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# Electronic logistics service quality and repurchase intention in e-tailing: Catalytic role of shopping satisfaction, payment options, gender and returning experience

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## ABSTRACT

This paper empirically examines the mediating role of shopping satisfaction between electronic logistics service quality (e-LSQ) and repurchase intention. Further, this paper investigates the moderating role of gender, payment options, and returns or replacement experience on the link between e-LSQ and shopping satisfaction (and repurchase intention). Empirical data comprising 640 Indian online shoppers are analyzed with covariance-based structural equation modeling. The findings indicated that the condition of the shipment is the most crucial e-LSQ dimension and its linkage with shopping satisfaction varies across payment options, gender, and returning experience. The poor condition of the shipment might have triggered the returns in e-tailing in the Indian context. The findings will help e-tail managers design a robust logistics network to retain and win despondent customers.

## 1. Introduction

E-tailing has evolved through the offering of more standardized products, wider product varieties, fulfillment quality, preferred delivery time slots, order accuracy, free shipping, discounts, cash-on-delivery payment option, easy return and exchange policies. Logistics is often a differentiator and competitive advantage in e-tailing companies (Nguyen et al., 2019; Tang and Veulenturf, 2019). Booming e-tailing has also triggered growth in the e-tail logistics sector in India. In 2018, the industry was valued at \$ 1.45 billion and was expected to grow at 36 percent in the next three years (KPMG, 2018). However, lack of logistics infrastructure and the poor e-fulfillment services pose challenges for logistics service providers (LSPs) in India (KPMG, 2018). Poor logistics infrastructure not only increases the delivery time but also damages the products during shipment. Logistics transactions of e-tailing are often outsourced, usually performed by third-party logistics (3 PL) (Rabinovich et al., 2007). Some e-tailers have developed their in-house captive logistics in addition to 3 PL.

Researchers and practitioners have identified the electronics logistics service quality (e-LSQ) of the LSPs as the most critical operation for e-tailers (Cao et al., 2018; Hüseyinoğlu et al., 2018; Koufteros et al., 2014; Murfield et al., 2017). Further, e-LSQ also leads to satisfaction and

retention of customers (Murfield et al., 2017; Rao et al., 2011). Shopping satisfaction is an essential determinant of repurchase intention (Yi and La, 2004); however, the link between shopping satisfaction and repurchase intentions is complex (Balabanis et al., 2006; Leuschner et al., 2013). Balabanis et al. (2006) found no significant relationship between satisfaction and loyalty, whereas Liao et al. (2017) argued satisfaction as the strongest predictor of repurchase intention. It motivated us to test the relevance of the indirect path of e-LSQ to repurchase intention through shopping satisfaction.

In India, LSPs deliver more than 1.9 million shipments daily (KPMG, 2018). Serving a large number of shipments and ensuring satisfaction concerning e-LSQ is a big challenge for e-tailers. Customer segmentation based on customer demographics and contextual factors like payment options could help LSPs to prioritize the shipments.

Different payment options, specifically cash-on-delivery (COD), have generated trust in the mindsets of customers towards online shopping in the developing countries. Customers in tier-II and tier-III cities usually preferred the COD payment option and triggered approximately 50–55% of total online retail shipments (KPMG, 2018). However, post demonetization and the digital India initiative by the Government of India, consumers switched to innovative payment options like mobile wallets in addition to cards and COD. Fig. 1 shows that the share of COD

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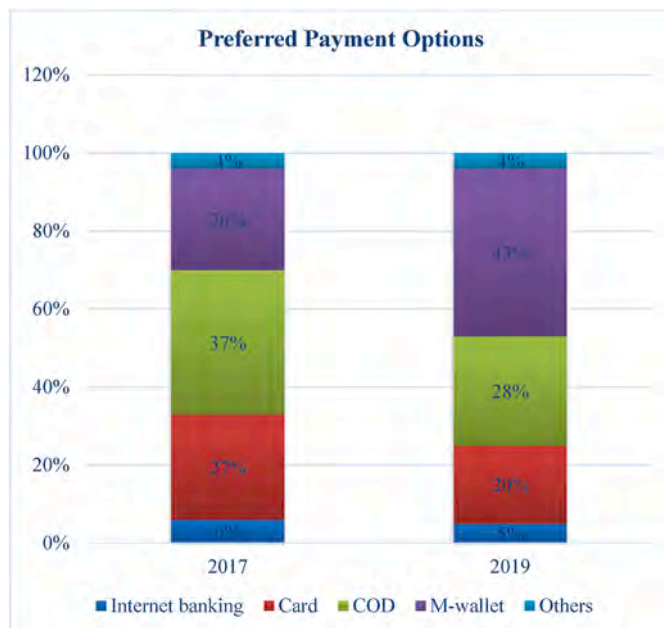


Fig. 1. Preferred payment options.

reduced from 37% in 2017 to 28% in 2019 (Statistica, 2020). Despite this, COD remains one of the most preferred payment options by consumers in the Indian context.

COD provides an opportunity to encourage non-digital customers towards online shopping (Hawk, 2004). Previous literature on payment methods focused on comparing cash and credit card payments on the level of transparency offered by them (Boden et al., 2020; Gafeeva et al., 2018). They relied on the ‘pain of paying’ approach, that is, pain arising for making payments for shopping and parting with cash, and found that cash payments result in higher pain than credit card payments (Prelec and Loewenstein, 1998; Runnemark et al., 2015; Soman, 2003). However, the role of payment methods on the relationship between the condition of shipment and shopping satisfaction (and repurchase intention) has not received attention. The above studies stirred us to test the moderating effect of payment options on the relationship condition of shipment and shopping satisfaction (and repurchase intention).

Twenty percent of online shoppers in the year 2015 were females (Kearney, 2016), which further increased to 29.2 percent in 2019 (Statistica, 2020a). Gender influences consumer behavior in the retailing context, and often marketers deploy gender-based segmentation strategies to meet the expectations of consumers (Friedmann and Brueller, 2018; Vaidyanathan and Aggarwal, 2020). Gender differences are attributed to different factors like biological, psychological, social, and behavioral (Faqih, 2016; Venkatesh and Morris, 2000; Zhang et al., 2011). According to sociobiological theory, men are more instrumental, and women are more experiential (Faqih, 2016; Saad and Vongas, 2009). Females take more interest in off-line shopping as compared to men (Hansen and Jensen, 2009), while men are more likely to shop online as compared to women (Zhang et al., 2011). Gender-based differences have been studied in pricing related issues in online retailing as well (Friedmann and Brueller, 2018). Limited research has analyzed the impact of gender on the relationship between the condition of shipment and shopping satisfaction (and repurchase intention).

During online shopping, females are more likely to be concerned with e-LSQ compared to males (Chou et al., 2015; Herter et al., 2014). Hence, the relationship between the order condition of the shipment and shopping satisfaction (and repurchase intention) may differ significantly based on gender (Garbarino and Strahilevitz, 2004; Sanchez-Franco et al., 2009). Therefore, we studied the moderating role of gender in the relationship between the condition of the shipment and shopping

satisfaction (and repurchase intention).

E-tailers face specific challenges like lower switching costs (Jain et al., 2017), feel and a touch of the products (Faqih, 2016), and virtual firm-consumer interaction (Davari et al., 2016). Negative perceptions of customers are also reflected by a higher cart abandonment rate of 88.05 percent in 2020 (Statistica, 2020b) and increased product returns and exchanges. According to a study (KPMG, 2018), in the year 2017, an average of 20% of online orders placed in India was returned. Product returns, if handled well, could help in retaining customers (Mollenkopf et al., 2011; Wang et al., 2019). Online retailers often offer a liberal returns policy, ‘no questions asked’ return policies and view returns as an opportunity to reduce negative perceptions of customers (Jeng, 2017), converting them to repurchase online (Javed and Wu, 2019) and retain them (Mollenkopf et al., 2011). However, liberal returns policies result in increased reverse logistics costs (Anderson et al., 2009), and therefore e-tailers also look for opportunities to reduce the returns. Poor logistics infrastructure of India may damage the shipment during transit, and it may trigger returns. Consequently, we analyzed the moderating role of returns on the relationship of the condition of the shipment and shopping satisfaction (and repurchase intention).

The remainder of the paper is organized as follows: A literature review on the e-LSQ and theory development is carried out in the next section. We then present a research methodology related to our sampling technique and data collection in section 3. After presenting the statistical analysis in section 4, theoretical and managerial implications are discussed in Section 5. The paper is concluded by highlighting the limitations of the study and future research opportunities in section 6.

## 2. Literature Review and theory development

The literature review was performed in four phases. In the first phase, the theoretical framework was developed by reviewing extant literature pertinent to e-LSQ. Next, the role of shopping satisfaction in mediating the relationship between e-LSQ and repurchase intention was conjectured. In the second phase, an extant review of the literature resulted in hypotheses development to study the moderating role of payment options between e-LSQ and shopping satisfaction (and repurchase intention). Hypotheses development to test the moderating role of gender and returns was carried out in the third and fourth phases, respectively. Table 1 highlights the summary of the literature review.

### 2.1. Conceptual Framework

Existing literature on service quality in online retailing has dealt with website quality (Parasuraman et al., 2005; Zeithaml et al., 2002); physical distribution service quality (Hüseyinoğlu et al., 2018; Koufteros et al., 2014; Rabinovich and Bailey, 2004; Xing et al., 2010) and reverse logistics (Griffis et al., 2012; Jiang and Rosenbloom, 2005; Mollenkopf et al., 2007; Towers and Xu, 2016). Physical distribution service quality dimensions, such as product availability, timely product delivery, shipment condition, and order billing accuracy upon arrival, are essential for making at-purchase decisions (Koufteros et al., 2014; Rabinovich and Bailey, 2004; Xing et al., 2010). Physical distribution service quality includes information related to tracking of shipment (Mentzer et al., 1989; Towers and Xu, 2016), and it is relevant to service quality (Rabinovich and Bailey, 2004) in e-fulfillment. Mentzer et al. (1989) operationalized order fulfillment primarily in three dimensions, namely, product availability, timely delivery, and condition of the shipment on arrival. Based on the above literature, we found that product availability, timeliness, and shipment condition on arrival are critical dimensions of e-fulfillment (Koufteros et al., 2014; Murfield et al., 2017; Rao et al., 2014).

Availability measures the capability to manage inventory, that is, availability of a product in stock during order procurement, information regarding the availability of a product if it is out-of-stock or substitute products (Xing et al., 2010). “Timeliness refers to whether products or

**Table 1**  
Literature Review summary.

Author(s), year	Theoretical Lens	Payment options				Gender	Returns	e-logistics service quality			Dependent variable(s)		Methodology	Location
		Cash	Credit card	Debit card	Internet Banking			Availability	Timeliness	Condition	Shopping satisfaction	Repurchase intention		
Boden et al. (2020)	Pain of paying, TAM	✓	✓									Regression	US, Germany, India	
Gafeeva et al. (2018)	Recall error on spending	✓		✓								HLR	Germany	
Runnemark et al. (2015)	WTP	✓		✓								Regression	D.K.	
Greenacre and Akbar (2019)	construal theory	✓		✓								Regression	Australia	
Atulkar and Kesari (2018)					✓							PLS-SEM	India	
Hwang and Lee (2018)	Selectivity theory and gender schema Theory				✓							ANOVA, Regression	South Korea	
Faqih (2016)	TAM, IDT, TPB, UTAUT				✓						✓	PLS-SEM	Jordan	
Friedmann and Brueller (2018)	Sociobiological theory				✓							Step-wise regression	Israel	
Son et al. (2019)						✓						Regression	South Korea	
Jeng (2017)	Consumer response theory					✓						CB-SEM	Taiwan	
Javed and Wu (2019)						✓					✓	CB-SEM	China	
Kalia (2017)	Service quality					✓	✓	✓	✓			Content analysis		
Mollenkopf et al. (2011)	Service quality					✓						Qualitative (Interview-based)	U.S., Italy	
Koufteros et al. (2014)	Adaptation theory						✓	✓	✓	✓	✓	ANOVA, CB-SEM	Large university	
Murfield et al. (2017)	Service quality						✓	✓	✓	✓	✓	PLS-SEM		
Rao et al. (2014)	Appraisal – response – coping model						✓	✓	✓	✓		Logistics regression	U.S.	
Present Study	Pain of paying, sociobiological theory and service quality	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		India	

services were delivered on time or not" (Koufteros et al., 2014, p.10). Condition measures the accuracy and quality of an order (Xing et al., 2010). In this study, we have used shopping satisfaction and repurchase intention to measure customer expectations. Shopping satisfaction measures the customer's satisfaction based on the prior purchasing experience with an e-tailer, including pre-purchase, during-purchase, and post-purchase experience (Khalifa and Liu, 2007; Yi and La, 2004) while repurchase intention represents attitudinal aspects of customer loyalty. Specifically, since repurchase intentions are related to repeat purchases and recommendations, they are critical determinants of customer loyalty (Mittal and Kamukura, 2001). The direct relationship between e-LSQ and repurchase intention has already been studied in the literature. However, the mediating role of shopping satisfaction between e-LSQ and repurchase intention relationship has received scant attention in the existing literature. Therefore, this study attempts to explore the mediating role of shopping satisfaction between e-LSQ and repurchase intention.

The proposed framework (refer Fig. 2) shows e-LSQ positively influences online shopping satisfaction (Jain et al., 2015; Rao et al., 2011), and shopping satisfaction is antecedent to repurchase intention (Javed and Wu, 2019; Rose et al., 2012). Davis-Sramek et al. (2009) found the mediating effect of satisfaction between order fulfillment service quality and commitment. Soh et al. (2015) found the mediating effect of satisfaction between technical quality and loyalty. Murfield et al. (2017) studied the mediating effects of satisfaction between LSQ and customer loyalty. Previous literature suggests the significance of the indirect path between e-LSQ and repurchase intention through shopping satisfaction. Hence, we propose the following hypotheses:

- H1. Shopping satisfaction mediates the effect of product availability on the repurchase intention of shoppers.
- H2. Shopping satisfaction mediates the effect of delivery timeliness on the repurchase intention of shoppers.
- H3. Shopping satisfaction mediates the effect of shipment condition on the repurchase intention of shoppers.

2.2. Impact of payment options

The payment option is a significant attribute of online retailing. Due to low credit card penetration, lack of trust in digital payments, and cultural preferences in developing countries, shoppers prefer the cash on delivery and pay the money after inspecting the shipment (Hawk, 2004). "COD makes sense in India because banks offer door-to-door cash

delivery services, people keep large sums of cash at home, and large transactions are made in cash" (Kshetri, 2007). Leading e-tailers in India have also recognized these psychological barriers towards online payments and offered the COD payment option to the shoppers to enhance their trust in online shopping.

Payment options and its relationship with consumer spending behavior has received significant attention in the literature. Runnemark et al. (2015) argued consumer's willingness to pay is higher when consumers pay with debit cards than with cash. Similarly, Gafeeva et al. (2018) found that consumer's willingness to pay is more elevated when consumers pay with credit cards than cash. These studies argued that the card (either credit card or debit card) payments reduce payment transparency and consumer's recall accuracy of shopping and therefore reduce the payment related pain for the customers (Gafeeva et al., 2018; Runnemark et al., 2015; Soman, 2003). Customers opted for non-COD payment options are more concerned with the condition of the shipment as they pay for the shipment in advance. Therefore, it would be interesting to explore the moderating role of payment options in the relationship between shipment condition and shopping satisfaction (and repurchase intention) with the following hypotheses:

- H4. The payment options moderate the relationship between the shipment condition and shopping satisfaction, such that the degree of the relationship is higher for shoppers using non-COD payment options.
- H5. The payment options moderate the relationship between the shipment condition and repurchase intention, such that the degree of the relationship is higher for shoppers using non-COD payment options.

2.3. Role of gender

Significant gender differences exist in the usage of information and communication technologies, internet, and emails (Awad and Ragowsky, 2008; Cyr and Bonanni, 2005; Garbarino and Strahilevitz, 2004; Kim et al., 2011; Sanchez-Franco et al., 2009). As compared to men, women found shopping as fun and enjoyed shopping more (Chou et al., 2015). Significant gender differences were observed in the perceptions of (i) communication technologies (Gefen and Ridings, 2005), (ii) e-tailers' website related features and website satisfaction (Cyr and Bonanni, 2005), and (iii) internet usage (Sanchez-Franco, 2006). Also, ease of using computer influenced women's decisions and men's purchase decisions (Venkatesh and Morris, 2000). Awad and Ragoswsky (2008) found that women have a stronger effect than men on the effect of trust on intention in online shopping. Females are affected by the physical attributes of the product and shop more than men (Sanchez-Franco, 2006). Kim et al., 2011 found that e-services attributes differ across gender. Sanchez-Franco et al. (2009) found that the influence of commitment and trust on loyalty was stronger for women than men. Women were found more tolerant and were more likely to repurchase than men, and they give higher satisfaction ratings than men (Mittal and Kamukura, 2001). Hwang and Lee (2018) found that women pay more visual attention to shopping information and shopping attitude, whereas men pay more visual attention to product information. Atulkar and Kesari (2018) found that females have a stronger relationship between materialism and store environment with impulse buying than men, indicating females are highly materialistic consumer than the male consumer.

Previous literature has also studied the moderating influence of gender on the relationship between service quality elements and behavioral loyalty as well as attitudinal loyalty variables (Darley and Luethge, 2019; Kim et al., 2011; Sharma et al., 2012). The positive association between service quality and satisfaction was much stronger for women as compared to men (Sharma et al., 2012). Mortimer and Clarke (2011) found that the men are more concerned with the functional utilities, that is, transaction speed, convenience, and efficiency. In contrast, women, on the other hand, are more concerned with experiential or relational utilities than men in a supermarket store. Hence it

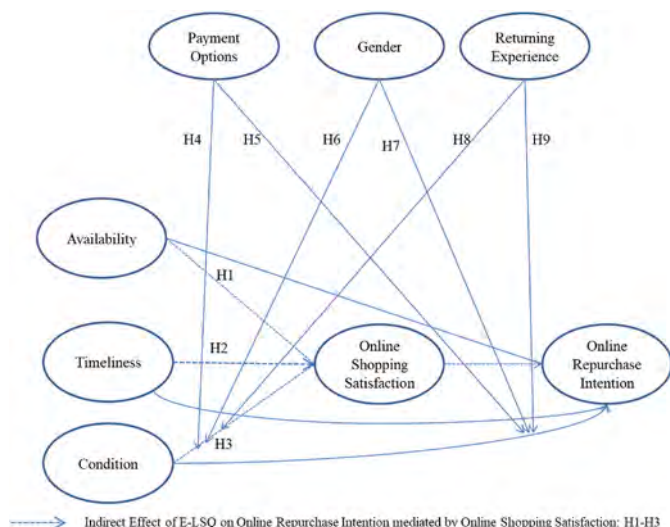


Fig. 2. Conceptual framework.



can be inferred that gender would influence the relationship between the condition of the shipment and shopping satisfaction (and repurchase intention) in the context of online retailing. Further, condition measures relational utility as the delivery boy delivers the product to consumers and then consumers evaluate the shipment, therefore, females would have stronger influence on the association of condition of the shipment on the shopping satisfaction (and repurchase intention).

Recognizing the gender differences reported in existing literature, we propose the following hypotheses to explore the gender differences specifically.

**H6.** The association of shipment conditions with shopping satisfaction will be stronger for female shoppers than male shoppers.

**H7.** The association of shipment conditions with repurchase intention will be stronger for female shoppers than male shoppers.

#### 2.4. Impact of returns

After-sales services are critical for e-tailing as it includes shipment modification/cancellation requests, replacement, product returns, and refunds (Grewal et al., 2004; Javed and Wu, 2019; Kalia, 2017). Though e-tailers provide details of products through product information, photos, videos, chat options, and virtual reality for trials (Grewal et al., 2004), however, returns remain significantly higher in e-tailing. Product return is a critical issue to e-tailers rather than being considered as a just cost of doing business (Ramírez, 2012; Rao et al., 2014). The returned product provides an opportunity to acquire new customers through service recovery resulting in increased profitability in any organization (Mollenkopf et al., 2011). Perceived fairness and quality in returns could also influence the shopping satisfaction (Javed and Wu, 2019), purchase intention (Jeng, 2017), and repurchase intention (Javed and Wu, 2019; Wang et al., 2019) of customers. One of the reasons for higher returns in developing countries is poor logistics infrastructure, which leads to negative service encounters for the shoppers. However, e-tailers get a service recovery opportunity to enhance shopping satisfaction and repurchase intentions of the shoppers by offering excellent returning or replacement experience.

The return or replacement experience is an undesirable outcome in online shopping that may influence the customers' expectations from e-LSQ (Lin et al., 2011). The returns or replacement experience may influence the relationship between the shipment condition and shopping satisfaction (and repurchase intention) such that it will increase the degree of association between the condition and shopping satisfaction for customers who face returns than those who don't. Specifically, customers are more concerned with the condition of the shipment delivered to them.

Therefore, we propose the following hypotheses:

**H8.** The returns or replacement experience moderate the relationship between the condition and shopping satisfaction such that the association is higher for the shoppers experiencing the returning process.

**H9.** The returns or replacement experience moderate the relationship between the condition and repurchase intention such that the association is higher for the shoppers experiencing the returning process.

### 3. Research methodology

We present the methodology behind the pilot and main studies in this section. Initially, we describe the sampling technique to identify and choose the target respondents. The questionnaire design is then presented in the next section. Pre-testing and pilot testing results, along with content validity measures, are presented after that. Lastly, we describe the data collection methodology for the main study and further address the common method variance after data collection.

#### 3.1. Sampling technique

Customers with online shopping experience were the potential respondents for this study. Youth are active Internet users (Gafeeva et al., 2018; Javed and Wu, 2019; Jeng, 2017; Koufteros et al., 2014) and college students represent the profile of online customers (Javed and Wu, 2019; Jeng, 2017; Koufteros et al., 2014). Therefore, we decided to collect the data from students engaged in online shopping. We chose a convenient sampling method and collected data from the students of a large University located in Central India in the year 2018.

#### 3.2. Questionnaire design

This study targeted those customers who had purchased products online in the last six months. The questionnaire consisted of two parts: (i) the qualification part and (ii) the main questionnaire part. The qualification section collected respondents' demographic and shopping characteristics to filter them out for the main questionnaire. The respondents were asked to indicate whether they also encountered returns or replacement experience in the last six months. The respondents responded to the main questionnaire for a specific e-tailer of their choice. The main questionnaire comprised 23 close-ended items designed to measure the eight variables used in the framework, anchored on a seven-point Likert scale from "1 = strongly disagree" to "7 = strongly agree". The items used to measure each variable were adopted and modified from existing literature (Bienstock et al., 1996; Boyer and Hult, 2005; Parasuraman et al., 2005; Rose et al., 2012; Koufteros et al., 2014). Details on the items used for each variable are provided in Appendix A.

#### 3.3. Pre-test and pilot study

The content validity of the questionnaire was established by consulting seven academicians and five e-tail managers. Further, face validity was established by interviewing ten frequent shoppers. The data was collected from students of a large University located in Central India. The students' responses were gathered in a classroom setting; that is, responses were collected from students already enrolled in specific class sessions. The purpose of the study was clearly explained to those course instructors who assisted us in our data collection. Specifically, instructors were asked to allot 15–20 min after completing their sessions to collect student responses. The entire questionnaire survey was administered in paper-and-pencil form, and questionnaires were distributed to those students in each classroom who volunteered for the survey. Chocolates as non-monetary incentive were offered to respondents to complete the questionnaire. The respondents were asked to complete the main questionnaire for a specific e-tailer of their choice, as indicated in the qualifying questionnaire. On average, it took each respondent 15 min to complete the survey. Next, a pilot survey was administered, resulting in 95 valid responses. All the constructs attained Cronbach's alpha (CA) (i.e., reliability measure) values of more than 0.7 (Hair et al., 2006), as well as composite reliabilities (CR) greater than 0.7 and extracted average variances (AVE) of 0.5 or more.

The main study resulted in a total of 640 valid responses. Out of these, 361 responses had encountered shopping experience only, whereas 279 responses had encountered both shopping and return or replacement experience.

#### 3.4. Common method variance

Self-report surveys suffer from method biases (Podsakoff et al., 2003). Reverse coded items on a 7-point Likert scale were used during the questionnaire design stage, voluntary and anonymous participation accompanied by a cover letter during the data collection stage to reduce common method bias (Podsakoff et al., 2003; Viswanathan and Kayande, 2012). A post-data collection statistical remedy of Harman's

single factor test was also carried out to address the common method variance (Podsakoff et al., 2003). Factor analysis using unrotated principal component analysis resulted in five factors, with the largest variance of a factor as 35.12%. Since no single factor accounted for the majority of variances, Harmon's single factor test was successfully validated. Thus, the common method variance was not a problem for this study (Podsakoff et al., 2003).

4. Statistical analysis

In this section, we begin with descriptive statistics of the sample then assess the measurement model using a confirmatory analysis. Next, we carry out the assessment of the structural model and the mediation analysis. At last, the assessment of measurement invariance and the multi-group analysis is carried out.

4.1. Sample characteristics

Table 2 indicated that the respondents in our sample majorly belonged to the age group of 21–25 years. More than 70 percent of the respondents purchased products once per month or once per three months, establishing that they were frequent shoppers. About the yearly purchase amount, the respondents were spread across the sample, confirming that the sample represent all online shoppers with different purchase values. Around 56 percent of the respondents have purchased products or services online and did not encounter returns, whereas 44 percent have encountered both purchasing and returning or replacement experience. Nearly 72 percent of the respondents in the sample purchased products from an e-tailer in either the last week or month. This purchase recency established that these respondents were active online shoppers who could recall their recent purchase encounters with e-tailers. Nearly 60 percent of the respondents who have returning experience has returned the product within three months that provided

Table 2  
Sample characteristics.

Gender	Male	Female			
Frequency	440	200			
Percentage	68.75	31.25			
Age	18–21 years	21–25 years	26–30 years	31–35 years	>35 years
Frequency	9	566	59	5	1
Percentage	1.41	88.44	9.22	0.78	0.16
Online shopping experience	Purchasing experience	Returns or replacement experience			
Frequency	361	279			
Percentage	56.41	43.59			
Number of products/services purchased online	Once in a week	Once in a month	Once in 3 months	Once in 6 months	
Frequency	63	254	245	78	
Percentage	9.84	39.69	38.28	12.19	
Amount (in INR.#) spent on purchasing products/services in the last year	<1000	1000–3000	3001–5000	5001–10000	>10000
Frequency	48	138	110	131	213
Percentage	7.50	21.56	17.19	20.47	33.28
Last time of products/services purchased online	Last week	Last month	Past 3 months	Past 6 months	
Frequency	124	138	65	34	
Percentage	34.35	38.23	18.01	9.42	
Number of times products/services purchased from specific e-tailer	Once	2-5 times	6-10 times	>10 times	
Frequency	350	196	44	50	
Percentage	54.69	30.63	6.88	7.81	
Number of products returned/replaced from specific e-tailer*	Once	2–5	6–10	>10	
Frequency	206	71	2	0	
Percentage	73.8	25.4	0.7	0	
Last time returning or replacing a product*	Last Week	Last Month	Past 3 months	Past 6 months	
Frequency	47	49	71	112	
Percentage	16.85	17.56	25.45	40.14	

#1 INR. = 0.014 US\$ in 2018 (source: www.xe.com); \* Only for respondents who have returned or replaced the product online.

evidence for returning recency. It was also found that the respondents usually purchased items from such product categories as apparel and electronics, which are top-selling categories in e-tailing in the Indian context (Kearney, 2016).

4.2. CB-SEM model assessment

We used a two-stage (measurement and structural) CB-SEM approach to analyze the model due to (i) its appropriateness for theory testing; (ii) its suitability for examining causal relationship models; and (iii) its aptness for analyzing model with sufficiently large sample size (Bagozzi and Yi, 1998; Hu and Bentler, 1999).

To test the hypotheses, we used AMOS 24 software. We also checked for interaction effects amongst e-LSQ dimensions; however, no significant interaction effect of different e-LSQ dimensions was observed on shopping satisfaction and repurchase intention.

4.3. Measurement model assessment

The measurement model obtained excellent fit with Chi-square (CMIN = 794.887, DF = 220, p-value = 0.000), the goodness of fit index (GFI = 0.903), the comparative fit index (CFI = 0.950), Tucker-Lewis coefficient (TFI = 0.942), the Adjusted Goodness of Fit Index (AGFI = 0.879), the Normal Fit Index (NFI = 0.932), the Incremental Fit Index (IFI = 0.950) and the root mean square of approximation (RMSEA = 0.064, PCLOSE = 0.000) as the fit indices are better than the recommended values (Hu and Bentler 1999). Fig. 3 shows the CFA using AMOS 24 software.

Cronbach's alpha (CA), Composite reliability (CR), and average variance extracted (AVE) values were found to be higher than the specified values for all the constructs (Hair et al., 2006). Further, AVE values were higher than the maximum shared variance (MSV), and average shared squared variance (ASV) values provided evidence for

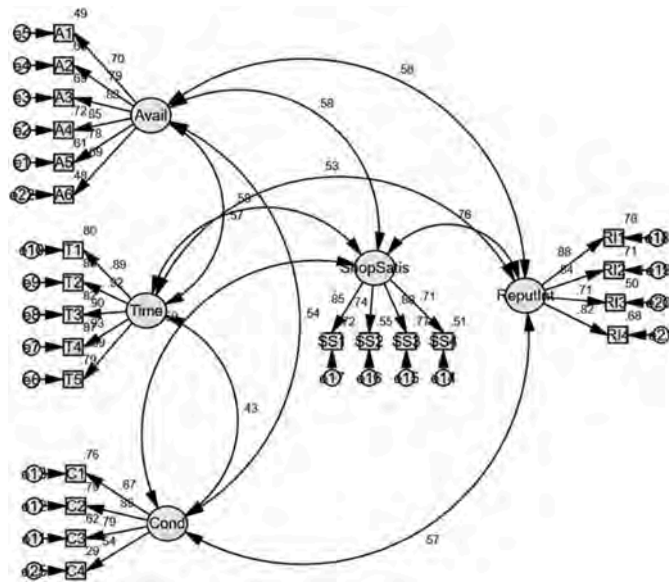


Fig. 3. Confirmatory factor analysis.

convergent validity (Hair et al., 2006). Table 3 demonstrates that inter-construct correlations were lower than the square root of AVE for each construct, thus establishing discriminant validity (Fornell and Larcker, 1981). Factor loadings of individual items assessed indicator reliability is shown in Appendix A (Hair et al., 2006).

4.4. Structural model assessment

The structural model also achieved good fit (CMIN = 1166.709, DF = 440, p-value = 0.000, GFI = 0.868, CFI = 0.936, TFI = 0.927, AGFI = 0.834, NFI = 0.902, IFI = 0.937 and RMSEA = 0.051, PCLOSE = 0.000). The shopping satisfaction (R2 = 0.505) and repurchase intention (R2 = 0.602) obtained moderate R2 values.

4.5. Mediation analysis

Baron and Kenny(1986) 's method was adopted to test multiple mediations. Further, the indirect effect significance test was also used to test for partial, full, or no mediation (Preacher and Hayes, 2004; Zhao et al., 2010). Table 4 represents the direct and indirect effects of e-fulfillment dimensions on repurchase intention (Step 1 and Step 2 of Baron and Kenney (1986) 's approach). Table 5 represents step 3 of Baron and Kenny (1986) 's approach, including all the structural path coefficients in the presence of mediators.

When shopping satisfaction acts as a mediator, the direct effect of timeliness and condition on repurchase intention gets reduced, whereas the influence of availability on repurchase intention becomes insignificant. Also, the standardized indirect (mediated) effect is significantly different from zero at the 0.05 level (p = 0.05, two-tailed). Further, a bias-corrected confidence interval was obtained using bootstrap approximation (Refer to Table 6). The bias-corrected confidence interval

Table 3  
Validity and reliability.

Construct	CA	CR	AVE	MSV	ASV	Avail	Time	Cond	ShopSatis	RepurInt
Avail	0.897	0.900	0.603	0.332	0.320	<b>0.776</b>				
Time	0.960	0.960	0.827	0.338	0.280	0.568	<b>0.909</b>			
Cond	0.831	0.861	0.615	0.348	0.287	0.542	0.430	<b>0.784</b>		
ShopSatis	0.868	0.875	0.638	0.581	0.400	0.576	0.581	0.590	<b>0.799</b>	
RepurInt	0.885	0.888	0.666	0.581	0.377	0.762	0.575	0.525	0.566	<b>0.816</b>

Note: CA: Cronbach's Alpha; C.R.: Composite Reliability; AVE: Average Variance Extracted; MSV: Maximum Shared Variance; ASV: Average Shared Squared Variance; <sup>a</sup>Diagonal values in bold are square roots of AVEs and the off-diagonal values are the correlations between the constructs.

Table 4  
Direct and Indirect effects.

Direct effect	Path coefficient	Indirect effects	Path coefficient
Avail- > RepurInt	0.26***	Avail- > ShopSatis	0.214***
Time- > RepurInt	0.189***	Time- > ShopSatis	0.237***
Cond- > RepurInt	0.352***	Cond- > ShopSatis	0.367***
		ShopSatis- > RepurInt	0.832***

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

Table 5  
Direct effect in presence of mediator.

Direct effect	Path coefficient
Avail- > ShopSatis	0.196***
Time- > ShopSatis	0.238***
Cond- > ShopSatis	0.353***
Avail- > RepurInt	0.143***
Time- > RepurInt	0.046
Cond- > RepurInt	0.141**
ShopSatis- > RepurInt	0.609***

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

does not include zero and establishes a significant indirect effect for all the constructs (Preacher and Hayes, 2004). This shows that partial mediation for availability (direct effect  $\beta = 0.143$ ,  $p = 0.000$ ; indirect effect:  $\beta = 0.178$ , LCI = 0.059, UCI = 0.169) and condition (direct effect  $\beta = 0.141$ ,  $p = 0.000$ ; indirect effect:  $\beta = 0.197$ , LCI = 0.15, UCI = 0.300) whereas full mediation for timeliness (direct effect  $\beta = 0.046$ ,  $p = 0.525$ ; indirect effect:  $\beta = 0.305$ , LCI = 0.103, UCI = 0.202) indicating support for hypotheses H1, H2 and H3. Further, the variance accounted for (VAF) value was calculated by taking the ratio of indirect effect to the total effect (that is, direct plus total effect) to determine the strength of mediation (Hair et al., 2016). VAF for availability is 55.5%, timeliness is 86.90%, and the condition is 58.30%, indicating an indirect path through shopping satisfaction absorbs more than 50% of the direct path for all the variables. Thus shopping satisfaction is necessary for explaining the relationship between e-LSQ and repurchase intention.

4.6. Moderation analysis

Multiple group confirmatory factor analysis (MGCF) was performed to study the variation across payment options, gender, and returning experience. Measurement invariance was done to ensure the equivalence of a measured construct across different groups (Davidov, 2008). Measurement invariance established the fact that the same construct is measured in each group and provides the opportunity to compare means or factor loadings path coefficients across different groups (Chen, 2011). Configural invariance was also carried out to establish measurement invariance. Tables 7-9 show that all the groups had an adequate fit.

Three conditions (namely metric invariance, scalar invariance, and structural covariances) must be satisfied to test measurement invariance (Davidov, 2008). Metric invariance restricts the factor loadings to be equal across groups, but the intercepts are allowed to vary across groups. Scalar invariance constraints both loadings and intercepts to be equal

**Table 6**  
Mediation analysis and Indirect effect significance Test.

Hypothesis	Path	Direct effect (c)	Direct effect in presence of mediator (c')	Indirect effect	Lower Bound	Upper Bound	p-value	VAF <sup>a</sup>	Mediation	Decision
H1	Avail- > RepurInt	.260***	0.143***	0.178*	0.059	0.169	0.012	0.555	Partial	Accepted
H2	Time- > RepurInt	.189***	0.046	0.305**	0.103	0.202	0.006	0.869	Full	Accepted
H3	Cond- > RepurInt	.352***	0.141**	0.197*	0.15	0.3	0.013	0.583	Partial	Accepted

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

<sup>a</sup> VAF: variance accounted for (VAF=Indirect effect/(Direct + Indirect effect)).

**Table 7**  
Measurement invariance based on payment options.

Model	N	X <sup>2</sup>	DF	CFI	TLI	RMSEA
Single Group CFA						
COD	251	495.906	220	0.942	0.933	0.071
Others	389	605.669	220	0.944	0.936	0.067
Multi-group CFA	640	1101.67	440	0.943	0.935	0.045
Baseline (Unconstrained)	640	1131.5	458	0.942	0.936	0.044
Metric Invariance	640	1163.03	473	0.941	0.937	0.044
Scalar Invariance	640	1270.12	496	0.934	0.932	0.046
Structural Covariances	251	495.906	220	0.942	0.933	0.071

across groups, whereas structural covariances constraints loadings, intercepts, variances, and covariances across groups. For model comparison and assessing measurement invariance, the goodness of fit index difference ( $\Delta$  goodness-of-fit index) was used (Chen, 2007; Voicu, 2010) according to which  $\Delta$ RMSEA should be less than 0.01 and  $\Delta$ CFI,  $\Delta$ TLI should be less than 0.02 for a good fit. For all the cases,  $\Delta$ CFI and  $\Delta$ TLI were observed below 0.02; and  $\Delta$ RMSEA was found to be less than 0.01, thus establishing measurement invariance (Refer to Tables 7–9).

After establishing the measurement invariance, the multi-group analysis was performed by testing the significance of the difference of path coefficients between two groups. A parametric t-test was used to test the significant difference in path coefficients.

Payment options were classified into two categories- (i) customers opting for COD as a payment option, and (ii) customers opting for other payment options like internet banking, debit card or credit card. Table 10 shows that the payment options moderate the relationship between (i) condition of the shipment and shopping satisfaction ( $\beta = -0.291, p = 0.043$ ) and (ii) condition of the shipment and repurchase intention ( $\beta = -0.397, p = 0.004$ ), indicating support for hypotheses H4 and H5.

Gender was also found to moderate the relationship between (i) condition of the shipment and shopping satisfaction ( $\beta = -0.386, p = 0.002$ ) and (ii) condition of the shipment and repurchase intention ( $\beta = -0.448, p = 0.000$ ), indicating support for H6 and H7 (refer Table 11).

The returning experience was classified into two categories - (i) Nonreturns: Customers who have not experienced returning or replacement experience and (ii) Returns: Customers who have experienced returning or replacement experience. The returning experience

**Table 8**  
Measurement invariance based on gender.

Model	N	X <sup>2</sup>	DF	CFI	TLI	RMSEA
Single Group CFA						
Male	440	646.015	220	0.947	0.939	0.066
Female	200	505.879	220	0.921	0.909	0.081
Multi-group CFA	640	1152.300	440	0.939	0.930	0.050
Baseline (Unconstrained)	640	1183.440	458	0.938	0.931	0.050
Metric Invariance	640	1237.930	473	0.935	0.930	0.050
Scalar Invariance	640	1331.610	496	0.928	0.927	0.051
Structural Covariances	640	1331.610	496	0.928	0.927	0.051

moderated the relationship between the condition of the shipment and shopping satisfaction ( $\beta = 0.359, p = 0.000$ ), indicating support for hypothesis H8. In contrast, the returning experience could not moderate the relationship between the condition of the shipment and repurchase intention ( $\beta = 0.108, p = 0.237$ ), showing hypothesis H9 was not accepted (refer to Table 12). The results have been reported in Fig. 4.

### 5. Theoretical and practical implications

The results indicate that shopping satisfaction has a full mediation effect on the relationship between availability and repurchase intention, whereas partial mediation between (i) timeliness-repurchase intention and (ii) condition-repurchase intention link. The finding of the study is similar to that of Rao et al. (2011) and Murfield et al. (2017). Thus, it indicates that e-tailers and their logistics service providers (LSPs) should increase the satisfaction of customers concerning e-LSQ that will increase the intent of the customers to repurchase from the same e-tailer, thereby resulting in the retention of customers. The satisfied customers will be repurchasing from the same e-tailers.

The moderating effect of payment options on the link between the condition of the shipment and shopping satisfaction (and repurchase intention) indicates that the customers who have paid the money through the online payment option are more concerned with the condition of the shipment. This finding is consistent with the previous literature (Gafeeva et al., 2018; Greenacre and Akbar, 2019; Runnemark et al., 2015). Hence e-tailers and their LSPs should focus mainly on the condition of the shipment for retaining the customers and should give preference to the segment of customers preferring all payment options rather than COD. It is one unique contribution of this study to the academic literature and the practitioners as well.

Gender was found to moderate the link between the condition of the shipment and shopping satisfaction (and repurchase intention), reflecting that females are more concerned than men towards the condition of the shipment. The findings of this study are complementary to the literature (Mortimer and Clarke, 2011; Sánchez-Franco, 2006; Sharma et al., 2012; Venkatesh and Morris, 2000). This again contributes to the literature, and it also provides an opportunity for the e-tail managers to focus more on female customers.

Further, e-tailers should identify the reasons for the higher incidences of return as logistics is more often outsourced to LSPs by e-

**Table 9**  
Measurement invariance based on returning experience.

Model	N	X <sup>2</sup>	DF	CFI	TLI	RMSEA
Single Group CFA						
Nonreturns	361	628.820	220	0.933	0.923	0.072
Returns	279	537.865	220	0.939	0.930	0.072
Multi-group CFA	640	1166.710	440	0.936	0.927	0.051
Baseline (Unconstrained)	640	1195.830	458	0.935	0.928	0.050
Metric Invariance	640	1328.240	473	0.925	0.920	0.053
Scalar Invariance	640	1663.140	496	0.898	0.895	0.061
Structural Covariances	640	1663.140	496	0.898	0.895	0.061



**Table 10**  
Multi-group analysis (payment options).

Hypothesis	Structural Paths	Global	COD (251)	Others (389)	Difference Path coefficient	Parametric test for difference t-value	Decision
		Path coefficient	Path coefficient	Path coefficient			
H4	Cond- > Shopsatis	0.353***	0.16*	0.451***	-0.291**	-2.932	Accepted
H5	Cond- > RepurInt	0.141***	0.11	0.507***	-0.397***	-3.724	Accepted

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

**Table 11**  
Multi-group analysis (gender).

Hypothesis	Structural Paths	Global	Male (440)	Female (200)	Difference Path coefficient	Parametric test for difference t-value	Decision
		Path coefficient	Path coefficient	Path coefficient			
H6	Cond- > Shopsatis	0.353***	0.22	0.606***	-0.386**	-3.163	Accepted
H7	Cond- > RepurInt	0.141***	0.219	0.667***	-0.448***	-3.475	Accepted

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

tailers. Further investigation is required to find which one whether outsourcing of logistics or in-adequate performance measurement of LSPs by e-tailers is generating more returns. In market-place based distribution channels, vendors sometimes dispatch the goods directly to customers as against some vendors being required to bring the items to the fulfillment center where final packaging is carried out after proper inspection. In the latter case, the poor condition of the order can be avoided before shipment. E-tailers can reduce returns arising due to product inaccuracy primarily due to the mismatch between the product description and actual offering. Despite all these interventions, should there be a service encounter of returns, e-tailers should sincerely think of designing their reverse logistics service architecture to regain the customers who faced returns. Thus, it may help increase the customer's shopping satisfaction and would pave the way for service recovery leading to repurchase intention.

Poor logistics infrastructure in India may result in damage to the products during shipment. Customers who have faced returning experience might have received the products in spoiled or damaged condition. Condition measures the reliability of the shipments in terms of product quality and accuracy of the shipment. The product might have been damaged during shipment owing to poor logistics infrastructure. The other reason could be the inferior quality products shipped by the supplier or inaccurate delivery of shipment. Returning experience moderated the relationship between the condition and shopping satisfaction. This indicates that customers facing returning or replacement experience is more concerned with the condition of the shipment. E-tailers could improve the delivery conditions of the shipments if they have control over the logistics supply chain. This includes receiving products from the suppliers to their fulfillment centers or warehouses. The packaging of the shipment could be monitored to reduce product damage during transit.

Further, the accuracy of the shipment could be checked before the start of the shipment. The findings suggest that e-tailers should opt either for an inventory-based operations model or fulfilled by e-tailers model. Both these models provide operations and logistics supply functions under the control of e-tailers. Further, e-tailers should develop their own "captive logistics arms" to increase the reliability of the

shipment (KPMG, 2016).

In this way, e-tail managers would be able to improve the condition of the shipment and simultaneously reduce returns. The reduction in returns would provide a competitive advantage (Ramrez, 2012) to e-tailers as returns cost increases the average logistics cost by fifty percent (KPMG 2018). Our finding is again unique and contributes to the literature on logistics service quality management.

In the Indian context, the condition of the shipment if the most critical dimension. This finding is contrary to that of Murfield et al. (2017); they found that timeliness as a most crucial dimension in the U. S. context, whereas in the Indian context, the condition is the most critical logistics service quality dimension since poor logistics infrastructure increases the chance of damaging of products during shipment. E-tail managers and their LSPs should ensure that the products are not damaged during the shipment. They should ensure product quality and accuracy of the shipment when it reaches the customers. They should select reliable logistics partners and ensure proper packaging (Rajesh et al., 2011). LSPs should focus on the accuracy and reliability (i.e., good quality) of the condition of the shipment.

**6. Limitations, future research directions, and conclusion**

First, this study lacked generalizability as the data was collected from Central India, and the sample was skewed towards youth. Second, this study considered products from the product categories of consumer electronics, apparel, and books. Future studies shall develop product category-specific frameworks to gain deeper insights into relationships. Third, this study focused on the 'pain of paying' concept to analyze the role of payment options; however, future research can analyze how payment options can generate trust in e-tailing. Fourth, this study didn't differentiate returns or product exchanges. Further, a longitudinal study shall be carried out to strengthen the findings.

This study found that e-tailers should increase the shopping satisfaction of the customers who experienced e-LSQ, which in turn may help to increase the intent of the customers to repeat purchase. The condition of the shipment is the most crucial e-LSQ dimension in the Indian context, and e-tailers should focus on improving the satisfaction and

**Table 12**  
Multi-group analysis (returning experience).

Hypothesis	Structural Paths	Global	Returns (279)	Nonreturns (361)	Difference Path coefficient	Parametric test for difference t-value	Decision
		Path coefficient	Path coefficient	Path coefficient			
H8	Cond- > Shopsatis	0.353***	0.376***	0.017	0.359***	3.578***	Accepted
H9	Cond- > RepurInt	0.141***	0.167***	0.059	0.108	1.023	Not Accepted

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

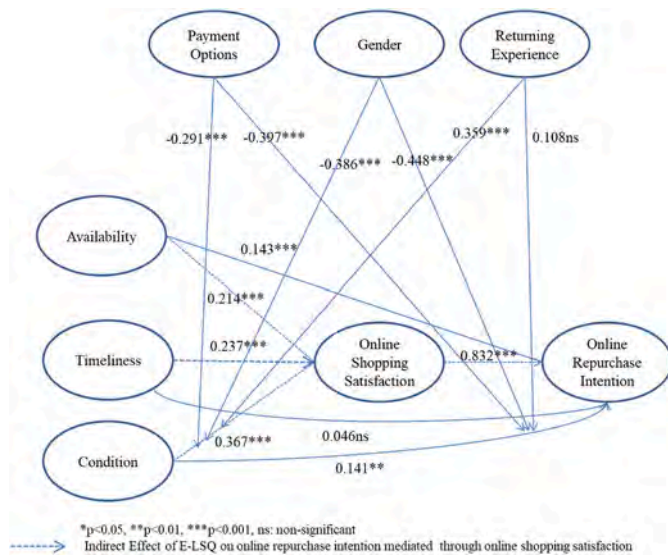


Fig. 4. Results.

repurchase intention arising from this dimension across different groups. Further, e-tailers may segment customers based on gender, payment options, and returning experience and can design differentiated policies to retain and win despondent customers.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jretconser.2020.102360>.

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