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Article

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Marketing logistics and consumer behaviour: an empirical study on Indian e-shoppers

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ABSTRACT

The unprecedented growth in e-commerce has brought forward a new paradigm in consumer behaviour and the strategic approach businesses take in reaching and retaining customers. The influence of marketing logistics (ML) on e-shoppers' behaviour represents a critical facet of this shift. It bridges the gap between customer demand, consumer satisfaction and shapes e-shoppers' behaviour. Recognising the role and potential of ML can enable e-retailers to effectively plan their operations towards customer satisfaction. The current study aims to examine the causal association between selected ML dimensions and customer satisfaction (CS). Additionally, it also examines the relationship between CS and the post-purchase behaviour of online shoppers. Data were randomly collected from 515 e-shoppers through a structured e-questionnaire and were analyzed using robust PLS-SEM and ANN techniques. The study revealed that except for product availability, all other ML dimensions such as product quality, tracking facility, and delivery speed significantly influence customer satisfaction. Subsequently, it also revealed that online marketers can significantly enhance customer loyalty, re-purchase intentions, and word-of-mouth by boosting customer satisfaction. This study highlights how e-retailers can strategically align their ML ecosystems to bring efficiency and reliability to the end-to-end shopping experience. Additionally, it has the potential to drive the advancement of e-commerce in India.

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1. Introduction

In India, e-commerce has witnessed exponential growth with propelled economic growth, favourable market conditions, enhanced digital ad spending, the deluge of social media, and changes in consumer buying patterns (Tandon, 2021). The pandemic has significantly widened the adoption of online shopping (Mishra et al., 2022; Polas et al., 2022; Song et al., 2022). Despite the continued functioning of offline stores and a drop in COVID cases, the long-lasting effects of the pandemic have led to an increase in online shopping, with the average transaction value increasing by 2.5% YoY in 2021–22. The shift in consumer buying behaviour and acceptance of e-commerce has led to firms adopting digital transformation, with traditional offline retailers realizing the need for a robust online presence.

As per the recent report of the Ministry of Commerce and Industry, India has the third largest online shoppers base in the world (only behind China, and the USA) and is predicted to surpass the USA to become the second-largest e-commerce market by 2034. In the last three years, nearly 130 million shoppers have been added and this is expected to increase to 350 million by 2025–26, with an improvement in the standard of living of over 1.4 billion Indian people. Further, research by Bain and Company predicts India to be a 120–140 billion USD industry by 2025–26, growing at a rate of 25–30%

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per year over the next three years. The average order size in 2021–22 increased by 69.4% YoY, compared to 44.9% in 2020–21 (India Retail and E-Commerce Trends Report 2022, Wazir Advisor and Unicommerce).

This growth in online businesses has led to a significant shift in customer and marketer relationships. Online shopping enables spontaneous information flow, capital flow, and customized commerce flows. As a result, there has been a trend towards ever-higher demand standards for customer service. Meidutė-Kavaliauskienė et al. (2014) stated that the best way to serve the customer is the way the customer wants to be served. However, it toughens competition among e-retailers because it is no longer sufficient to have attractive products, competitively priced, and elegantly advertised. Modern marketers are expected to provide time, products, places, and possession utilities simultaneously to satisfy and build better customer relations (Chandra & Jain, 2014). Businesses can achieve their marketing goals of meeting customers' needs, creating value, and retaining customers by utilizing efficient marketing logistics (Kotler & Keller, 2016). Marketing Logistics (ML) is defined as 'the planning, implementing, and controlling of the physical flow of goods, services, and related information from points of origin to points of consumption to meet consumer requirements at a profit' (Kotler & Keller, 2016). To maintain a competitive edge, it is more crucial than ever to deliver quality in ML to satisfy customer expectations (Uvet, 2020). This ensures that products are delivered to the appropriate place, at the appropriate time, in the appropriate quantity (and condition), and at the appropriate cost (Barcik & Jakubiec, 2013; Chandra & Jain, 2009; Kawa & Światowiec-Szczepańska, 2021).

Consumer behaviour (CB) is the most studied and complex branch of marketing (Dias et al., 2022; Koronios et al., 2020; William et al., 2009). According to Kotler and Keller (2016), CB is 'the study of how individuals, groups and organizations select, buy, use and dispose of goods, services, ideas or experiences to satisfy their needs and wants'. However, the present study is concentrated on the long-term future behaviour of e-shoppers by utilising four key components of CB, i.e. CS, RPI, CL and WoM based on stimuli-organism-response (S-O-R) theory. (Al-adwan et al., 2022; Hafez et al., 2021) suggests CS forms the base for developing long-term consumer behaviour. A satisfied customer is expected to build positive relations with the retailers and establish long-term post-purchase behaviour i.e. (loyalty, re-purchase, word of mouth) (Caruana et al., 2016; Dias et al., 2022; Erciş et al., 2013; Jiang et al., 2013; Kharbanda & Singh, 2022; Pham et al., 2020; Rahman et al., 2018; Tripathi et al., 2023).

Furthermore, ML, as a crucial supporting platform not only provides a chance for network businesses to directly contact consumers but also has a great impact on CS and consumption psychology (Hua & Jing, 2015). Also, it is evident from prior studies (Dias et al., 2022; Tripathi et al., 2023) on ML that CS plays a significant role in influencing customers' choices regarding their future involvement in online shopping (Tandon, 2021) and shaping future behaviour, such as re-purchase, loyalty (Erciş et al., 2013; Pereira et al., 2016). Correspondingly, developing countries (like India) differ from developed countries in terms of ethno-socio-economic, infrastructural and regulatory aspects (Khare et al., 2020; Omar et al., 2011; Riley & Klein, 2019; Tandon & Kiran, 2019).

Therefore, the current study seeks to understand the influence of ML (stimuli) on e-shoppers' behaviour, i.e. CS (organism) and its behavioural outcomes/responses (i.e. re-purchase intention, word of mouth and loyalty) in the Indian e-commerce sector. Although theory is not sufficient for addressing such a relationship directly, it provides a framework to investigate the above-mentioned constructs. Thus, the present study has endeavoured to address the following broad research questions (RQs):

RQ1: How do ML factors (delivery speed, product condition, tracking facility, and availability) influence customer satisfaction in online shopping in India?

RQ2: How does customer satisfaction, derived from customer experience of ML factors, impact the re-purchase intention of e-shoppers in India?

RQ3: How does customer satisfaction, derived from customer experience of ML factors, impact the word of mouth of e-shoppers in India?

RQ4: How does customer satisfaction, derived from customer experience of ML factors, impact the customer loyalty of e-shoppers in India?

Considering the above, this study aims to achieve the following objectives.

1. To examine the impact of marketing logistic factors on e-shoppers' satisfaction in India.
2. To assess the causative association between customer satisfaction and the re-purchase intention of e-shoppers in India.
3. To investigate the cause-and-effect relationship between customer satisfaction and loyalty of e-shoppers in India.
4. To check the causal relationship between customer satisfaction and word of mouth in India.

The sequence of this paper is organized as follows. [Section 2](#) follows the introduction section, which covers a review of the existing literature, research gaps, and hypotheses development. [Section 3](#) explains the research method, data analysis, assessment of the measurement model, and predictive power of the model. [Section 4](#) discusses and interprets the results of the study. Finally, [Section 5](#) presents the implications, future research scope, and conclusion.

2. Review of literature

Marketing services and logistics were formerly seen as distinct divisions within the broader field of marketing management. Nevertheless, a definitive differentiation between them was not evident (Drobiazgiewicz, 2018). The MSK model, developed by Mentzer, Gomes, and Krapfel, offers a comprehensive perspective for differentiating between these branches. The logistical aspects studied were availability, timeliness, and delivery quality. The marketing service dimensions recommended were price, product quality, sales assistance, and warranty. Later, these dimensions were strategically integrated to measure their combined influence on the delivery of customer service (Mentzer et al., 1989).

Emerson and Grimm (1996) expanded the MGK model by adding communication as an additional dimension of logistics to broaden the understanding. Subsequently, other prominent dimensions such as reverse logistics, sales responsiveness, and green packaging were added to enrich the literature (Autry et al., 2001; Bag & Gupta, 2020; do Paço & Raposo, 2009; Harris & Martin, 2014; Lamba et al., 2020; Lambert et al., 2011; Lee & Lin, 2005; Orzan et al., 2018; Ramseook, 2012; Ribbink et al., 2004; Smith, 2005; Tripathi et al., 2023).

The advent of the online market presents significant prospects for business growth in the future specifically in emerging economies like India. To enhance the efficiency of e-commerce operations, a novel approach is proposed that combines marketing and logistics activities. These two components are mutually reinforcing, as marketing serves to stimulate demand for goods or services, while logistic activities facilitate their effective distribution (Ghoumrassi et al., 2017). The primary objective of this integration is to attain enduring CS (a crucial component of CB), thereby facilitating the generation of sustained profits (Christopher & Peck, 2012; Drobiazgiewicz, 2018). Effective ML enables businesses to reach geographically dispersed customers, opening doors to new markets and fostering business growth. It helps to gain a competitive advantage and improve marketing objectives. This expands shopping options for consumers (Ghoumrassi et al., 2017). Customers expect fast and reliable deliveries, and businesses that excel in this area gain a significant advantage (Mustofa et al., 2022).

ML has become increasingly complex and challenging, requiring e-marketers to adapt constantly to dynamic business conditions and technological advancements (Al-Ababneh et al., 2023; Cao et al., 2018; Jain et al., 2017; Kawa & Światowiec-Szczepańska, 2021; Smith, 2005). It is also important for achieving organizational marketing objectives and related to CS as it directly affects the consumers' experience. When companies deliver the right product in the right condition to the right customer at the right time and place, it can enhance CS and build a base for positive post-purchase behaviour (Cao et al., 2018; Gounaris et al., 2010; Jiang et al., 2013; Otim & Grover, 2006; Rahi et al., 2021; Tripathi et al., 2023).

2.1. Research gap

2.1.1. Knowledge gap

Studies are abundant on the diverse dimensions of CS (a vital CB element) in the context of online shopping. However, studies that directly link ML and e-shoppers' satisfaction are very limited. Prior

studies on ML have mostly concentrated on delivery charges, reviews, buyers' attitudes, facility layouts, purchasing flexibility, shopping orientation, retailer reputation, and return window (Hu et al., 2016; Querin & Göbl, 2017; Riley & Klein, 2019; Zhang et al., 2005). ML components, such as product availability, tracking facilities, delivery speed, and product conditions, have received less attention. Furthermore, hardly any study has been conducted to associate ML, CS, and post-purchase behaviour including re-purchase intention, customer loyalty, and word of mouth. Thus, this study addresses the knowledge gap by exploring underscored ML variables' effects on CS and post-purchase behaviour.

2.1.2. Geographical gap

Most of the prior studies on ML and CS are conducted and validated in developed nations having substantial online customer (shopper) bases and better logistic ecosystems (Yu et al., 2016). Nevertheless, the last two decades have witnessed tremendous growth in the number of online shoppers in developing countries including India (Tandon, 2021; Tandon & Kiran, 2019). The geographically scattered e-shopper base poses distinct obstacles for online marketers, unlike developed countries. Surprisingly, no relevant reported study was found on ML to validate the existing models prevalent in developed countries. So, it becomes crucial to critically examine the empirical validity of the existing models of the developed world for developing countries (concentration on India) having diverse cultural landscapes.

2.1.3. Methodological gap

Studies on ML are often used regression analysis. Seldom studies have used Partial Least Square Structure Equation Modelling (PLS-SEM) method for data analysis (Uvet, 2020). However, none of the studies used PLS-SEM along with Artificial Neural Networks (ANNs) to determine the relative importance of each independent factor. The current study overcomes this methodological gap by employing a robust PLS-SEM and ANN analysis to ascertain the weightage of each ML on CS.

2.2. Theoretical framework

2.2.1. Stimuli-Organism-Response (S-O-R) theory

The Stimulus-Organism-Response (S-O-R) theory is a psychological framework that explains how individuals process information from their environment and translate it into behaviour. It focuses on three key components: stimuli, organism, and response. The S-O-R theory is widely used in behavioural research to explain complex consumer behaviour, including ML and CS (Hu et al., 2016; Phang et al., 2009; Wu & Li, 2018; Yan et al., 2018; Zhang et al., 2014). The present study has used the S-O-R model because it emphasizes the intervening organismic factors, recognizing that behaviour is not passively reacted to but is mediated by internal processes. The model is dynamic and expandable, allowing for better reflection of complex behavioural experiences. It helps pinpoint specific aspects of marketing that can be targeted for improvement based on their influence on CS. The study is structured around the e-shoppers' buying perspective, providing a clear, linear framework for understanding the cause-and-effect relationships between stimuli (Marketing Logistics), organism (Customer Satisfaction), and response (Re-purchase intention, customer loyalty and Word-of-mouth) (Figure 1). This simplifies the research questions and makes the analysis straightforward. Empirical validation of these relationships through data analysis will provide valuable insights for businesses to enhance their operations and foster stronger customer relationships.

2.3. Hypotheses development

2.3.1. Delivery speed and E-shopper satisfaction

With rapid digitalization, Internet penetration, and an intense race for dominance among e-shoppers, the business environment has drastically changed in the last 15 years. Customers in geographically dispersed, established, and emerging markets now demand better services at lower costs in a shorter time. Online shopping allows consumers to remain conveniently at their homes while products are delivered by retailers. Delivery speed (DS) has emerged as the key delivery service that adds value to the scale and scope

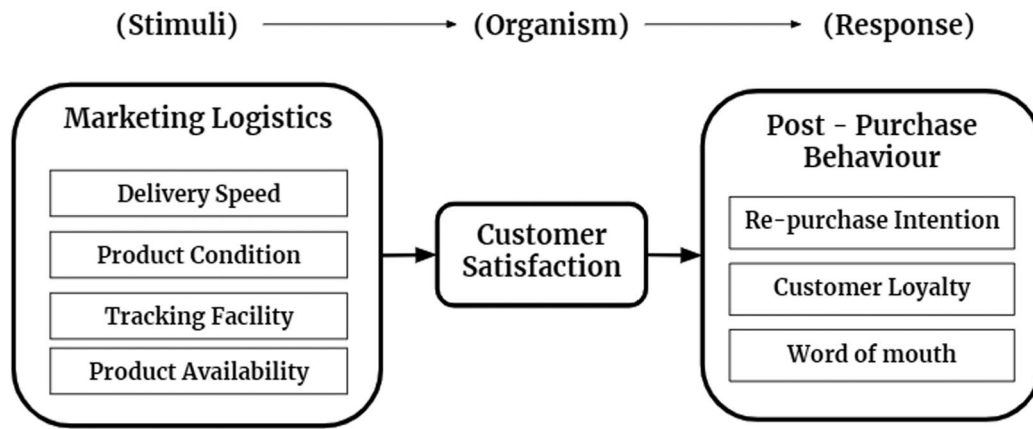


Figure 1. Conceptual framework.

of operation within the marketing logistics (Xing et al., 2010). Subsequently, marketers are forced to recalibrate their ML to realign dynamic market demand (Stock et al., 1999).

In this purview of ML, delivery speed (DS) is defined as the amount of time between placing an order and delivering it to the customer's desired location (Riley & Klein, 2019). It is considered the primary service that adds value to the scale and scope of operations within the e-commerce business mode.

As customers become increasingly impatient, they anticipate a specified delivery target time for their orders. They prefer those e-shopping platforms that provide faster delivery services (Merkert et al., 2022). Research conducted by (Riquelme et al., 2016; Zhang et al., 2005) found that delivery speed positively influences consumer satisfaction, re-purchase intention, and word-of-mouth communication. The outcome of this study signifies that consumers perceive fast delivery as an indication of the e-commerce retailer's reliability and competence. Nevertheless, it should be kept in mind that speedy delivery involves cost and affects the profit margins of the marketers (Cherrett et al., 2017). Xing et al. (2011) suggested that e-retailers can charge additional delivery charges to customers willing to provide quick and specified time and place delivery.

It is worth noting that DS is an important key to logistic services because it increases agility in product supply, which eventually results in CS and impacts consumers' re-purchase intention (Fernandes et al., 2018). Chan et al. (2018) further emphasized that on-time delivery significantly affects consumer buying behaviour. According to Liu et al. (2017), fast delivery increases customer loyalty. When a customer receives an order quickly, they are more likely to become loyal to the brand. On the contrary, if deliveries are delayed (from the promised delivery time), it may cause consumer anxiety and lead to customer dissatisfaction. DS also positively influenced customers' online purchase intentions. When a company provides fast delivery, it can enhance its loyalty to the brand and increase the likelihood of repeat purchases (Liu et al., 2017). Therefore, it is crucial to ensure that the right product is safely delivered to the customer's location without postponement (Rajendran et al., 2018). A study by (Perera et al., 2020; Riley & Klein, 2019; van Doorn et al., 2017) found that faster delivery speed also influences word of mouth. When customers receive orders quickly, they are more likely to share their positive experiences with others, leading to positive word of mouth. Because of the wide-ranging potential of DS to influence customers' buying attitudes and intentions, previous studies have considered DS as a highly valued factor in customers.

Thus, the following hypothesis is proposed:

H1: Delivery speed positively influences e-shoppers' satisfaction.

2.3.2. Product condition and E-shopper satisfaction

E-commerce has made shopping more pragmatic since it not only saves time and cost but also enables e-shoppers to compare products across different retailers. However, many factors influence consumers' purchasing behaviour (Revindran et al., 2020).

In any part of the world, consumers are authentically concerned about the product condition/quality they purchase. It is a substantial measure of perceived performance towards approaching CS, specifically in online shopping (Rajendran et al., 2018). As e-shoppers can only interact with a product symbolically when shopping, they often make buying decisions based on the perceived performance of the product (Boyer, 2005), therefore, successful fulfillment of the order is considered a crucial attribute influencing it.

Ahn et al. (2004) defined Product condition (PC) is defined as the actual functionality of the product, consistency between the quality specification of the Internet shopping mall and the real quality of the physical product. This is the form and composition of the delivered order. It broadly incorporates order accuracy, product quality, and completeness. Any compromise on the product condition can result in increased returns; therefore, product conditions are important in e-commerce to help maintain CS and loyalty and reduce the risk and cost of replacing faulty goods (Guo et al., 2012; Handoko, 2016; Ziaullah et al., 2014).

On the other hand, effective product conditions raise product patronage, enhance logistics service quality (LSQ), and eventually result in favourable consumer behaviour (Kaswengi & Lambey-Checchin, 2020). Hafez et al. (2021) further pointed out that PC has a two-fold significant impact on customers. First, it improves CS and encourages customer loyalty. Similarly, a study by Gounaris et al. (2010) found that product quality has a significant impact on customer loyalty. When a customer is satisfied with a product's quality, they are more likely to become loyal to the brand. As a result, it is advised that logistics service providers should use packaging materials that can withstand at least two delivery trips (Xing et al., 2011).

Product conditions also affect post-purchase behaviour. According to Khan and Rahman (2017) customers are more likely to purchase products in good condition. In a study (S. Kim & Park, 2013), they found that product quality has a significant impact on customers' purchase intentions. Similarly (Varki & Wong, 2003), found that customers are willing to pay more for products in good condition.

Moreover, product conditions can significantly impact word-of-mouth. Hennig-Thurau et al. (2004) found that product quality positively influences word-of-mouth. When a customer is satisfied with a product's quality, they are more likely to recommend it to others. Similarly, Nyer and Gopinath (2005) found that product conditions influence word-of-mouth. When a product's condition is poor, customers are more likely to share negative feedback. Therefore, companies should prioritize maintaining high product quality to increase buying behaviour. Thus, we propose the following hypothesis:

H2: Product condition positively influences e-shoppers' satisfaction.

2.3.3. Tracking facility and E-shoppers satisfaction

The rapid development of e-commerce has brought about many changes in consumer behaviour, including purchasing patterns, decision-making processes, and product evaluation. A product tracking facility is one of the most important features of e-commerce that provides information to online shoppers about the location, status, and estimated delivery time of their ordered products.

Chen and Lin (2005) define a tracking facility as the capability to trace and follow product shipment. It involves providing an online service in which customers can track the status of their ordered products (Otim & Grover, 2006).

Riley and Klein (2019) examined the influence of tracking facilities on online purchasers' attitudes and intentions. As e-shoppers do not have physical access to products purchased online, tracking facilities provide them with a sense of relief and anticipation. It further revealed that e-shoppers who do not provide tracking facilities to shoppers often experience increasing consumer anxiety.

Another study by Cao et al. (2018) examined the impact of product tracking facilities on online shoppers' satisfaction. The study found that the availability of product-tracking facilities increases the perceived usefulness and satisfaction of online shoppers in e-commerce. The study also revealed that online shoppers who use product-tracking facilities are more likely to make repeat purchases from the same e-commerce website.

These facilities reduce the potential risks associated with online shopping (Otim & Grover, 2006) and add positive value to online attitudes that influence subsequent behaviour. As online tracking facilities play a vital role in post-purchase decisions (CS, buying intention, and referral), e-retailers with difficulty

in designing such facilities can use software programs or third-party logistics service providers (Cao et al., 2018). This can save e-retailers from spending large financial resources to establish their own (Xing et al., 2011). Online tracking is far better than traditional hotline services, where customers have to inquire about order status (Otim & Grover, 2006). Rajendran et al. (2018) discussed advancements in tracking technology, where IoT can play an important role (Ahmad et al., 2020).

However, not all studies have found a positive impact of product-tracking facilities on online shoppers' behaviour. For instance, a study found that product tracking facilities did not significantly influence online shoppers' satisfaction or trust in e-commerce websites. The study suggested that other factors, such as website design and product quality, might have a greater impact on online shoppers' behaviour (Riquelme et al., 2016).

Considering the inconsistent findings, the following hypothesis is proposed:

H3: Tracking facility positively influences e-shoppers' satisfaction.

2.3.4. Product availability and E-shopper satisfaction

Product availability (AVB) refers to the marketer's ability to readily source inventory ordered by customers (Maltz & Maltz, 1998). It is the key component of e-PDSQ (Physical Distribution Service Quality). PD is the minimum service assumption that customers expect (Murfield et al., 2017) and the second most important aspect, after price, that pushes customers to shop online (Aichner & Coletti, 2013). As AVB is considered the central force in triggering sales (Hausman & Siekpe, 2009), marketers have expended significant effort and financial resources to keep products continuously available (Conlon & Mortimer, 2013). It is further advocated that if a product is not available, marketers should provide effective alternatives to convince the consumer (Boyer, 2005).

Jain et al. (2017) described that as e-shoppers cannot access the product physically, it is imperative to ensure product availability at fulfillment centres. It is advised that e-retailers provide accurate AVB information to customers (Heim & Sinha, 2001). Any mismatch or shortage of product availability information at fulfillment centres may lead to delayed shipments and consumer anxiety. In contrast, round-the-clock AVB can develop, sustain, and improve customer buying behaviour. Customers tend to visit online shopping platforms where AVB is high. This directly indicates that AVB influences customers' online buying experience, that is, trust, CS, and loyalty (Handoko, 2016; Ziaullah et al., 2014).

Empirical studies have consistently found that product availability has a significant impact on CS. Customers who can find the products they want are more likely to be satisfied with and exhibit favourable behaviours, such as repeat purchases, positive word-of-mouth, and increased loyalty to the brand. Additionally, customers who experience product unavailability are more likely to exhibit negative behaviours such as switching to a competitor, complaining to the firm, or reducing future purchase intentions.

Interestingly, studies have observed that a lack of product availability (referred to as AVB manipulation) also triggers customer buying intention if perceived positively (Steinhart et al., 2013; Amaldoss & Jain, 2005). If product unavailability is described because of huge demand, product scarcity, or limited editions, the perceived relevance of the product increases and motivates customers to make buying decisions.

Jain et al. (2017) conducted a systematic literature review and suggested that AVB is directly linked to CS and the re-purchase intention of e-shoppers. Revindran et al. (2020) confirmed that AVB had the highest correlation with online CS. Thus, we propose the following hypothesis:

H4: Product availability positively influences e-shoppers' satisfaction.

2.3.5. Consumer behaviour (Customer satisfaction, loyalty, re-purchase intention, and word of mouth)

As CB is the most studied, complex and vast branch of marketing (Dias et al., 2022; William et al., 2009), it is almost impossible to include everything in a single study. So, the scope of CB in the present study is directed at CS, loyalty, re-purchase intention, and word of mouth.

Kotler and Keller (2016) defined 'CS as a consequence of the customer's experience during various purchasing stages'. It is measured as the association among consumption, anticipation, and experience,

and it is accomplished when the final deliverable (i.e. experience) is as per their expectations. In e-commerce, CS represents the accumulative impression of an e-retailer's performance (Chang & Chen, 2009).

The concepts of CS in online and offline shopping environments are significantly different. It is generally assumed that online shopping platforms provide relatively more information about the product in comparison to offline stores. This additional information allows customers to improve the selection of products at lower prices and helps deliver a higher CS than offline (Shankar et al., 2003). CS is the most emphasized element in marketing that plays a decisive role in market dynamics (Zaid & Patwayati, 2021).

CS and loyalty are closely and positively related to marketers' profitability and market share (Al-Adwan et al., 2020; Anderson & Revelle, 1994; Jain et al., 2015). Studies (Al-Adwan et al., 2020; Kim & Park, 2013; Zins, 2001) also found that the more satisfied a customer is, the greater their loyalty and word of mouth (WOM). Here, word of mouth refers to informal communication between parties concerning the evaluation of goods and services. These can be positive, neutral, or negative. Consumers are influenced significantly by WOM because they believe peer consumers more than vendors and marketers. Satisfied consumers are more likely to intend to provide a positive WOM (Jones et al., 2019). Though very challenging, businesses are often pressured to understand customer value anticipation. It directly help marketers define, design, and develop appropriate products for targeted customers. The literature strongly suggests that anticipation of customer value is critical for firm success. It is a rule of thumb that acquiring new customers costs more than retaining current customers. The connection between CS, customer loyalty, word of mouth, and re-purchase intention is strong (Prasad et al., 2017). It also helps to establish long-term relationships with customers and suppliers (Nyer & Gopinath, 2005). Interestingly, Vredenburg and Wee (1986) revealed that most customer dissatisfaction is attributable to post-purchase interactions with retailers.

Moreover, if consumers have to pay additional expenses for any post-purchase issue related to the product, the level of dissatisfaction is exacerbated, and the customer engages twice as much as a satisfied customer, meaning that dissatisfied customers lead to greater (highly and negative) word-of-mouth (Anderson, 1998). With the exponential growth of social media, shopping on social media platforms has gained immense academic and industrial importance. This has provided a great opportunity for interaction between diversified stakeholders. (Ryu & Park, 2020) observed that social media have a positive and significant influence on word-of-mouth and re-purchase intention. Jones et al. (2019) conclude that purchase behaviour is an indicator of future purchases, that is, re-purchase intentions.

Additionally, positive WOM intentions are behavioural responses that provide a way for consumers to share a positive outcome with others. Khalifa and Liu (2007) also report a positive relationship between online shopping experiences and online re-purchase intention; these findings regarding the association between CS, loyalty, WOM, and re-purchase intention underscore the need for further investigation. Thus, the following hypothesis was proposed:

Hypothesis 5: CS positively influences e-shoppers' re-purchase intention.

Hypothesis 6: CS positively influences e-shoppers' customer loyalty.

Hypothesis 7: CS positively influences e-shoppers' word of mouth.

3. Methodology

3.1. Data collection

The study used a simple random sampling technique to collect data from the top two metropolitan Indian cities, Delhi and Mumbai, broadly representing India's geographically and culturally diverse population. This technique ensures data transparency, unbiasedness, and the law of statistical regularity. E-questionnaire was administered via targeted bulk emails and social media sites, ensuring transparent and cost-effective data storage. However, before filling out the main questionnaire targeted respondents were provided with detailed written information regarding the study's purpose and the sensitive nature of their demographic and psychographic data. They expressed in writing their understanding of the

study's purpose, their voluntary participation, the confidentiality of their responses, and their right to withdraw from the study at any moment without any consequences. The data was collected between 15 August 2023 and 25 October 2023.

Further, as this study involves the active involvement of e-shoppers as respondents, ethical approval was obtained from the Institutional Research Ethics Committee of Deen Dayal Upadhyay Gorakhpur University, Gorakhpur (AISHE Code: U-0508) and Institutional Research: Ethics Review Committee of School of Management Sciences, Varanasi (AISHE Code: C-13645).

3.2. Sample size

The study's outcome relies on the appropriate sample size determination. Using widely accepted (Cohen, 1992; Paul et al., 2016) methods, the minimum sample size (N) was determined to be 189 and 114 respectively. To ensure comprehensive coverage, the law of inertia of large numbers and statistical robustness, nearly 602 online customers were approached, far exceeding the minimum sample size threshold to account for potential factors such as non-responses or incomplete submissions. A pilot study was conducted with 64 e-shoppers. Based on their responses, minor modifications were made to the questionnaire. Later, a total of 515 valid responses were collected for further analysis.

3.3. Measures

The study utilized a quantitative approach to evaluate the relationships between variables, utilizing items from previous studies and modifying them for the research's scope to ensure validity and reliability. The participants were administered an online questionnaire to ensure transparency, collection efficiency and data storage. The first part of the questionnaire included questions reflecting respondents' socio-demographic profiles and the second part consisted of five-point Likert scale questions to assess respondents' agreement/disagreement on each statement representing the research variables.

Constructs	Scale Items	Literature
Delivery Speed (DS)	DS1: DS is crucial for online orders. DS2: I want my shipments to arrive promptly. DS3: A faster delivery rate leads to increased satisfaction.	(Merkert et al., 2022)
Product Condition (PC)	PC1: Products delivered are usually in good condition. PC2: Accurate products are delivered most of the time. PC3: Products are often delivered intact and undamaged.	(Rajendran et al., 2018)
Tracking Facility (TF)	TF1: I regularly track my shipments. TF2: I track my packages from shipment to delivery. TF3: Tracking my packages is important to me.	(Cao et al., 2018)
Product Availability (AVB)	AVB1: Proper stock of the required product is ensured most of the time. AVB2: Waiting time for out-of-stock items is usually less. AVB3: Alternative product is offered in case of out-of-stock items.	(Al-adwan et al., 2022)
Customer Satisfaction (CS)	CS1: My purchase experience has been quietly satisfying. CS2: My e-shopping platform offers better service compared to competitors. CS3: Overall, I am pleased with the services.	(Zaid & Patwayati, 2021)
Re-purchase Intention (RPI)	RPI1: I will continue using my present e-shopping site for shopping. RPI2: I will again use the same e-shopping platform for future purchases. RPI3: Next time, I'll prefer my current e-shopping platform.	(Jones et al., 2019)
Customer Loyalty (CL)	CL1: I am a loyal customer of my e-shopping platform. CL2: Even if other platforms offer comparable services, I prefer my existing e-shopping platform. CL3: I expect to stay with the company for a long period.	(Kim & Joo, 2017)
Word of Mouth (WOM)	WOM1: I speak positively about my e-shopping platform. WOM2: I recommend my e-platform to the people I know. WOM3: I don't miss an opportunity to tell others about e-platform services.	(Al-adwan et al., 2022)

4. Data analysis

The study utilized Smart-PLS 4.0 statistical software for data analysis by utilizing a robust two-stage modelling framework that combined ANNs with PLS-SEM.

PLS-SEM is a complex multiple regression model used in social sciences and marketing research, providing a comprehensive understanding of research variables' relationships (Alkhwaldi et al., 2022; Barbu

et al., 2021; Nguyen et al., 2021). PLS-SEM is a more suitable research approach than CB-SEM (Co-variance-based Structure Equation Modelling) due to its less sensitivity to data violations, ability to handle non-normal data and small sample sizes (Dash & Paul, 2021), and the efficacy to accommodate complex models and measurements. It prioritizes maximizing explained variance, making it ideal for understanding key outcomes or identifying significant drivers (Rigdon et al., 2017). Further, the PLS-SEM model is a predictive tool, that provides causal-relationship analysis findings and projections about consumer behaviour, enabling it to anticipate consumer's response regarding ML, thereby shedding light on causality (Figure 2).

Subsequently, the ANN analysis has been conducted to complement PLS-SEM as it is considered appropriate for revealing non-linear data relationships. Later, the normalized importance score and ranking are recognized from the hypotheses testing (Mishra et al., 2022; Moedeen et al., 2024; Tripathi et al., 2023).

4.1. Measurement model

4.1.1. Construct reliability and validity

The analysis was conducted using the PLS-SEM approach with SmartPLS software, which applies both measurement and structural model assessment. The factor loadings were calculated, and the results showed that all factor loadings were above the minimum threshold of 0.60 (Table 1). The reliability of the measures, construct reliability, and validity were assessed using several metrics including Cronbach's alpha, rho_A, composite reliability, and average variance extracted (AVE).

Cronbach's alpha is a measure of internal consistency reliability that assesses how well the items in a construct or scale measure the same underlying construct. The values in Table 1 range from 0.704 to 0.843, which are generally considered to indicate good to excellent levels of internal consistency.

Rho_A is a new reliability estimate that has been proposed as an alternative to Cronbach's alpha. It is similar to alpha but has some advantages over alpha that is it can account for measurement errors and unmodeled constructs in the analysis. The values in Table 1 range from 0.707 to 0.957, which is also considered a good to excellent level of reliability.

Composite reliability is another measure of internal consistency reliability, which is calculated by dividing the total variance by the sum of the total variance and total error variance. It is a more robust measure of reliability than Cronbach's alpha, as it can account for item-specific error variance. The values in Table 1 range from 0.832 to 0.905, which are considered to be good to excellent levels of reliability. Hence, Cronbach's α , rho_A and composite reliability were calculated, and the results indicated that they met the threshold reliability criteria.

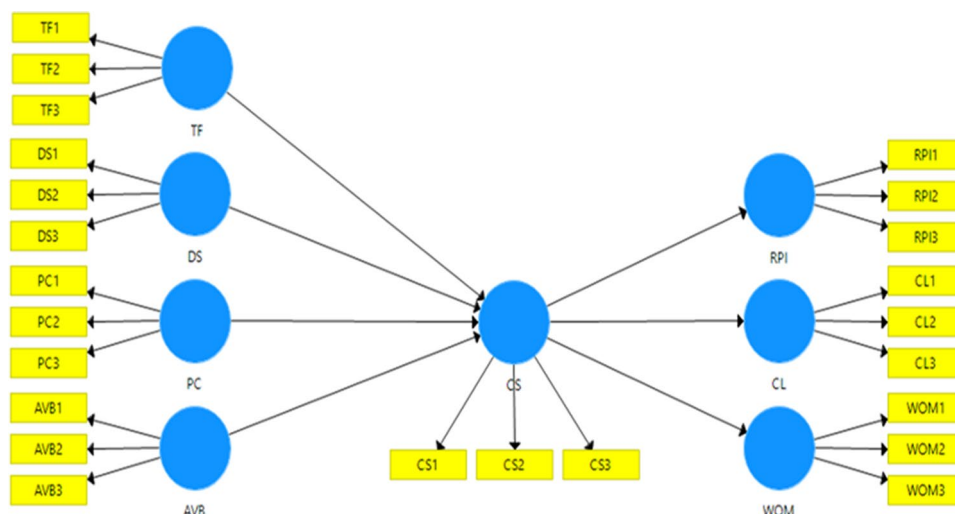


Figure 2. Structural Equation Model.

The AVE is a measure of convergent validity that assesses the degree to which items in a construct or scale measure the same underlying construct. It was calculated by squaring the correlations between the construct and its items and then averaging them. The values in Table 1 range from 0.625 to 0.761, which is generally considered acceptable to good convergent validity.

The study also assessed the collinearity of the indicators using the Variance Inflation Factor (VIF), which measures the degree of multicollinearity between the predictors in a regression model. VIF values greater than 3.3 indicate possible multicollinearity issues. All VIF values were below 2.2, indicating no multicollinearity issues among the predictors (Table 2).

Table 1. Construct reliability and validity.

Construct	Items	Factor loading	Cronbach's Alpha	rho_A	Composite reliability	AVE
AVB	AVB1	0.709	0.729	0.957	0.832	0.625
	AVB2	0.737				
	AVB3	0.911				
CL	CL1	0.773	0.726	0.729	0.843	0.641
	CL2	0.822				
	CL3	0.807				
CS	CS1	0.842	0.779	0.779	0.872	0.694
	CS2	0.800				
	CS3	0.856				
DS	DS1	0.820	0.780	0.781	0.872	0.695
	DS2	0.829				
	DS3	0.851				
PC	PC1	0.868	0.843	0.844	0.905	0.761
	PC2	0.870				
	PC3	0.878				
RPI	RPI1	0.661	0.722	0.782	0.836	0.632
	RPI2	0.856				
	RPI3	0.852				
TF	TF1	0.799	0.704	0.707	0.835	0.627
	TF2	0.791				
	TF3	0.786				
WOM	WOM1	0.822	0.760	0.761	0.862	0.676
	WOM2	0.854				
	WOM3	0.790				

4.1.2. Variance inflation factors

Table 2. Variance inflation factor.

Construct's Items	VIF
AVB1	1.419
AVB2	1.500
AVB3	1.407
CL1	1.186
CL2	1.928
CL3	1.905
CS1	1.726
CS2	1.454
CS3	1.790
DS1	1.498
DS2	1.684
DS3	1.737
PC1	1.885
PC2	2.027
PC3	2.160
RPI1	1.343
RPI2	1.442
RPI3	1.514
TF1	1.445
TF2	1.483
TF3	1.273
WOM1	1.555
WOM2	1.742
WOM3	1.437

4.1.3. Discriminant validity

The Fornell-Larcker criterion and the HTMT ratio were used to assess the discriminant validity of a set of constructs (Table 3). The Fornell-Larcker criterion suggests that the square root of the AVE for each construct should be higher than its correlation with any other construct in the set. From the matrix, it appears that the criterion is met for all constructs. The Heterotrait-Monotrait ratio (HTMT) is another statistical measure used to assess discriminant validity, which is the extent to which constructs in a research study are different from each other. The HTMT value ranges from 0 to 1, where a value less than 0.9 is considered to indicate good discriminant validity. If the HTMT value is close to or greater than one, it suggests that the two constructs are highly related and may not be distinct from each other. In this study, the HTMT values for the majority of the construct pairs were below 0.9, indicating good discriminant validity.

4.2. Structural model assessment

The study used a bootstrapping technique to assess the significance of the hypothesized paths and calculated β -coefficients, t -values, and p -values to confirm the results. Six of the seven hypotheses were supported (Table 4). The study used the Coefficient of Determination (R^2) to ascertain the overall model strength and found that the proposed structural model could explain approximately 52% of the variance in CS and approximately 37% of the variance in word of mouth. Similarly, approximately 30% of the variance in re-purchase intention and customer loyalty is explained by the structural model (Table 5). Overall, the R-squared values suggest that the model has a moderate explanatory power.

Table 3. Discriminant validity.

Construct	AVB	CL	CS	DS	PC	RPI	TF	WOM
Fornell-Larcker Criterion								
AVB	0.791							
CL	0.258	0.801						
CS	0.243	0.555	0.833					
DS	0.282	0.612	0.553	0.833				
PC	0.248	0.537	0.673	0.561	0.872			
RPI	0.240	0.490	0.539	0.559	0.427	0.795		
TF	0.263	0.530	0.559	0.618	0.532	0.540	0.792	
WOM	0.246	0.663	0.610	0.641	0.689	0.463	0.499	0.822
Heterotrait- Monotrait (HTMT) Ratio Matrix								
AVB								
CL	0.317							
CS	0.279	0.719						
DS	0.355	0.783	0.708					
PC	0.287	0.656	0.828	0.689				
RPI	0.325	0.656	0.667	0.720	0.503			
TF	0.359	0.727	0.749	0.837	0.677	0.769		
WOM	0.288	0.873	0.792	0.831	0.859	0.582	0.676	

Table 4. Path analysis.

H	Path	Beta	SD	T Statistics	p -Values	Support
H1	DS \rightarrow CS	0.154	0.057	2.720	0.007	Yes
H2	PC \rightarrow CS	0.469	0.049	9.615	0.000	Yes
H3	TF \rightarrow CS	0.207	0.052	4.003	0.000	Yes
H4	AVB \rightarrow CS	0.028	0.038	0.744	0.457	No
H5	CS \rightarrow RPI	0.555	0.034	16.267	0.000	Yes
H6	CS \rightarrow CL	0.539	0.035	15.323	0.000	Yes
H7	CS \rightarrow WOM	0.610	0.036	17.099	0.000	Yes

Table 5. Model strength.

Outcome variable	R Square	R Square Adjusted
CL	0.308	0.306
CS	0.523	0.520
RPI	0.291	0.289
WOM	0.372	0.370

4.3. Discussion

The present study builds a conceptual framework of dimensions that influence ML on e-shoppers' behaviour using the S-O-R model. We consider the growing importance of sustainable business practices and their impact on CS. We also take into account the effect of CS on customers' re-purchase intention, word of mouth, and loyalty. For the fulfillment of the first objective and research question of the study, the results of the hypothesis testing H1, H2, H3, and H4 (Table 4) established that CS is significantly associated with all predictors (delivery speed, product condition, and tracking facility except product availability). Consequently, H1 ($\beta=0.154$), H2 ($\beta=0.469$), and H3 ($\beta=0.207$) were supported, whereas H4 ($\beta=0.028$) was not supported.

The outcome of H1(RQ1) indicates a significant positive relationship between delivery speed and CS, consistent with prior studies. This is consistent with the results of previous studies (Chan et al., 2018; Fernandes et al., 2018; Nicholls & Watson, 2005; Rajendran et al., 2018; Riquelme et al., 2016; van Doorn et al., 2017; Zhang et al., 2005). This finding implies that swift delivery can enhance the perceived value of a product or service. Customers may perceive faster delivery as a sign of efficiency and reliability, which leads to a more positive overall experience. Fast delivery is convenient for customers and saves time and effort. This convenience can contribute significantly to CS as it aligns with the modern preference for quick and efficient services. Quick delivery also reduces the uncertainty and anxiety associated with waiting for a product or service. Businesses that prioritize and achieve fast delivery may gain a competitive advantage in the market. If a company consistently outperforms competitors in terms of delivery speed, it can attract and retain more satisfied customers.

H2 (RQ1) result also revealed a significant positive relationship between the product condition and CS, which is consistent with prior studies (Gounaris et al., 2010; Guo et al., 2012; Hafez et al., 2021; Kim & Park, 2013; Handoko, 2016; Ziaullah et al., 2014). This suggests that ensuring the products are in excellent condition upon delivery becomes a critical aspect of CS. This involves implementing robust quality control measures throughout the production and delivery processes. The consistent delivery of products in excellent condition contributes to a positive brand reputation. Satisfied customers are more likely to become loyal and may even recommend the brand to others, leading to increased customer acquisition through positive word-of-mouth.

Similarly, the outcome of H3 (RQ1) has been confirmed with previous studies (Otim & Grover, 2006; Riley & Klein, 2019). This signifies that shipping and tracking services play a critical role in online shopping. By providing online order-tracking facilities (information), e-retailers can reduce perceived risk and subsequently increase consumers' buying intentions. This can improve order fulfillment efficiency. By offering transparency, managing expectations, fostering trust, empowering proactive problem-solving, and serving as a competitive differentiator, tracking facilities are more than just a convenient add-on; they are a cornerstone of a positive customer experience in the digital age.

Surprisingly, H4 ($\beta=0.028$) is not supported because product availability does not have a significant relationship with CS. This finding is not consistent with those of previous studies (Boyer & Hult, 2005; Hausman & Siekpe, 2009; Jain et al., 2017; Handoko, 2016; Revindran et al., 2020; Ziaullah et al., 2014). This means that the mere availability of a product does not guarantee or directly contribute to CS. It also posits that CS is influenced by factors other than the simple presence of a product in the marketplace. Nevertheless, product availability is undoubtedly important, as it is just one component of the larger picture. Other factors play a crucial role in determining whether a customer is satisfied with a purchase. However, this outcome was consistent with the results of a previous study (Riquelme et al., 2016).

In order of second, third and fourth objectives and research questions (RQ2, RQ3, and RQ4), the outcome of hypothesis testing (H5, H6, and H7) in the current study demonstrated that CS is positively associated with customer re-purchase intention, customer loyalty and word of mouth. Therefore, H5 ($\beta=0.555$), H6 ($\beta=0.539$) and H7 ($\beta=0.610$) are supported.

The positive relationship between CS and customer loyalty, re-purchase intention, and word-of-mouth is consistent with prior studies (Al-Adwan et al., 2020; Gounaris et al., 2010; Jain et al., 2017; Jones et al., 2019; Khalaf Ahmad, 2012; Khalifa & Liu, 2007; Micu et al., 2019; Mofokeng, 2021; Paul et al., 2016; Shankar et al., 2003). This implies that CS serves as a foundation for building strong customer

relationships, fostering loyalty, and generating positive word of mouth. By continuously meeting and surpassing customer expectations, businesses can gain the competitive benefits of increased customer retention, improved brand image, reduced marketing costs, and a competitive advantage in the market. Satisfied customers are expected to stay with the organization for a long period, reducing the need for extensive marketing and advertising efforts to attract new customers. Additionally, loyal customers tend to have higher lifetime values, meaning that they spend more on their customer journey, which further justifies the importance of CS in driving profitability.

4.4. Artificial neural network (ANN) analysis

The ANN technique utilized input neurons to model the significant determinants of CS that were found via the creation and testing of hypotheses. In line with previous research on ANN modelling, 70% of the data was utilized for training the model, while the remaining 30% was allocated for testing (Azad et al., 2024; Mishra et al., 2022; Tripathi et al., 2023). The mean root mean square error (RMSE) value was calculated by iterating the ANN cases ten times to mitigate prediction mistakes in the modelling process. The training and testing models had average RMSE values of 0.104 and 0.102, respectively, indicating a strong fit of the ANN model (Table 6). To assess the relative significance of predictors, a sensitivity analysis was conducted. The most significant element that emerged was the product condition. According to Table 7, the tracking facility achieved the second highest ranking, whereas delivery speed was identified as the least significant ML factor.

The findings indicate that e-retailers should give priority to enhancing product quality to address consumer complaints. It is imperative to place significant emphasis on the deployment of efficient tracking facilities. It is recommended that e-retailers allocate their available resources to key aspects based on their relative relevance. They should reallocate superfluous resources from less significant to the aforementioned more crucial ones.

Table 6. RMSE.

RMSE-ANN-CS Table						
Case	Training			Testing		
	N	SSE	RMSE	N	SSE	RMSE
ANN 1	366	4.184	0.107	149	1.32	0.094
ANN 2	348	3.916	0.106	167	1.71	0.101
ANN 3	351	3.780	0.104	164	1.61	0.099
ANN 4	357	4.027	0.106	158	1.63	0.102
ANN 5	370	3.675	0.100	145	1.77	0.110
ANN 6	353	4.026	0.107	162	1.38	0.092
ANN 7	362	3.559	0.099	153	1.82	0.109
ANN 8	366	3.943	0.104	149	1.83	0.111
ANN 9	362	3.968	0.105	153	1.5	0.099
ANN 10	355	3.558	0.100	160	1.812	0.106
Mean			0.104			0.102
S.D			0.0029			0.0063

Table 7. Sensitivity analysis.

Case	DS	PC	TF
ANN1	21.2%	100.0%	74.6%
ANN2	44.5%	100.0%	29.0%
ANN3	43.0%	100.0%	37.9%
ANN4	3.6%	100.0%	92.4%
ANN5	48.8%	100.0%	47.9%
ANN6	40.0%	100.0%	58.4%
ANN7	45.3%	100.0%	52.8%
ANN8	51.2%	100.0%	45.5%
ANN9	21.8%	100.0%	68.7%
ANN10	46.1%	100.0%	43.6%
Avg. Imp.	36.54%	100.00%	55.08%
Norm. Imp.	36.54%	100.00%	55.08%

5.1. Implications

5.1.1. Theoretical implications

The research aims to refine the classical S-O-R framework by focusing on the role of ML in e-shoppers' decision-making processes, identifying elements like delivery speed, product condition, tracking facility, and product availability. It also examines how these logistics factors influence psychological factors. Positive logistics experiences can boost CS, brand perception, and repeat purchases, while negative experiences can lead to dissatisfaction and damage brand loyalty.

The research analyses how the internal state (CS) translates into concrete e-shoppers' post-purchase behaviours. The PLS-SEM analysis technique provides the evaluation of the intricate interplay between ML factors and the psychological state of e-shoppers. ANNs employed to research model provide the non-linear and potentially unpredictable relationships between ML cues, the psychological factor of e-shoppers, and their resulting behaviours. This deeper understanding can inform the development of more effective e-commerce marketing strategies that leverage the power of logistics to optimize customer experience, cultivate brand loyalty, and drive sales growth.

5.1.2. Practical implications

ML research benefits various stakeholders, including academicians, consumers, marketers, policymakers, and consumers in India. It fosters innovation and bridges the theory-practice gap, while consumers appreciate transparency and sustainable practices. Marketers manage product flow, maintain inventory levels, and reduce operational expenses. Policymakers can identify opportunities to improve domestic supply chains, stimulate economic growth, attract investment, and create jobs. Studying ML can also promote sustainable development and reduce environmental impacts by incentivizing eco-friendly transportation modes, energy efficiency, and green logistics practices. Overall, this research contributes to supply chain efficiency, CS, business performance, and economic development.

5.1.3. Managerial implications

Quality is crucial for CS in online retailers, as they create a digital tapestry to bridge the gap between product presentation and reality. High-resolution visuals, detailed specifications, and customer reviews craft a customer's perception of quality. A product that deviates significantly from this curated image can lead to a decline in CS, potentially severing trust and loyalty. High-quality products not only foster satisfaction but also build trust and loyalty, attracting repeat purchases and bolstering brand reputation. Negative experiences can damage the brand image, impacting sales and potentially leading to a downward spiral.

E-commerce businesses must prioritize delivery speed to gain a competitive edge and attract customers. Offering faster options can foster loyalty and repeat business. A balanced approach to enhance delivery speed considering cost, includes optimizing logistics, strategically placing warehouses near customer hubs, and forming partnerships with efficient carriers. Transparent communication about delivery timelines is crucial for trust building.

High-quality products and their delivery in good condition attract repeat purchases and strengthen brand reputation, while negative experiences can damage the brand image and negatively impact sales.

A resilient monitoring system (real-time tracking facility) serves as an indication of a retailer's dedication to transparency and responsibility, thereby cultivating consumer confidence. Providing an informative and user-friendly monitoring system can serve as a substantial point of differentiation in the highly competitive e-commerce industry.

Just having a product available does not ensure or directly enhance CS. Several other factors have dominion over buyers' buying decisions. Nonetheless, product availability is a significant driver of CS, with retailers that prioritize robust inventory management systems optimizing sales opportunities and cultivating customer confidence.

Prioritizing CS is a strategic investment with long-term benefits, such as a loyal following, reduced acquisition costs, and a natural competitive advantage. By focusing on CS at every touchpoint, e-commerce businesses can cultivate a loyal customer base that drives growth and protects against competition through word of mouth.

5.2. Directions for future research

Online shopping has brought immense changes in e-shoppers buying behaviour. COVID-19 has heightened online shopping, necessitating the development of new research theories, methods, and paradigms to analyze new processes, patterns, and problems in the post-pandemic era. Following prior models of S-O-R, constructing new models like ECT (Expectancy-confirmation theory), TRA (Theory of Reasoned Action), TPB (Theory of Planned Behaviour), UTAUT (Unified Theory of Acceptance and Use of Technology), E-SERVQUAL Model, Self-Efficacy Theory or hybrid of two or more is suggested for prospective studies. Research may assess other dimensions influencing e-shopper buying behaviour, such as drone deliveries, pick-up delivery and product alternatives, which may vary across cultures, living standards, education levels, family size, and income. This can help e-retailers formulate customer-oriented strategies. Future research may also consider other components of consumer behaviour such as trust and referrals.

Due to financial and time constraints, representative data was collected from Mumbai and Delhi. Later, more geographical compositions can be considered for a better representation of India. Additionally, the study is concentrated in India, hence it is advised to execute the present study in other countries for generalization. Moreover, a comparison between developing and developed can pave the way for a better understanding of the role of the growth and development status of an economy on e-shoppers buying behaviour.

5.3. Conclusion

The growth of the Internet has allowed customers access to wide-ranging products and allows them to select the most suitable product with just a click (from brick to click). As online retailing grows, ML has become an increasingly important factor in determining the success or failure of online retail businesses, as it directly influences consumers' online shopping behaviour. By emphasizing the COVID-19 pandemic, intense digitalization, fintech, and social media adoption in India—this study adds to the existing predictors of consumer behaviour about ML in the e-commerce sector. Using a PLS-SEM model, this model double-checks the relevance of the variables and their predictive accuracy. The outcome of the study signifies a significant positive impact of delivery speed, product condition, and tracking facility on CS, which in turn positively influences post-purchase behaviour (re-purchase intention, loyalty, and word-of-mouth). In contrast, product availability is not significantly associated with CS.

This study provides crucial insights for both e-retailers/policymakers and academicians, as it provides a better understanding of the diversified facets of the e-marketplace in India. These findings offer crucial evidence for the deliberation on how marketing plans and policies might influence customer buying behaviour. Marketers/policymakers can utilize these findings while defining, designing, and developing marketing strategies. Businesses aiming to enhance CS should consider a holistic approach to modern ML that encompasses various aspects of the customer experience. This can help marketers to ensure better customer service, CS, and long-term relationships with customers. Furthermore, the study provides crucial insights into several interesting but essential topics for future online shopping behaviour for academicians to envision further studies in the ML and CB domains.

Author contribution

Vipin Vihari Ram Tripathi and Manish Kumar Srivastava contributed to the conception and design of the work. Rukmani Jaiswal and Thakur Digbijay Singh were involved in the data analysis and interpretation drafting of the paper. Amgad S. D. Khaled critically reviewed the work.

Vipin Vihari Ram Tripathi prepared the final version of the manuscript, after consensus, with constant help from all co-authors.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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