described in Figure 4 based on the literature support.

This study identified various leading variables which are mentioned in Table 1.

Table 1   Identified various leading variables

Sl. no.	Factors and variables	Lit. support
Product attributes		
1	PI – Product information	Chong et al. (2021), Lim et al. (2022)
2	OV – Order visibility	Rezaei et al. (2021), Zaidan et al. (2022)
3	PO – Price offerings	Fernández et al. (2023)
Performance measurement		
4	PP – Purchase process	Johnson et al. (2021), Lee et al. (2020)
5	SL – Service level	Nguyen and Tran (2022), Markovic et al. (2024)
6	RHP – Return handling policy	Khoa and Anh (2023); Hsiao et al. (2023)
Deliverable attributes		
7	TD – Timeliness of delivery	Park et al. (2023), Vasić et al. (2020)
8	OA – Order accuracy	Kim et al. (2023), Lin et al. (2022)
9	DC – Delivery condition	Petrovic et al. (2022), Gharibi et al. (2024)
Service quality		
10	RES – responsiveness	Hoang et al. (2023), Park and Kim (2021)
11	CUST – customisation	Hofmann and Osterwalder (2021), Gracia et al. (2017)
12	ASSUR – assurance	Meng et al. (2021), Zhang et al. (2022)
Customer satisfaction		
13	DP – Digital payment	Bhattacharjee et al. (2021), Liu et al. (2023)
14	BC – Better communication	Tseng and Liao (2015), Hwang et al. (2022)
15	RM – Returning mechanism	Koutsoumanis et al. (2021), Ferreira et al. (2023)
Customer loyalty		
16	IQ – Information quality	Yang et al. (2017), Park and Kim (2021)
17	TS – Time-saving	Gounaris et al. (2010), Ramírez et al. (2021)
18	ABI – Attitude and behavioural intention	Liao et al. (2021), Reinartz et al. (2019)

Source: Compiled by authors

3.5   *Gap model of SQ*

The model outlines the five key customer satisfaction gaps that must be filled by firms in order to meet expectations. The gap model of SQ states that perception has a significant impact on consumer satisfaction. A happy client is one who believes their expectations were met by the service. If not, they will not be happy. If they have any complaints, they will be related to one of the five 'gaps' in customer service listed below.

Table 2   Literature support of the different article

| S.no.	Journal name	Journal topic	GIST of journal	Linkage to study
1	JOM, Vol. 54, No. 2, pp.69—82	Evaluating service encounters- the effects of physical surroundings and employee responses	The author proposes a paradigm for evaluating service encounters that combines customer happiness, services marketing, and attribution theories.	Helps the in the study of service factors leading to customer satisfaction.
2	JOR, Vol. 92, No. 4	E-service quality: development of a hierarchical model	This study describes thee-service quality concept as a third-order factor model that relates perceptions of online service quality to discrete, i.e., website design, fulfillment, customer assistance, and security/privacy.	Assists in the correlation of online service quality judgments with specific and actionable service aspects.
3	JOR, Vol. 91, No. 4	E-service quality: a meta-analytic review	This study summarises the influence of e-service quality on key outcomes and word-of-mouth as well as the moderating impact of three contextual elements such as nation culture, regulatory environment, and industry context.	This article contains a direct link that provides an overview of the impact of e-service quality and analyze the outcomes of customer happiness and loyalty.
4	JOR, Vol. 76, No. 2.	Assessing the effects of quality value and customer satisfaction on consumer behavioral and intentions in service environments.	The study examines the links between the identified constructs across numerous service industries, based on recent breakthroughs in services marketing theory.	Helps in assessing different theory of service delivery dimensions across the service industries.
5	JOCM, Vol. 23, No. 7	Customer satisfaction and loyalty in a digital environment: an empirical test	The goal of this article is to look into the relationships between customer loyalty attitudes, behaviors, and profitability.	Directly linked to current study and helps to explore the relation between customer loyalty and behavior.
6	JAIS, Vol. 1, No. 8	The relative importance of perceived ease of use in IS adoption: a study of e-commerce adoption	The underlying hypothesis of this research is that the importance of perceived ease of use varies depending on the activity.	Helps in exploring about the ease of use dimension in ecommerce study.
7	JSM, Vol. 24, No. 2	Effects of service quality and satisfaction on customers' behavioral intentions in e-shopping	This article describe the impacts of service quality and satisfaction on consumer behavioral intentions in the setting of online shopping.	Aids in the investigation of the impact of service quality and satisfaction on numerous parameters in the current study.
8	JSM, Vol. 18, No. 3, pp.175–186	Customer loyalty to content-based websites: the case of an online health care service	The current study investigates the factors that influence consumer loyalty to a content-based service, such as a healthcare Web site.	Helps in knowing the determinants of customer loyalty in ecommerce setting.

Source: Compiled by authors

Table 2   Literature support of the different article (continued)

S.no.	Journal name	Journal topic	GIST of journal	Linkage to study
9	*JIM*, Vol. 19, No. 3	The role of cumulative online purchasing experience in service recovery management	This study moderating influence of cumulative online purchasing experience as well as classic theoretical model of service failure and recovery to the online shopping environment.	Links to our study in knowing about the customer purchase experience in online shopping environment.
10	*JSR*, Vol. 10, No. 4, pp.347—364	Satisfiers and dissatisfiers in the online environment: a critical incident assessment.	This study looks into the aspects that contribute to customer dissatisfaction in the online service environment.	Directly linked to our study in knowing about factors responsible for customer satisfaction or dissatisfaction.
11	*APJML*, Vol. 22, No. 3	The effect of perceived service quality dimensions on customer satisfaction, trust, and loyalty in e-commerce settings: A cross cultural analysis	At the construct level, the research intends to investigate the relationship between perceived service quality, satisfaction, trust, and loyalty in ecommerce environments.	Inextricably linked to a study to determine ecommerce setting in India which perceived service quality, satisfaction, trust, and loyalty.
12	*JSM*, Vol. 20, No. 2	On-screen characters: their design and influence on consumer trust	The goal of this study is to see if the OSCs' portrayal, as well as user differences, has an impact on how appealing, appropriate, and trustworthy they are.	Explores the factors that influence customer trust.
13	*JOM*, Vol. 49, No. 4	A conceptual model of service quality and its implications for future research	The purpose of this article is to correct this problem by summarising the findings of an extended exploratory study of quality in four service organisations and building a service quality model.	Helped in developing service quality model and factors.
14	*JOSR*, Vol. 7, No. 3	E-s-qual a multiple-item scale for assessing electronic service quality	This paper proposes, develops, refines, and tests a multiple-item scale (E-S-QUAL) for evaluating the quality of service given by online shopping sites.	Links to the study to understand the service quality measuring scales in ecommerce environment
15	*JOAMS*, Vol. 30, No. 4	Customers to online stores, and what keeps them coming back.	This study examines survey and behavioral data collected from Internet consumers to determine what was most important to them and compares the aspects that influence attraction versus retention.	Helps to know to about factors responsible for customer trust, loyalty and retention in online shoppers.

Source: Compiled by authors

Figure 5 Gap model of SQ (see online version for colours)
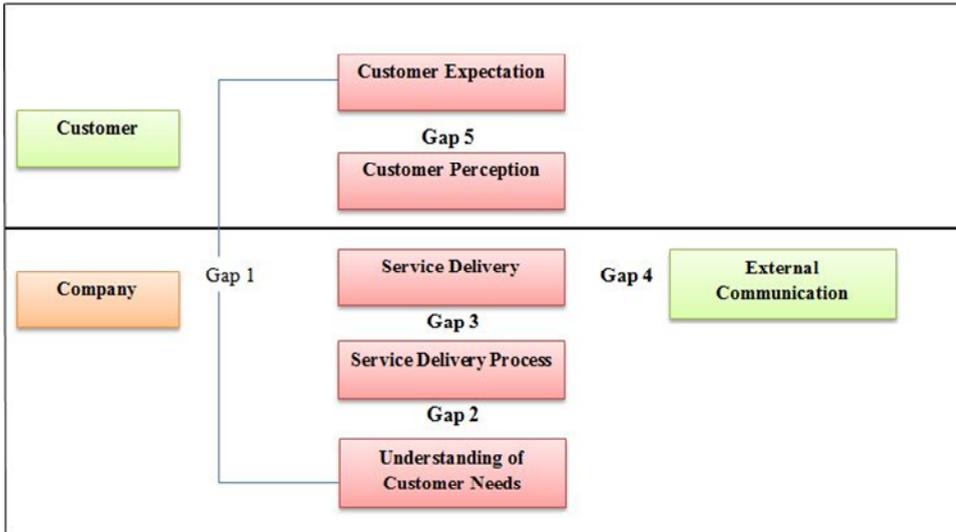
Source: Compiled by authors

Table 3 Justification of the gap model (see online version for colours)

SL. no.	Gap model	Description
Gap 1:	The knowledge gap (Close this gap by learning what customers expect.)	• Using customer research. • Increasing interactions between management and customers. • Increasing interactions between management and service staff. • Act on other customer insights you receive once validated.
Gap 2:	The policy gap (Close this gap by creating the right service quality standards.)	• Ensure a good proportion of senior management remuneration is aligned to service quality. • Set, communicate and reinforce quality standards. • Set measurable service quality goals. • Train managers to be service quality leaders. • Update policies regularly. • Reward staff for the achievement of quality goals.
Gap 3:	The delivery gap (Close this gap by ensuring that performance meets set standards.)	• Train employees. • Empower employees. • Provide the right technology, tools, and equipment. • Focus on inter marketing. • Take steps to retain high-performing employees.

Source: Compile by authors

Table 3   Justification of the gap model (continued) (see online version for colours)

SL. no.	Gap model	Description
Gap 4:	The communication gap (Close this gap by ensuring the product or service delivered matches and promises made)	• Getting employees input to your advertising campaigns. • Use reality advertising by using real customers, real reviews, and real employees, etc. • Ensure advertising campaigns are signed off by the operations team. • Manage customer expectations realistically.
Gap 5:	The customer gap	The customer gap is the difference between customer expectations and customer perceptions. This gap occurs because customers do not always understand what the service has done for them, or they misinterpret the service quality.

Source: Compile by authors

Figure 6   Consumer feedback form (see online version for colours)

The gap model of SQ is a framework for analysing common customer satisfaction problems. There are five common gaps that can develop inside the model:

- The gap of knowledge is comprising the customer expectation and consumer feedback through questionnaire.

- The policy gap is comprising the SQ standards.

- The delivery gap is comprising the performance measurement.

- The communication gap is comprising the service delivery process.

- The customer gap is comprising the need of the customer.

This gap can occur as a result of one of the other four gaps, or simply because the consumer has a faulty perception of the service's quality. In the worst-case situation, a company could lose a significant chunk of its consumers overnight. Despite the fact that the corporation believed there was no gap, their clients were simply waiting for someone to fill the void. Companies should measure each gap and take steps to close them where necessary in order to adopt the model.

The consumer feedback form is more realistic approach to get new information. After compiling each response from its appropriate item, the consumer feedback form is a more practical technique to obtaining fresh information and attempting to close this gap. It is a more practical and real-time based technique to try to bridge this informational vacuum with the help of the consumer feedback form.

Figure 7 QR scan for consumer feedback form

4 **Research objective**

- To understand the role and impact of logistic supply and service delivery dimension in e-commerce industry.
- To identify the various factors of delivery services responsible for customer satisfaction and loyalty in e-commerce industry.
- To examine and validate the construct of services delivery dimension to influence customer satisfaction and loyalty.

5 **Hypothesis of the study**

H1 The product attributes have significantly impact to service delivery dimension to effect of logistics services provider to customer satisfaction and loyalty.

H2 The performance measurement has significantly impact to service delivery dimension to effect of logistics services policies to customer satisfaction and loyalty.

H3 Deliverable attributes have significantly impact to effect of logistics services policies to customer satisfaction and loyalty in e-commerce industry.

H4 SQ has significantly impact to effect of logistics services policies to customer satisfaction and loyalty in e-commerce industry.

H5 Service delivery dimension has indirectly and significantly impact to effect of logistics services policies to customer loyalty in e-commerce industry.

H6 Service delivery dimension has significantly impact to effect of logistics services policies to customer satisfaction and loyalty in e-commerce industry.

H7 Services delivery items have positive and direct impact on customer satisfaction and loyalty in e-commerce industry.

5.1   Research methodology

5.1.1   Research design

This study used a quantitative approach to investigate how e-commerce enterprises handle deliveries. A systematic questionnaire and a survey were used to perform this investigation.

5.1.2   Data collection technique

Both primary and secondary data were acquired for this investigation. To collect primary data, a thorough questionnaire was given. Meanwhile, secondary data was acquired from published research, pertinent publications, and websites. In order to study current trends among e-shoppers from varied backgrounds, the most recent information on their behaviours, encounters, and expectations were gathered.

5.1.3   Designing the questionnaire

Using citations from a few pertinent literatures, a three-part structured questionnaire was created. Both parts one and two contained closed-ended inquiries. The first section was made to gather information about the respondent's socio demographic profile; the second was made to learn about the purchasing habits of online consumers; and the third was made to gauge how satisfied online consumers were with the online delivery system. The attitudes of the respondents were evaluated using declarative sentences, with 1 denoting 'strongly disagree' and 5 denoting 'strongly agree'. Internet users were asked to indicate whether they agreed or disagreed with each statement.

Table 4   List of online platforms

S. no.	List of online platforms	Questionnaire distributed	Data collected
1	Amazon	60	47
2	Flipkart	55	42
3	Myntra	35	27
4	Tata Cliq	30	20
5	Ajio	30	21
6	Nykaa	30	19

Source: Compiled by authors

Table 4   List of online platforms (continued)

S. no.	List of online platforms	Questionnaire distributed	Data collected
7	MakeMyTrip	40	33
8	PharmEasy	25	19
9	Lenskart	40	26
10	BigBasket	35	21
Total		*380*	*275*

Source: Compiled by authors

5.1.4   Sampling design

Convenient sampling was used as the sample method since it suited the demands of the investigation. With this approach, it is simple for the researcher to select respondents depending on their convenience and accessibility.

5.1.5   Sampling size

In order to gather data from the many cities in the state of Jharkhand, including Ranchi, Jamshedpur, Bokaro, Dhanbad, Hazaribagh, and Deogarh, the researchers had to use stratified random sampling to choose the respondents. The survey was conducted among the respondents from various age groups who prefer shopping via online. The respondents were invited to reply to questions on their shopping habits. The respondents were given a thorough explanation of the purpose and goal of the data collection, along with instructions that the material would only be used for academic purposes. The majority of respondents were found to be reluctant to provide their personal information.

Response details

Table 5   Response details

Total questionnaires distributed	Non-response	Received filled in questionnaire	Incomplete response	Response considered for analysis	Percentage
380	67	313	38	275	0.72%

Source: Compile by authors

Table 6   Profile of sample respondents (N = 275)

Category	Frequency	Percent (%)
Gender		
Male	145	52.7%
Female	130	47.3%
Age		
18–25	60	21.8%
26–35	95	34.5%
36–45	75	27.3%

Source: Compiled by authors

Table 6   Profile of sample respondents (N = 275)

Category	Frequency	Percent (%)
46–54	30	10.9%
55+	15	5.5%
Marital status		
Single	155	56.4%
Married	120	43.6%
Occupation		
Private sector	130	47.3%
Public sector	80	29.1%
Student	40	14.5%
Self-employed/business owner	25	9.1%
Monthly income (INR)		
Less than 25,000	55	20.0%
25,000–50,000	120	43.6%
50,000–75,000	75	27.3%
Above 75,000	25	9.1%
Frequency of online shopping		
Once a week	40	14.5%
Several times a month	70	25.5%
Once a month	90	32.7%
Several times a year	75	27.3%
Online shopping expenditure		
Less than 10%	65	23.6%
10%–25%	120	43.6%
25%–50%	70	25.5%
50%–75%	15	5.5%
Most bought product category		
Electronics	80	29.1%
Clothing	75	27.3%
Food and groceries	60	21.8%
Household appliances	30	10.9%
Books	20	7.3%
Medicines, personal care and hygiene	20	7.3%
Home decor and furniture	25	9.1%
Footwear	40	14.5%
Jewellery and watches	30	10.9%
Health and fitness equipment	25	9.1%
Automotive parts and accessories	15	5.5%
Other	10	3.6%

Source: Compiled by authors

Initially, 380 questionnaires were circulated; of those, 313 completed questionnaires were received, along with 38 responses that were missing in some way. Ultimately, 275 questions were chosen for study since they were correctly filled out and comprehensive in every way. The detailed profile of Sample Respondents (N = 275) is mentioned in Table 6.

6 Data analysis and interpretation

Cronbach's alpha was used to assess the indicators' internal consistency and reliability. SPSS software was used to carry out the test.

Table 7 Reliability statistics

Construct	N. of items	Cronbach's alpha
Product attributes	3	0.857
Performance measurement	3	0.858
Deliverable attributes	3	0.884
Service quality	3	0.895
Customer satisfaction	3	0.936
Customer loyalty	3	0.858
Overall indicators	*18*	*0.909*
Total sample	*275*	

Source: Compile by authors

As the Cronbach's alpha value in the preceding table is 0.909, it can be assumed that the tool is acceptable and trustworthy and that the data collected is reliable.

6.1 Hypotheses testing

H1 The product attributes have significantly impact to service delivery dimension to effect of logistics services provider to customer satisfaction and loyalty in e-commerce.

According to the model summary in Table 8, R is equal to 0.850a, indicating that there is a strong connection between the PO, OV, and PI. Furthermore, the p-value for the significant difference is 0.000, the R square value is 0.722, the adjusted R square value is 0.719, and the R square value overall is 0.719. It is quite clear from that there is a statistically significant association. It also implies that the service delivery dimension is impacted to logistics services regulations affect customer satisfaction and loyalty.

H2 The performance measurement has significantly impact to service delivery dimension to effect of logistics services policies to customer satisfaction and loyalty.

The model summary is expressed in a clear and accessible manner, stating that the value of R is 0.846a, which denotes a positive and high degree of correlation between the dependent and independent variables like RHP, PP, and SL. The value of R square is 0.716, and R square is.713, and the sign's P-value is 0.000. It is quite clear from this; there is a statistically significant association. The service delivery dimension, the

influence of logistics services policies, and customer happiness and loyalty are all heavily impacted by performance assessment. Since then, both the corporate climate and the logistics industry have transformed. The concept of 'operational activities' has been expanded to include a wide variety of value-added tasks, such as packaging, third-party inventory management, bar coding, and information systems for Performance evaluation.

Table 8   Model summary of product attributes

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.850[a]	0.722	0.719	3.87607	0.722	234.321	3	271	0.000

			ANOVA[b]			
Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	10,561.245	3	3,520.415	234.321	0.000[a]
	Residual	4,071.483	271	15.024		
	Total	14,632.727	274			

Note: [a]Predictors: (constant), PO, OV, PI.

  Source: The authors (calculated by using SPSS softwares)

H3   Deliverable attributes have significantly impact to effect of logistics services policies to customer satisfaction and loyalty in e-commerce industry.

According to the model summary, the dependent and independent variables have a positive association with an R value of 0.625a. Additionally, the p value is 0.000 and the R squared values are 0.391 and 0.384, respectively. The correlation in this instance is weak, indicating that the impact of the deliverable attributes is not very effective in providing the logistic service to improve customer satisfaction and loyalty in the e-commerce industry, despite the fact that it is obvious that there is a statistically significant relationship between the two.

Table 9   Model summary of performance measurement

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.846[a]	0.716	0.713	3.91535	0.716	227.839	3	271	0.000

			ANOVA[b]			
Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	10,478.299	3	3,492.766	227.839	0.000[a]
	Residual	4,154.428	271	15.330		
	Total	14,632.727	274			

Notes: [a]Predictors: (constant), RHP, PP, SL.
  [b]Dependent variable: SDS.

  Source: The authors (calculated by using SPSS softwares)

Table 10   Model summary of deliverable attributes

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.625[a]	0.391	0.384	5.73431	0.391	58.001	3	271	0.000

				ANOVA[b]			
Model		Sum of squares	df	Mean square		F	Sig.
1	Regression	5,721.619	3	1,907.206		58.001	0.000[a]
	Residual	8,911.108	271	32.882			
	Total	14,632.727	274				

Notes: [a]Predictors: (constant), DC, TD, OA.
　　　[b]Dependent variable: SDS.
　　　　Source: The authors (calculated by using SPSS softwares)

H4 SQ have significantly impact to effect of logistics services policies to customer satisfaction and loyalty.

The value of R, which indicates that there is a positive and medium degree of correlation between the dependent and independent variables, is stated in the model summary in a clear and unambiguous manner as being 0.709a. Also, the association is statistically significant as shown by the R square value of 0.503, adjusted R square value of 0.498 and p value of sig. of 0.000. In this instance, the effectiveness of logistics services regulations on consumer happiness and loyalty in the e-commerce industry has been considerably impacted by SQ. Because the consumers' view of the quality of the services impacts how satisfied they are, a process is required to gauge how much value is created for them by logistics services.

H5 Service delivery dimension has indirectly impact to effect of logistics services policies to customer loyalty in e-commerce industry.

As shown in Table 12, there is a considerable correlation between the service delivery dimension and logistical rules and consumer loyalty in the e-commerce industry. The value of R is 0.395a, R square is 0.156, and adjusted R square is 0.146. According to the ANOVA table, the total of square values for the three degrees of freedom is 2,280.307. If the p-value is less than 0.05, the model is considered statistically significant. According to the model summary in Table 12, there is a weak but positive relationship between the service delivery dimension, logistical service rules, and customer loyalty. Even if the service delivery dimension is suboptimal, the product or service may still fail to reach the end consumers.

Table 11   Model summary of SQ

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.709[a]	0.503	0.498	5.17968	0.503	91.468	3	271	0.000
				ANOVA[b]					
Model		Sum of squares		df	Mean square		F		Sig.
1 Regression		7,362.031		3	2,454.010		91.468		0.000[a]
Residual		7,270.696		271	26.829				
Total		14,632.727		274					

Notes: [a]Predictors: (constant), Assur, RES, Cust.
      [b]Dependent variable: SDS.
    Source: The authors (calculated by using SPSS softwares)

Table 12   Model summary of service delivery dimension

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.395[a]	0.156	0.146	6.75136	0.156	16.676	3	271	0.000
				ANOVA[b]					
Model		Sum of squares		df	Mean square		F		Sig.
1 Regression		2,280.307		3	760.102		16.676		0.000[a]
Residual		12,352.420		271	45.581				
Total		14,632.727		274					

Notes: [a]Predictors: (constant), ABI, TS, IQ.
      [b]Dependent variable: SDS.
    Source: The authors (calculated by using SPSS softwares)

H6 Service delivery dimension has significantly impact to effect of logistics services
    policies to customer satisfaction and loyalty in e-commerce industry.

The model summary states the value of R, which indicates a positive and moderate degree of correlation between the dependent and independent variables, as being 0.449 in the present model. In addition, whereas adjusted R squared is worth 0.192 and the sig. p value is 0.000, R squared is worth 0.201. It makes it quite clear that there is a statistically significant correlation. In this instance, the service delivery dimension has a big impact on how logistics services rules affect consumer loyalty and satisfaction in the e-commerce market.

Table 13 Model summary of service delivery dimension and customer satisfaction

Model	R	R square	Adjusted R square	Std. error of the estimate	Change Statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.449[a]	0.201	0.192	6.56708	0.201	22.766	3	271	0.000

ANOVA[b]					
Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	2,945.445	3	981.815	22.766	0.000[a]
	Residual	11,687.282	271	43.127		
	Total	14,632.727	274			

Notes: [a]Predictors: (constant), BC, PS, RM.
 [b]Dependent variable: SDS.

Source: The authors (calculated by using SPSS softwares)

Table 14 Model summary of customer satisfaction and loyalty in e-commerce industry

Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.807[a]	0.651	0.647	1.21120	0.651	168.741	3	271	0.000

ANOVA[b]					
Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	742.626	3	247.542	168.741	0.000[a]
	Residual	397.556	271	1.467		
	Total	1,140.182	274			

Notes: [a]Predictors: (constant), ABI, TS, IQ.
 [b]Dependent variable: CUSTSETIF

Source: The authors (calculated by using SPSS softwares)

H7 Services delivery items have positive and direct impact on customer satisfaction and loyalty in e-commerce industry.

Table 14 shows the relationship between the dependent and independent variables which indicates the R value is 0.807, R square is 0.651, and adjusted R square is 0.647, indicating that the relationship between service delivery dimension and customer happiness and loyalty in the e-commerce market is statistically significant. The total of square values at three degrees of freedom is 742.626 in the ANOVA table, and the stated p-value of 0.05 indicates that the model is statistically significant. According to the model summary in Table 14, there is a strong positive correlation between customer satisfaction and customer loyalty. Regulations governing logistics services have a direct and positive influence on consumer satisfaction and loyalty in the e-commerce industry. In addition to assisting in the delivery of goods or services, logistics services have an impact on customer satisfaction. Customers will be pleased with the functionality of the product as well as the timely, accurate, and adequate delivery of their orders.

Table 15   Calculations of AVE value for service delivery dimension

Indicator variables	Latent variables	Standardised loadings	Square of standardised loadings	Sum of the squared standardised loadings	Number of indicators	Ave	Square root of AVE
V3	PA	0.817	0.667489	2.003646	3	0.667882	0.817240479
V2	PA	0.779	0.606841				
V1	PA	0.854	0.729316				
V6	PM	0.666	0.443556	2.056814	3	0.68560467	0.82801248
V5	PM	0.913	0.833569				
V4	PM	0.883	0.779689				
V9	DA	0.871	0.758641	2.18919	3	0.72973	0.854242354
V8	DA	0.905	0.819025				
V7	DA	0.782	0.611524				
V24	SQ	0.814	0.662596	2.24327	3	0.74775667	0.864729245
V23	SQ	0.893	0.797449				
V22	SQ	0.885	0.783225				

The researchers examined the confirmatory factor analysis (CFA) was done to establish reliability and validity of the components of the service delivery dimension after each construct's validity using the regression model. Figure 8 mentions the CFA model of service delivery dimension.

Figure 8 CFA model-service delivery dimension (see online version for colours)
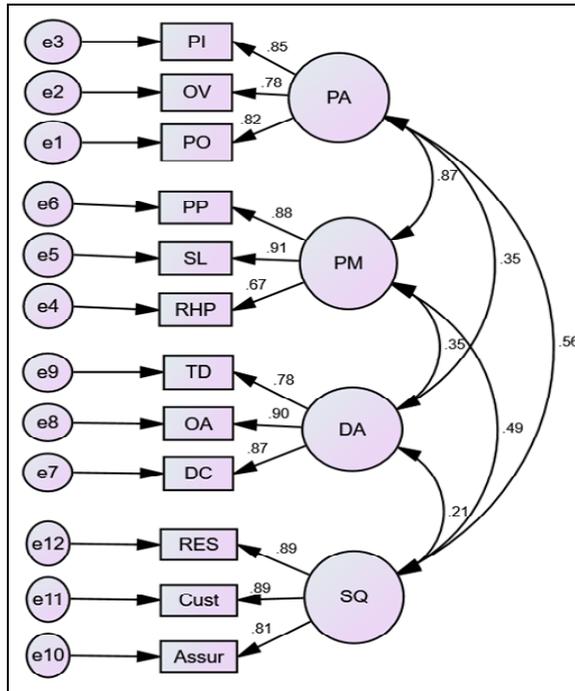
7 Calculation of convergent and discriminant validity

The association between two measurements that measure the same idea is referred to as convergent validity. CFA, which confirms that construct factor loading is larger than 0.50, can be used to evaluate this form of validity (Hair et al., 2006). Convergent validity is defined as CR > 0.7, AVE > 0.5, and CR > AVE (Nunnally, 1970), whereas discriminant validity is defined as how much a measure varies from other measures that do not examine the same construct.

7.1 Discriminant validity

The standardised loadings, AVE, and square root of AVE were computed, and it was discovered that the values of both were more than the square of the standardised loadings and greater than 0.5 in all cases. As a result, it can be concluded that the constructs have convergent validity.

The values of CR, AVE, and MSV have been calculated in Table 16, and it has been noted that the values are above 0.70 for CR, greater than 0.50 for AVE, and greater than

AVE in all situations, establishing the construct validity of the model. Also, the discriminant validity is demonstrated because the value of AVE is always bigger than MSV.

Table 16   Calculation of CR, MSV and AVE for service delivery dimension (using Gaskin's formula)

	CR	AVE	MSV	MaxR(H)	PA	DA	PM	SQ
PA	0.858	0.668	0.664	0.862	*0.817*			
DA	0.890	0.730	0.122	0.902	0.349	*0.854*		
PM	0.865	0.686	0.664	0.903	0.814	0.347	*0.828*	
SQ	0.899	0.748	0.309	0.905	0.556	0.212	0.491	*0.865*

Source: The authors (calculated by using SPSS Software)

Table 17   Model fit indices components of service delivery dimension

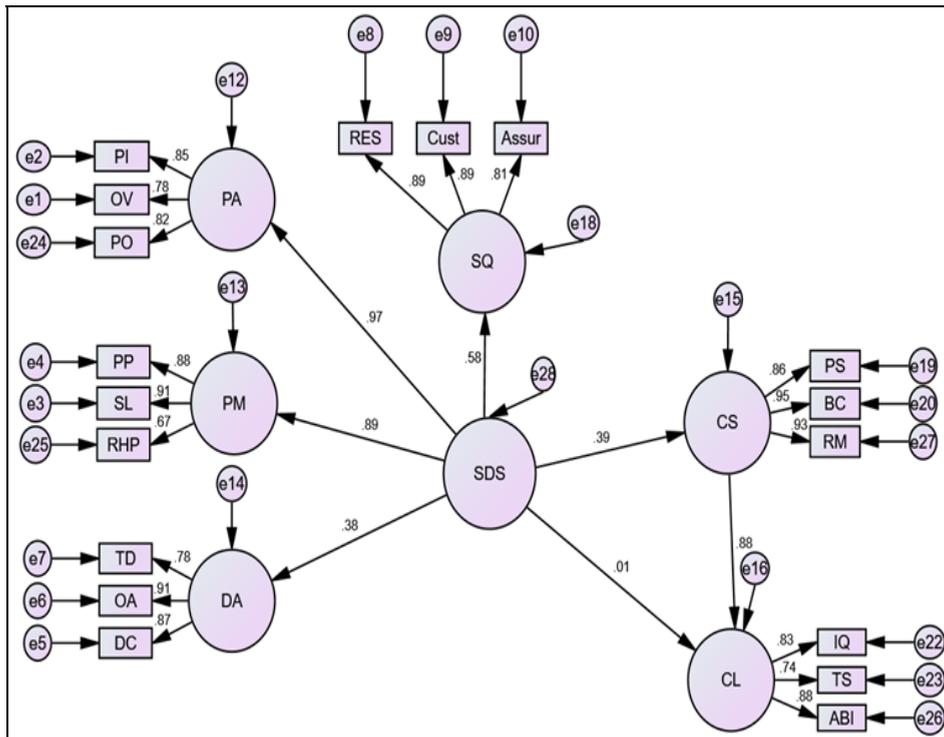| Fit measure	Good fit		Excellent fit		Goodness fit Indices (measurement model)	Remarks
χ^2/df (CMIN/df)	$0 \leq \chi^2/df \leq$		$2 < \chi^2/df \leq 3$		1.523	Excellent fit
RMSEA	$0 \leq$ RMSEA ≤ 0.05		$0.05 <$ RMSEA ≤ 0.08		0.063	Excellent fit
P value for test of close fit (RMSEA < 0.05)	$0.10 < p \leq 1.00$ (RMSEA < 0.05)		$0.05 \leq p \leq 0.10$ (RMSEA < 0.05)		0.021	Good fit
NFI	0.95	$\leq$ NFI ≤ 1.00	0.90	$\leq$ NFI < 0.95	0.967	Excellent fit
CFI	0.97	$\leq$ CFI ≤ 1.00	0.90	$\leq$ CFI < 0.95	0.988	Excellent fit
GFI	0.95	$\leq$ GFI ≤ 1.00	0.90	$\leq$ GFI < 0.95	0.957	Excellent fit
AGFI	0.95	$\leq$ AGFI ≤ 1.00	0.90	$\leq$ AGFI < 0.95	0.935	Excellent fit

Source: The authors (calculated by using AMOS softwares)

Table 17 was observed that the result of CFA model was excellent (χ^2/df or CMIN/df = 1.523, GFI = 0.988, AGFI = 0.935, CFI = 0.957, NFI = 0.967 and RMSEA = 0.063), Figure 3 assures the model fit of Service Delivery dimension its statistical significance.

7.2   *Overall result of proposed conceptual framework model*

With the help of AMOS software, the overall conceptual framework model shown in Table 18 was created to examine the relationship between customer happiness and loyalty in the e-commerce industry. Furthermore, strong beneficial associations can be found not only in the service delivery dimension quality, but also in the direct impact and significant relationship to customer satisfaction and loyalty.

Figure 9   Final output of proposed conceptual model (see online version for colours)

Source: The authors (developed by using SPSS and AMOS Software)

Table 18   Final result of conceptual model of service delivery dimension

Fit measure	Good fit		Excellent fit		Goodness fit Indices (measurement model)	Remarks
χ^2/df (CMIN/df)	$0 \leq \chi^2$/df ≤ 2		$2 < \chi^2$/df ≤ 3		1.694	Excellent fit
RMSEA	$0 \leq$ RMSEA ≤ 0.05		$0.05 <$ RMSEA ≤ 0.08		0.062	Excellent fit
P value for test of close fit (RMSEA < 0.05)	$0.10 < p \leq 1.00$ (RMSEA < 0.05)		$0.05 \leq p \leq 0.10$ (RMSEA < 0.05)		0.039	Good fit
NFI	0.95	$\leq$ NFI ≤ 1.00	0.90	$\leq$ NFI < 0.95	0.943	Excellent fit
CFI	0.97	$\leq$ CFI ≤ 1.00	0.90	$\leq$ CFI < 0.95	0.976	Excellent fit
GFI	0.95	$\leq$ GFI ≤ 1.00	0.90	$\leq$ GFI < 0.95	0.922	Excellent fit
AGFI	0.95	$\leq$ AGFI ≤ 1.00	0.90	$\leq$ AGFI < 0.95	0.895	Good fit

Table 19   Regression weights

Items	Construct	Estimate	S.E.	C.R.	P
CS	SDS	0.361	0.063	5.755	***
CL	CS	0.842	0.060	14.098	***
CL	*SDS*	*0.005*	*0.040*	*0.137*	*0.891*
PA	SDS	1.000			
PM	SDS	1.158	0.102	11.306	***
DA	SDS	0.393	0.072	5.451	***
SQ	SDS	0.615	0.075	8.230	***
V2	PA	1.000			
V1	PA	1.111	0.074	14.930	***
V5	PM	1.000			
V4	PM	0.968	0.047	20.471	***
V9	DA	1.000			
V8	DA	1.248	0.070	17.933	***
V7	DA	1.037	0.067	15.387	***
V22	SQ	1.000			
V23	SQ	1.164	0.061	19.094	***
V24	SQ	1.074	0.064	16.872	***
V14	CS	1.000			
V16	CS	1.095	0.047	23.203	***
V18	CL	1.000			
V19	CL	0.858	0.063	13.632	***
V3	PA	1.067	0.075	14.188	***
V6	PM	0.692	0.054	12.846	***
V17	CL	1.052	0.062	17.078	***
V15	CS	1.095	0.050	22.037	***

The findings of the analysis suggest that the goodness of model fit is summarised in Table 17. Cronbach's alpha coefficient of dependability was determined to be 0.909 in this study (Table 7), which meets the acceptable standard of 0.7 (Nunnally, 1978). Table 18 shows the quality of fit statistics. The following are the model's reliability statistics: (χ^2/d for CMIN/df = 1.694, p-value for test of close = 0.000, GFI = 0.976, AGFI = 0.895, CFI = 0.976, NFI = 0.943 and RMSEA = 0.062, GFI = 0.976, AGFI = 0.895, CFI = 0.976, NFI = 0.943, and RMSEA = 0.062). As a result, the model demonstrates overall acceptable fit.

Now the regression weights presented in Table 19 which indicates that under various constructs like product attributes, performance measurement, deliverable attributes, and SQ are statistically significant but indirectly. Service delivery dimensions are insignificant to customer loyalty and the value is 0.891 which is more than the significant level of 0.05 at 95% of confidence level. Customer retention and satisfaction depend heavily on delivery time. Client loyalty, however, cannot be gained just on the basis of

delivery time unless the client is happy. As a result, the scope and caliber of service provision have a significant impact on customer satisfaction, which breeds customer loyalty. The neglect of the logistics services and their position in this business is to blame for any failure or difficulty. The delivery of products and services to clients depends on logistics services. Many e-commerce companies outsource their logistical functions in favour of concentrating on providing their consumers with high-quality goods and services. They also continue to be dedicated to the advancement of electronic payment methods.

7.3 Discussion of the study

The results of this study resonate with established research on e-commerce logistics and customer satisfaction. For instance, the importance of secure digital payment systems aligns with Bhattacharjee et al. (2021), who stressed the role of payment security in fostering trust. Similarly, the significance of a seamless return process is consistent with findings by Ferreira et al. (2023), underscoring the need for clear and customer-friendly return mechanisms.

However, this study diverges from prior research by presenting a nuanced understanding of the interplay between service delivery dimensions and customer loyalty. Unlike studies that emphasise standalone factors such as delivery speed (Ramírez et al., 2021), this research argues that an integrated approach-encompassing responsiveness, customisation, and assurance-is necessary for achieving sustained customer loyalty. Moreover, it introduces a unique perspective by linking SQ with behavioural intentions.

This study's uniqueness lies in its holistic examination of logistics service dimensions in the e-commerce context, particularly in emerging economies. While previous research has often focused on individual dimensions of SQ, this study adopts a comprehensive framework that integrates product attributes, performance metrics, and SQ dimensions to analyse their collective impact on customer satisfaction and loyalty. Furthermore, the study uniquely emphasises the indirect role of delivery timing in customer loyalty, challenging traditional views that prioritise speed as the primary determinant. Instead, it argues that satisfaction-derived from a combination of factors is the key driver of loyalty. Additionally, the inclusion of diverse age groups and the use of recent data on e-shoppers' behaviours further enhance the study's relevance and applicability.

7.4 Implications of the study

The study presents significant implications for managers, practitioners, and researchers in the e-commerce sector. For *managers*, the findings highlight the need to invest in advanced logistics technologies, such as real-time tracking and predictive analytics, to improve service transparency, reliability, and responsiveness. Managers should also focus on customer-centric policies, including efficient return mechanisms and grievance redress systems, to enhance satisfaction and retention. *Practitioners* are encouraged to integrate AI and machine learning for personalised logistics solutions and collaborate with logistics providers to streamline delivery processes while maintaining high service standards. For *researchers*, the study opens avenues for exploring logistics SQ in niche areas such as cross-border e-commerce or industry-specific contexts. Future research could also examine cultural variations in customer expectations and conduct longitudinal

studies to assess the long-term impact of logistics service dimensions on loyalty and business performance. Together, these implications offer a strategic framework for improving logistics operations, fostering customer satisfaction, and sustaining competitive advantage.

7.5   Conclusions

This study investigates the influence of logistics service delivery dimensions on customer satisfaction and loyalty within the fast-growing e-commerce sector. The analysis reveals that *product attributes, performance measurement, and deliverable attributes* are critical components in shaping customer perceptions of logistics SQ. Customers assess these factors when deciding whether an e-commerce platform meets their expectations.

A key finding of the study is that e-commerce firms can improve customer satisfaction by focusing on the service delivery dimensions of *responsiveness, customisation, and assurance*. Responsiveness refers to how quickly companies address customer needs, customisation speaks to tailoring services to individual preferences, and assurance involves providing customers with a sense of security and trust during transactions. When companies excel in these areas, they build a strong foundation for improving SQ, which subsequently drives higher customer satisfaction levels. Moreover, the research highlights the vital role of *effective communication, digital payment security, and robust return mechanisms* in fostering customer loyalty. In an era of increasing online transactions, providing customers with secure payment options and clear communication regarding delivery status, order tracking, and potential issues ensures a seamless shopping experience. The ease and reliability of returning products also enhance loyalty, as customers are more likely to return to platforms that offer smooth return policies.

As e-commerce continues to grow, logistics SQ will remain a pivotal factor in meeting and exceeding customer expectations. Companies that prioritise and optimise these dimensions are more likely to secure long-term customer loyalty, translating into sustainable success in the highly competitive e-commerce industry.

7.6   Limitations of the study

This study, while offering valuable insights into the influence of logistics service delivery dimensions on customer satisfaction and loyalty in e-commerce, has certain limitations. The findings are based on a specific geographical region, which may limit their generalisability to other areas with different cultural and infrastructural contexts. The cross-sectional design captures data at a single point in time, making it difficult to understand evolving trends. Additionally, the sample size, though meaningful, could be expanded for broader applicability. The study focuses exclusively on e-commerce logistics, excluding other sectors and external factors like economic changes or technological advancements that may impact results. Furthermore, the reliance on self-reported survey data introduces potential bias, and the exclusion of dimensions such as environmental sustainability or ethical practices suggests areas for future exploration. Recognising these limitations provides a foundation for more comprehensive research in the field.

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