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Examining the relationship between the level of logistics service quality, relationship quality and repurchase intention in e-retail sector of Pakistan

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ABSTRACT

This study examined the relationship between the level of logistics service quality, relationship quality, and repurchase intention in the e-retail sector of Pakistan. Logistics service quality LSQ was integrated into the step-by-step purchasing process including pre-purchase, purchase, and post-purchase factors. This research is unique from existing research work as it validated a holistic model by examining the role of customer's perception of LSQ in strengthening their RQ and subsequent purchase intentions in the e-retail logistics sector of Pakistan and draw important suggestions to enhance the competitiveness of logistics services of domestic e-retail logistic firms. A survey strategy using self-administered questionnaires was employed from customers of departmental stores, large discount stores, shopping malls & retail outlets. A total of n=241 based on a cluster of conventional retail consumers across Pakistan was drawn. The study results provide a quality framework for the management of logistics service providers working in Pakistan's e-retail industry to evaluate the strengths and limitations of their service provision and then identify areas where improvements might be needed.

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Introduction

E-retailing in Pakistan is emerging as a significant alternative and major distribution channel to meet the needs of frugal customers in their busy daily lives. The role of quality of logistics service is crucial to overcome the gap between the order and delivery, therefore, the purpose of the current study was to assess the role of the logistics service quality of e-retailing firms in producing customers repurchase through the mediating role of relationship quality from customer perspective.

E-retail business has witnessed global expansion during the recent past due the spread of high-speed Internet networks and mobile applications (Willems et al., 2017). Due to such interventions, the online retailing business is also expanding rapidly (Sinha, Gokhale, Rawal, & Solutions, 2015). E-commerce services are also emerging as an alternative to overcoming the limitations of our existing distribution structure (Melacini, Perotti, Rasini, Tappia, & Management, 2018). In particular, the spread in Internet and mobile application services is transforming many of the distribution activities parallel with the growth e-retail business (Mena et al., 2016). As the number of e-retailing firms that target individual consumers continues to increase, offline retailers which operates the existing offline stores are entering the B2C e-retailing supply chain and run their operations in an integrated manner (T. Le, Vo, Fujita, Nguyen, & Baik, 2019; Sheffield, 2019).

Since the e-retailing supply chain market expanded rapidly through web sites adding new distribution channels, the B2C e-retailing supply chain industry has transformed into a full-fledged digital competition (Izogo & Jayawardhena, 2018). Therefore, securing stable customers and profitability is becoming an important task for many e-retailing firms.

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Due to activation of e-retailing industry, the prices, quality, features of products and service delivered are rapidly becoming homogenized (Kalia, Arora, & Kumalo, 2016; J.-H. Kim, Kim, & Lennon, 2016). In the midst of these changes, the channel power is gradually shifting to customers, E-commerce is shifting the center point of the logistics system from retailer to consumers who are seeking ways to maximize convenience, choice, and price—establishing a completely different shopping experience resulting in emergence of different set of expectation from online stores. As more shoppers buy online, the demand for a seamless shopping experience lands on e-retailers. They have to look for new possibilities to meet the customer expectations (Kawa & Maryniak, 2018; S. F. W. Lim, Jin, Srail, & Management, 2018). In the logistic sector, when evaluating the role of logistics as a means of strategic advantage, it has become particularly important to recognize consumer values and demands (Izogo & Jayawardhena, 2018). Although logistics services require both quality enhancement and cost savings, understanding logistics from the customer's point of view can boost service offerings and can be a vehicle for competitiveness (Kawa & Maryniak, 2018; S. F. W. Lim et al., 2018).

Thus, e-retailers should ensure their profitability by minimizing existing customer turnover through developing a differentiated strategy by consistently meeting what their customers expect. In response to such complexly segmented customer needs, many online retail firms need to focus on improving their logistics capabilities as a means to achieving sustained competitive advantage in the e-retail industry because it is difficult to differentiate based on product quality alone and can be easily be imitated. When recognizing the quality preferences of consumers, businesses should concentrate on those service components that can have the biggest effect in terms of shaping future actions. However, e-commerce, along with the growing number of online shopping customers, has proven to be more complicated relative to traditional ways of doing business (Santouridis, Trivellas, Tsimonis, & Sciences, 2012). One of the main factors contributing to success or failure in e-retail supply chains is the strengthening of the service quality of logistics service providers (Bouzaabia, van Riel, & Semeijn, 2013; Murfield, Boone, Rutner, Thomas, & Management, 2017). In this light, past research shows that the quality of logistics services in E-retailers is considered a major success factor in maintaining close relationships with customers and improving customer loyalty (Bhavsar, Diallo, & Ülkü, 2020; Bouzaabia et al., 2013; Davis & Mentzer, 2006; M. Kim, Jang, & Lee, 2013).

The main objective of the study is to examine the relationship between the level of logistics service quality, relationship quality and repurchase intention in e-retail sector of Pakistan. Logistics service quality LSQ was integrated into step-by-step purchasing process including pre-purchase, purchase, and post-purchase factors.

This research is unique from exiting research work as it validated a holistic model by examining the role of customer's perception of LSQ in strengthening their RQ and subsequent purchase intentions in the e-retail logistics sector of Pakistan and draw important suggestions to enhance the competitiveness of logistics services of domestic e-retail logistic firms.

A survey strategy using self-administered questionnaires was employed from customers of departmental stores, large discount stores, shopping malls & retail outlets. A total of n=241 based on a cluster of conventional retail consumers across Pakistan was drawn.

The organization of text is as follows. Following this part, the empirical review and hypothesis development highlights the research gap and builds basis for research questions. Data, research methods, analysis and findings have been presented under research and methodology section. Finally, this paper concludes with implications and future research directions.

Literature Review

Empirical Review and Hypotheses Development

Analyzing how customers evaluate the quality of these e-retailing logistics services is a very important factor in establishing the growth strategy of e-retail businesses (Fahad et al., 2018). Past studies in the domain of relationship marketing argue that in the midst of intense competition, maintaining long-term relationship with customers and inducing their favorable purchase behaviors are critical to a firm's long-term profitability and survival (Anđelković & Bajatović, 2020; El Baz, Laguir, & Stekelorum, 2019; Fuad & Gaur, 2019; Tan, Steinhoff, Bewley, Gieler, & Rives, 2019). Many e-retail businesses have been trying to attract new customers rather than maintaining existing customers. However, unique laws of e-retail supply chain have maintaining relationship with customers in a more important position than ever (Gupta & Singh, 2020; Hsu, Angeloudis, & Aurisicchio, 2018; Kassim, Abdullah, & logistics, 2010; Shi & Liao, 2013; G. Wang, Gunasekaran, Ngai, & Papadopoulos, 2016).

In addition, it is important to establish relationship marketing strategies that delivers superior value through logistics management in order to secure competitive advantage (Gupta & Singh, 2020; Huma, Ahmed, Ikram, & Khawaja, 2019; Murfield et al., 2017). Nevertheless, most of the academic research on logistics has been conducted only from an operational perspective, such as route design, cost-cutting and dispute research. Few studies have integrated the concept of logistics service quality which is currently an emerging issue in the domain on logistic and supply chain management research (Kaswengi, Lambey-Checchin, & Management, 2019; Pommi, 2020). Thus, e-retail managers need to focus on maintaining existing customers building on defensive marketing strategies for sustained growth and profitability. Simply providing quality products at a low price does not guarantee differential competitive advantage, therefore e-retail managers need to focus on building superior logistic capabilities to prevent the departure of existing customers while appealing to their consumption experience of providing unique and competitive customer value to meet the customers' diversified needs at various levels. Research in online shopping context suggest that, compared to offline, it is difficult to establish close relationship between internet e-retailers and consumers on-line (Pappas, Sharma, Mikalef, & Giannakos, 2018).

Therefore, it is an important issue for retailers who operate online to build relationships with online buyer that are easy to switch at any time, thereby enhancing the quality of their logic services to develop and maintain long-term relationship. In many ways consumer's satisfaction, and confidence in a particular e-retailers is recognized as variable that determines retail sales and profitability (Hsu et al., 2018). Therefore, owing to expansion of e-retailing industry in Pakistan and surge in the number of online shopping consumers due the spread of e-commerce, understanding logistic service quality from the perspective consumers on maintaining profitable relationship with e-retailing firms and consumers requires a systematic and continuous research (Amjad & Siddiqui, 2019; Shirani, 2018).

To this end, many prior studies conducted research on how to induce consumer repurchasing behavior and reducing consumer turnover, However, existing research has not thoroughly examined the entire experience of e-commerce and the quality of logistics service perceived by customers together with relationship quality, turnover intention, and repurchase intention in e-retail industry from a holistic perspective. This research served as starting point for domestic researchers to further explore the role of LSQ in developing and maintaining quality relationships with users of e-retail supply chain businesses. Only few studies regarding logistic service quality of e-retailing firms has been conducted on domestic e-retail industry while much of the past research work has been focused towards developed economies. In addition, being an emerging economy, Pakistan differs from foreign countries greatly due to cultural, logistics infrastructure (Hamzah, Othman, Rashid, Ngah, & Society, 2020; U. Tandon, Kiran, Sah, & Management, 2018). Therefore, it is meaningful to conduct empirical research quality of logistics services (LSQ) in an emerging economy like Pakistan. Therefore, the purpose of this study was explore the role of logistic service quality LSQ in developing and maintaining quality relationship (conceptualized as customer satisfaction, trust and commitment) to induce customer repurchase intention among users of e-retail industry.

Figure 1: Research Model - *Conceptual framework of the study*

Logistics Service Quality

Service quality is defined as a type of attitude, a long-term overall assessment of a product or service, while a transaction-specific assessment is called satisfaction (Bitner, Booms, & Tetreault, 1990; Zeithaml, Parasuraman, & Berry, 1985). According to the characteristics of logistics, the quality of logistics services involves both online and offline aspects. J. W. Lin, Li, and Yang (2006) found that the perceived service quality positively affected perceived value, customer satisfactions, and behavioral intentions. LSQ is expected to have a positive effect on trust and perceived value, because favorable service can increase a customer's trust in a service provider and enhance his/her perception of what is received (Fornell, Johnson, Anderson, Cha, & Bryant, 1996). Several service managements studies have shown that service quality plays a key role in building trust (Chenet, Dagger, & O'Sullivan, 2010; Chiou & Droge, 2006). Logistic service quality has been considered to be one of the primary drivers of customer satisfaction (Fernandez, Lara, Ugalde, Sisodia, & Services, 2018; Kusumawardani & Hastayanti, 2020; E. Rachmawati & Suroso, 2020). Archer and Wesolowsky (1996) suggested that service quality and product quality are all of equal importance in affecting customer satisfaction. Fernandes, Moori, and Vitorino Filho (2018) found that logistic service quality was the main variable for customer satisfaction. By evaluating a revised satisfaction and service quality model, Utomo and Rahmawati (2020) studied the link between LSQ and satisfaction. Therefore, based on preceding studies this study proposed the following:

(H₁): Logistic services quality will have a positive effect on Relationship quality.

Rajendran, Wahab, Ling, and Yun (2018) found that among the various logistics services of e-retailers, the guarantee of delivery service affects the overall user satisfaction. In the study of Jiang and Zhang (2016), in order to discover the factors that affect the user satisfaction from E-retailers, the effects of factors such as ease of use, ease of payment and refund, security and reliability, and

customer support service on satisfaction and repurchase intentions were investigated. In a study by Rodríguez-Espíndola, Alem, Da Silva, and Engineering (2020), it was found that all factors affect satisfaction, and ease of use, security and reliability, and customer support services affect the repurchase intention. In addition, convenience and low shipping prices were identified as major competitiveness of e-retailers. Rajendran et al. (2018) defined variables such as economy, kindness, accuracy, speed, stability, and convenience of delivery price as determinants of delivery service quality in the measurement of delivery service quality, and the relationship between these factors and satisfaction and repurchase intention. Ocicka, Raźniewska, and Economics (2016) found that speed, economy, accuracy, and convenience had a significant effect on satisfaction. A. Tandon (2020) demonstrated that shopping satisfaction is a mediator that must be formed in order for consumers to have repurchase intentions in E-retailers, and that shopping satisfaction is particularly influenced by delivery services. On the basis of such prior research, the following hypothesis was established to investigate the relationship between delivery service quality, trust, and commitment, which are factors of logistics service in purchase situation.

(H₂): The quality of delivery service of logistics services will have a positive effect on Relationship quality.

- *(H₂-1): Delivery quality will have a positive effect on trust.*
- *(H₂-2): Delivery quality will have a positive effect on commitment.*
- *(H₂-3): Delivery quality will have a positive effect on satisfaction.*

In Chen et al. (2019) study of post-purchase behavior found factors such as convenience, order cancellation, return, repayment, etc. that has significant effect on the consumer's purchase satisfaction. Kaswengi et al. (2019) explains the Internet marketing function by dividing it into distribution channel and distribution channel accessibility. The function of distribution channel refers to the payment of charges and the transfer of ownership accordingly. payment stability, rapid delivery, easy exchange, convenient refund, and post-purchase service were found to affect consumers' purchasing behavior and purchase satisfaction. Based on the previous studies.(Dang, Yeo, 2018; H. B. H. LE, NGO, TRINH, NGUYEN, 2020), the following hypotheses were established to investigate the relationship between the quality of return service, trust, and commitment, which are factors of post-purchase logistics service.

(H₃): The quality of return service for logistics services will have a positive effect on Relationship quality.

- *(H₃-1): Quality of return service will have a positive effect on trust.*
- *(H₃-2): Quality of return service will have a positive effect on commitment.*
- *(H₃-3): Quality of return service will have a positive effect on satisfaction.*

The SERVQUAL model provides a theoretical basis for the causal relationship between service quality and customer satisfaction (Cronin Jr & Taylor, 1992). This study rearranged the logistics service quality factors that were commonly included in the existing research on the process level of logistics service quality in the process of E-retailer operations. Jamwal, Aggarwal, Gupta, and Sharma (2019) developed an e-commerce success model, including system quality, reliability and support services as independent variables, and system use and customer satisfaction as dependent variables. The results of a study were found that the factors of system quality, information quality, and design quality that constitute the quality of business affect trust and satisfaction and affect transaction intention. Ejdyas and Gulc (2020) stated that the more customers visit the website, the higher the likelihood of purchase on the website. Based on such prior research, the website quality factor, which is a logistical service factor before purchase, was redefined and a hypothesis was established about the relationship between trust and commitment.

(H₄): The quality of the website of logistics services will have a positive effect on Relationship quality.

- *(H₄-1): Website quality will have a positive impact on trust.*
- *(H₄-2): Website quality will have a positive effect on commitment.*
- *(H₄-3): Website quality will have a positive effect on satisfaction*

The relationship between Relationship quality and repurchase intention

In evaluating future purchase intention, Garbarino and Johnson (1999) concluded that for different types of consumers, three aspects of relationship quality can be separately defined and treated independently that is, overall consumer satisfaction, trust and commitment, In particular, they proposed that overall consumer satisfaction could affect trust and, in effect, trust could affect commitment. A customer's perceived trust in a site can affect his/her willingness to take the risk of buying something that he/she cannot physically inspect (Han & Cheng, 2020).

Marriott, Williams, and Services (2018) have shown that trust in online merchants can increase consumers' willingness to shop online. Besides the role of mitigating risks, trust belief also enhances an individual's expected usefulness or performance of a product or service (Gefen, Karahanna, & Straub, 2003). E. S.-T. Wang, Lin, and Technology (2017) pointed that perceived trust correlated positively with continued usage intention. Thus, we expect consumers' continuous usage intention to logistics service will increase when they form trust on the logistics platforms. It has been shown that commitment can last longer than the usual case due to their openness to the commitment experience. Oliver (1980) has demonstrated that customer satisfaction affects attitude after purchase and that this attitude continues to affect repurchase intention. The satisfaction of the customer increases the repurchase intention, which is a factor that affects the repurchase intention or the brand conversion intention. Dorai, Balasubramanian, Sivakumaran, and Services (2021) showed that the higher the frequency of revisiting the internet shopping satisfaction, the higher the intention of repurchase. This shows that consumers who purchased goods or services in the e-retailer feel shopping satisfaction and are more

likely to repurchase when they visit the e-retailer frequently. X.-J. Lim et al. (2019) said that the industry with intense market competition showed a gradual increase in repurchase intention as satisfaction increased, while it showed a rapid increase at a certain point of time, and that the repurchase intention was high even if the satisfaction was low in the monopolistic situation where market competition was limited.

(H5): Relationship Quality will have positive effect on Repurchase Intention.

- *(H5-1): Customer satisfaction will have a positive effect on Repurchase Intention.*
- *(H5-2): Trust will have a positive effect on Repurchase Intention*
- *(H5-3): Customer commitment will have a positive effect on Repurchase Intention.*

In the business-to-business (B2B) settings, M. Li, Shen, Huang, and Engineering (2019) examined how relationship quality can affect customer loyalty mediated by two relationship quality constructs encompassing four distinct facets (i.e., customer satisfaction, trust, commitment and service quality): internal relationship quality and overall quality of the relationship with current supplier. As per their study, the nature of the relationship affects the desire of consumers to repurchase, but only two factors, customer satisfaction and perceived quality of service, affected behavioral loyalty. Provided the theoretical perspectives and evidence of previous studies on service quality, quality of relationships and the intent to repurchase customers, the following hypothesis were proposed:

(H6): Relationship Quality will mediate the relationship between Repurchase Intention indirectly through improving Logistics service quality.

(H6-1-3) Customer satisfaction, trust and commitment will mediate in sequence the relationship between Logistic service quality and customer purchase intention.

Research and Methodology

The current study was exploratory in nature, wherein it explored the association between LSQ, relationship quality and repurchase intention in e-retail sector. The current study employs quantitative methods using a questionnaire survey to collect primary data from users who make frequent transactions online with e-retailing firms. Data was collected using convenience sampling technique from consumers ordering products online on frequent basis from different e-retailers. A total of $n=241$ based on a cluster of conventional retail consumers across Pakistan was drawn based on sampling recommendation by (Hair Jr, Hult, Ringle, & Sarstedt, 2016). A survey strategy using self-administered questionnaires was conducted from customers of departmental stores, large discount stores, shopping malls & retail outlets. Only those respondents were included, who frequently purchase and order products from their e-retail firms online their websites. The study used SPSS 25.0 and Smart PLS 3.0 statistical analysis software to test the hypotheses, run frequency analysis, reliability and validity analysis, factor analysis, correlation analysis, and structural equation modeling. Before testing proposed model, its validity was tested using exploratory factor analysis to confirm psychometric properties of the scales used. Afterwards, confirmatory factor analysis was used to check inner and outer path loadings, reliability, average variance extracted (AVE) and discriminant validity. Next hypothesis testing was confirmed using SEM-PLS algorithm and path significance will be verified. Finally, bootstrap resampling technique was used to check the indirect relationship between variables.

Measures

Logistics service quality refers to the quality perceived by users during all phases of interactions with a logistics platform, including encounters that occur before, during, and after the transactions. Quality of delivery service LDQ, quality of return services LRQ and website quality WQ were used as first order constructs to measure the degree of logistics service quality. The quality of a web site refers to a logistic service provider quality that refers to the communicates between web administrators and users for conveniently ordering and approving information on a visually diverse and harmonious web screen with easy access to information on the e-retailer web site (Akram et al., 2018; Al-dweeri, Obeidat, Al-dwiry, Alshurideh, & Alhorani, 2017; Pandey, Chawla, & Management, 2018). The quality of delivery service is the overall process from order to delivery to customers who visited the e-retail outlets online. It is a service quality scale that creates the time and space utility of goods and services such as delivery management process, delivery price, newness, accuracy, stability, product damage during delivery process (Bai, Kusi-Sarpong, Badri Ahmadi, & Sarkis, 2019; Raman & Logistics, 2019; Zhao & Zhu, 2018). The quality of return service refers to a service measure for handling consumer complaints by returning the purchased product to the seller or supplier for various reasons such as exchange, refund, and repair after purchasing the product (Cao, Ajjan, Hong, & Logistics, 2018; Oghazi, Karlsson, Hellström, Hjort, & Services, 2018; J. Wang, Li, Lu, Yang, & Wang, 2020). While there is limited agreement in describing and assessing the quality of relationships as a higher-order and multi-dimensional construct, due to the fact that there exists a number of relationships across consumers and business segments, similar to service quality, the quality of relationship that exist between buyers and sellers can also be operationalized. It will be operationalized in this current study as a three-dimensional concept consisting of satisfaction, trust and commitment, which means the degree of satisfaction, trust and commitment of customers have towards e-retailing firms. Customer satisfaction refers to the favorable feelings experienced during the process of purchasing products or services from an e-retailer after a comparative evaluation (Hu & Chen, 2018; Peterson, Kim, Jeong, & Marketing, 2020; U. J. J. o. M. A. Tandon, 2020; Waker, de Alencar Nääs, Duarte, & Papalardo, 2018). Trust refers to users' expectation that logistics service provider behaves ethically, dependably and fulfill their expected commitments (Iassinovskaia, Limbourg, & Riane, 2017; Menidjel, Benhabib, Bilgihan, Madanoglu, & Management, 2019; Vuong & Khanh Giao, 2020). Commitment refers to a desire to maintain valuable relationship and the belief that it is important

enough to make the utmost effort to maintain a lasting relationship with the exchange partner (Agag, 2019; Ertz, Durif, Lecompte, & Boivin, 2018; Ethirajan et al., 2021; Y. Li, Guo, & Zhang, 2018). Repurchase intention refers to the possibility that the customer will repeatedly use the service provider in future purchasing activities. The measurement focuses on post-purchase evaluation by relating (Oliver, 1980)'s post-purchase evaluation of product performance. All the constructs were measured using a seven-point Likert scale throughout the study.

Results

Descriptive Statistics

The age group selected in this sample is in line with the actual development of e-retail logistics in Pakistan. The majority of respondents were young people with undergraduate education (122 people), accounting for 50.6% of the sample, followed by 79 college students, accounting for 32.8% of the total, and 23 respondents had graduate education level, accounting for 9.5% of the total. Then for the income level, 60.2% of the respondents are below 60000 rupees, and 39.8% of the respondents are above 60000 rupees per month. The occupation of respondents were students (79 people), corporate / company staff (75 people), institutions / government staff (32 people), self-employed / freelance (37 people) and others (18 people), accounting for 32.8%, 31.1%, 13.3%, 15.4%, 7.5%, respectively. The sample has good representativeness and can reflect the typical situation of current e-retail logistics in Pakistan large and most populous cities.

Table 1: Characteristics of the Respondents ($n = 241$)

	Frequency	Percentage %
Times of using e-retailing products		
Once	93	38.6
2-3 times	83	34.4
4-6 times	34	14.1
7-10 times	16	6.6
Above 10 times	15	6.2
Gender		
Male	100	41.5
Female	141	58.5
Age		
20 and under 20	31	12.9
21-30	104	43.2
31-40	93	38.6
41-50	11	4.6
Above 50	2	0.8
Education		
High school and below	30	12.4
College	62	25.7
Undergraduate	122	50.6
Master	23	9.5
Doctorate and above	4	1.7
Income per month (PKR)		
Below 30000	94	39.0
30000-60000	51	21.2
60001-100000	46	19.1
100001-150000	29	12.0
150001-200000	10	4.1
200001-500000	7	2.9
Above 500000	4	1.7
Occupation		
Students	79	32.8
Corporate / Company Staff	75	31.1
Institutions / Government	32	13.3
Self-employed / Freelance	37	15.4
Others	18	7.5

Measurement model

All the items involved in this study, were reflective indicators, so when assessing reflective outer models, the reliability and validity should be verified. Reliability was evaluated the construct measures' internal consistency reliability. The validity was evaluated by dividing it into discriminant validity, which indicates differences between concepts, and convergent validity, which indicates the degree of correlation between measured variables and factors. Internal consistency can be assessed by Cronbach's alpha, Average

Variable Extracted (AVE), and construct reliability also referred to as composite reliability. The scale with high composite reliability can generally be evaluated as having high internal consistency, and the acceptable level of reliability is generally higher than 0.7 (Anderson & Narus, 1990). In addition, Cronbach's alpha value for evaluating reliability may be judged to be reliable if it is 0.6 or more, and excellent if it is 0.7 or more. Average Variable Extracted (AVE) represents the amount of variance described by the constitutive concept, and if the value is 0.5 or more, it can be judged that there is reliability of the constitutional concept (Fornell & Larcker, 1981). In this study, when looking at the reliability analysis of the primary factors in Table 2, the reliability of Cronbach's Alpha of every potential variable was greater than 0.7 (0.711~0.945), the composite reliability was 0.877 ~ 0.953, showing that all the items were higher than the standard value, confirming the high level of confidence in the concept. Convergent validity is established when every individual item has an external loading value greater than 0.60 and when the AVE values are 0.50 or greater (F. Hair Jr, Sarstedt, Hopkins, & G. Kuppelwieser, 2014). In general, all factor loading values were indicated as 0.642 to 0.906, and the average variance extraction (AVE) value was also found to be more than 0.5 (0.521~0.785) in all factors, which could be judged to have good convergent validity in the construction concept.

Table 2: Reliability and Construct Validity

Construct	Items	Loadings	α	rho_A	CR	AVE
Commitment	<i>cm1</i>	0.886	0.858	0.859	0.914	0.779
	<i>cm2</i>	0.896				
	<i>cm3</i>	0.866				
Customer satisfaction	<i>cs1</i>	0.904	0.885	0.885	0.929	0.813
	<i>cs2</i>	0.892				
	<i>cs3</i>	0.908				
Delivery quality	<i>dq1</i>	0.713	0.776	0.78	0.848	0.527
	<i>dq2</i>	0.745				
	<i>dq3</i>	0.764				
	<i>dq4</i>	0.703				
	<i>dq5</i>	0.704				
Repurchase Intention	<i>ri1</i>	0.909	0.789	0.789	0.904	0.826
	<i>ri2</i>	0.908				
Return Quality	<i>rq1</i>	0.852	0.899	0.90	0.929	0.767
	<i>rq2</i>	0.887				
	<i>rq3</i>	0.863				
	<i>rq4</i>	0.901				
Trust	<i>tr1</i>	0.922	0.858	0.881	0.913	0.779
	<i>tr2</i>	0.804				
	<i>tr3</i>	0.917				
Website quality	<i>wq1</i>	0.851	0.781	0.802	0.858	0.603
	<i>wq2</i>	0.759				
	<i>wq3</i>	0.797				
	<i>wq4</i>	0.691				

Note: α =Cronbach Alpha, AVE = Average Variance Extracted; CR = Composite Reliability.

Discriminant validity is the degree of which the construct is empirically different from other constructs or, in other words, what it is supposed to test should be measured by the construct. The Fornell and Larcker (1981) criteria is one technique for evaluating the presence of discriminant validity.

This approach asserts that with its indicators, the construct should share more variation than with any other construct. To test this requirement, the square root of the AVE for each construct should be greater than the correlation values between any two constructs.

The results were shown in Table 3 that the diagonal which are the square-root of average variance extracted values of all the latent constructs which are greater than the correlation estimate in any row or column, providing acceptable discriminant validity.

Table 3: Discriminant Validity

	CM	CS	DQ	LSQ	RI	RQ	TR	WQ
CM	0.883							
CS	0.525	0.901						
DQ	0.061	0.23	0.726					
LSQ	0.352	0.545	0.402	1				
RI	0.62	0.536	0.07	0.279	0.909			
RQ	0.064	0.141	0.131	0.347	0.001	0.876		
TR	0.515	0.408	0.076	0.28	0.488	0.109	0.883	
WQ	0.165	0.294	0.229	0.506	0.183	0.196	0.164	0.777

Note: The diagonal values are the square-roots of Average variance extracted value of latent constructs these values are highest in every column.

Hypotheses Testing results

The hypothesis test for the research model presented in this study was performed by verifying the significance between the paths of the structural model. In this study, as a method for evaluating the significance of the path coefficient, bootstrapping was performed for 1000 times by repeatedly sampling, presenting a t-value and a p-value to evaluate the significance of the hypothesis path (Chin, 1998). Table 3 shows the significance between the paths for the research hypothesis was evaluated by presenting the values of the path coefficients and the t-values.

The proposed hypotheses in Table 3 were tested using path relationship among eight latent constructs. $H_1 - H_4$ show the casual relationship between the first order constructs of Logistic service quality and relationship quality i.e., H_2 represents the path relationship between DQ → CS → TR → CC, H_3 represent the causal relationship between RQ → CS → TR → CC, H_4 represent the causal relationship between WQ → CS → TR → CC. H_5 represent the causal relationship between RQ and its three sub-variables ($H_{5-1} - H_{5-3}$) of relationship quality (i.e., CS, TR and CC) with RI. Similarly, three hypotheses and sub-hypotheses relating to H_6 signify the indirect relationship of RQ (i.e., CS, TR and CC) between LSQ and RI. As per Table 4 and Figure 2 and, all paths assumed in the hypothesized model were statistically significant at various significance levels separately, the individual paths were also evaluated in detail. First, path LSQ → CS → TR → CC is statistically significant at the $p=0.000$ significance level with the path coefficient of $\beta=0.080$, implying the impact of quality of delivery services on relationship is positive and very strong.

Path DQ → CS → TR → CC is statistically significant at the $p=0.000$ significance level with the path coefficient of $\beta=0.100$, implying the impact of quality of delivery services on relationship is positive and very strong. Path RQ → CS → TR → CC and Path WQ → CS → TR → CC are also statistically significant at the $p=0.000$ significance level with the path coefficient of $\beta=0.109$ and $p=0.000$ significance level with the path coefficient of $\beta=0.039$ respectively implying the impact of quality of return services and quality of website on relationship quality is positive and strong. The path CS → TR → CC → RI is statistically significant at the $p=0.000$ significance level with the path coefficient of $\beta=0.058$, implying the impact of relationship quality on customer repurchase intention is positive and strong. The sub-paths CS → RI, TR → RI, CC → RI are positive and significant at $p=0.000$ significance level with the path coefficients of $\beta=0.257$, $\beta=0.182$, $\beta=0.392$ implying that customer satisfaction, trust and commitment are strongly related to customer repurchase intention. The mediation path LSQ → CS → TR → CC → RI is statistically significant at the $p=0.000$ significance level with the path coefficient of $\beta=0.031$ revealing a sequential indirect effect. Moreover, the paths LSQ → CS → TR → RI, LSQ → CS → CC → RI and, LSQ → CS → RI also show significant mediation effects between LSQ and RI at $p=0.000$ significance level with path coefficients of $\beta=0.04$, $\beta=0.081$, $\beta=0.14$. The SEM results also partially supported the nomological validity of the LSQ, RQ and RI measurement models as path LSQ-RQ was anticipated to have a positive impact on RI theoretically.

Table 4: Significance Testing Results of the Structural Model Path Coefficients

Hypothesis	Path	Path Coefficient	SD.	T-Value	P- Values	Decision
H1	LSQ → CS → TR → CC	0.080	0.016	4.937	0.000	Supported
H2	DQ → CS → TR → CC	0.100	0.022	4.54	0.000	Supported
H3	RQ → CS → TR → CC	0.109	0.024	4.527	0.000	Supported
H4	WQ → CS → TR → CC	0.039	0.01	3.771	0.000	Supported
H5	CS → TR → CC → RI	0.058	0.014	4.079	0.000	Supported
H5-1	CS → RI	0.257	0.045	5.735	0.000	Supported
H5-2	TR → RI	0.182	0.051	3.557	0.000	Supported
H5-3	CC → RI	0.392	0.046	8.453	0.000	Supported
H6	LSQ → CS → TR → CC → RI	0.031	0.008	3.772	0.000	Supported
H6-1	LSQ → CS → TR → RI	0.040**	0.013	3.089	0.002	Supported
H6-2	LSQ → CS → CC → RI	0.081	0.016	5.089	0.000	Supported
H6-3	LSQ → CS → RI	0.140	0.026	5.424	0.000	Supported

Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Figure 2: Research Model Path Analysis

Discussion

First of all, it was found that that LSQ had a significant influence on relationship quality (H_1 : supported). All the constructs of LSQ, including quality of delivery service, quality of return service and website quality had a significant relationship with and its constituents die mentions of RQ including satisfaction, trust and commitment, therefore (H_2 , H_3 , H_4 were all supported). All the constructs explain about $R^2 = 38\%$ variance in relationship quality. This suggest that in order to form stronger and long-term relationships characterized by customer satisfaction, trust and commitment, e-retail service providers will have to focus on delivering exceptional logistic services to meet increasing customer expectation regarding overall logic service quality. Companies have recently attempted to boost logistics services to strengthen their competitive position, that can be evaluated in terms of level of user satisfaction, trust and level of commitment to the logistics experience offered.

The positive impact of logistics service on satisfying customers was commonly recognized by (Fernandes et al., 2018; J. Lin, Chen, Kawamura, & Economics, 2016; Ocicka et al., 2016; D. Z. Rachmawati & Agus, 2020; Zhou, Zhang, & Ren, 2018). Moreover, together with these studies, several studies including (Chan, Ngai, & Moon, 2017; Ejdays & Gulc, 2020; M. Li et al., 2020; S. F. W. Lim & Winkenbach, 2019; Mangla, Sharma, Patil, Yadav, & Xu, 2019; NGUYEN, NGUYEN, TAN, & Business, 2021; Prasanna & Vinita, 2021), emphasized that not delivery aspects of Quality of logistics service relates to whether the correct services or products are supplied in the exact quantity, at the exact location and at the precise time moreover the quality of rerun services in logistics service quality relating to how well consumers return requests have been handled which ultimately have a positive effect on satisfaction. The results show that consumers with time build their confidence and feel committed only when they are satisfied from LSQ of the re-retail service provider. In addition, in formation of consumer relationships, Garbarino and Johnson (1999) showed satisfaction, trust and commitment play a critical role. In marketing literature, the inter-relationship among these were also verified (e.g., Caceres & Paparoidamis, 2007; Morgan & Hunt, 1994). Therefore, it is interesting to validate these relationships in the field of e-retail logistics. It has been confirmed, similarly to other earlier studies, that customer satisfaction had a significant impact on their confidence and, in turn, consumer confidence affects their commitment. In addition, description of relationship quality in three sub-constructs is also supported by these findings. H_5 dealt with the association between the nature of the relationship and re-repurchase intention.

The results show that customer satisfaction, trust and commitment had a strong positive effect in predicting customer repurchases intention, however it can be noted that those customers who are commitment with the logistic service provider based on their satisfaction and trust had the greatest impact on RI. This shows that although satisfaction with trust in the services of the logistics service provider based on their logistics service quality is important to generate consumer repurchase intention, however this path becomes more stronger through their long-term commitment over time based on this H_{5-1} , H_{5-2} , H_{5-3} were also supported. Based on these results, it can be determined that merely satisfying customers does not guarantee repurchase in the future and possible only through consistent delivery of LSQ over time.

The study results also confirm that although LSQ, including quality of delivery service, quality of return service and website quality had a significantly predict customer repurchase intention however this path is amplified due to the mediation effect of RQ. According to the results the constituent dimensions of RQ including satisfaction, trust and commitment in sequence mediate the relationship between LSQ and RI. All the three dimensions of LSQ have significant direct and positive effect on repurchase intention, however with addition of relationship quality as mediating mechanism the model explanatory power significantly improves and result in higher

variance in customer repurchase intention. Therefore, H_6 and sub-hypotheses H_{6-1} , H_{6-2} , H_{6-3} were supported. From these, it can be inferred that excellent logistics service quality makes consumers satisfied which e-retailer and enhances their confidence in logistics services as result they feel more committed to the e-retailer therefore such quality relationship if maintained will lead to consumers favorable purchase decision in the future.

Implications

E-retailing in Pakistan is emerging as a very important alternative and major distribution channel to meet the needs of frugal customers in their busy daily lives. This is because the role of quality of logistics service is so important to overcome the gap that consumers cannot visit logistic service providers in person and purchase goods, and the time and place gap from the start of the product purchase till the product is delivered. The primary purpose of this study was to assess the role of the LSQ of e-retailing firms in producing customers repurchase through the mediating role of relationship quality from customer perspective.

This study empirically examined the relationship between the level of logistics service quality, relationship quality and re-purchase intentions in e-retail sector of Pakistan. Logistics service quality LSQ was integrated into step-by-step purchasing process including pre-purchase, purchase, and post-purchase factors and was measured as a second-order construct including website quality (pre-purchase), delivery service quality (purchase situation), and return service quality (purchase post-purchase). Whereas the level of satisfaction, trust and commitment that customers have with the e-retailer was measured as relationship quality RQ. The quality of the relationship, that represents the accurate reflection of the strength of a relationship and the degree to which it satisfies the parties' wishes and preferences based on a series of successful or unfavorable experiences or events (Hymon-Parker, Smith, & Sciences, 1998), was divided into three sub-constructs: satisfaction, trust and commitment.

This study is unique from exiting research work as it validated a holistic model by examining the role of customer's perception of LSQ in strengthening their RQ and subsequent purchase intentions in the e-retail logistics sector of Pakistan and draw important suggestions to enhance the competitiveness of logistics services of domestic e-retail logistic firms. The Structural Equation Modeling (SEM) evaluation further revealed the fact that better website quality (pre-purchase), quality of delivery service (purchase situation), and quality of return service (pre-purchase) seem to be more significant for deciding customer satisfaction, trust and commitment and are increasingly important in the context of e-retail logistics services.

Furthermore, it was worth noting from the results of the study of the measurement model and structural model analysis that all three dimensions of LSQ have a significant direct and positive impact on repurchase intention, however with addition of relationship quality as mediating mechanism the model explanatory power significantly improves and result in higher variance in customer repurchase intention. These demonstrate that only provision of LSQ does not guarantee favorable purchase intention among consumers rather e-retail firms should sustain quality relationship overtime through persistent LSQ efforts. These results highlight the important role of LSQ and its dimensions in the ongoing and prospective delivery of logistics services in Pakistan's e-retail industry. The method was verified by empirical data to confirm the significant positive impact on customer satisfaction, trust and commitment of each of these dimensions of the quality of logistics service.

This study tested complex relationships and contributes to the analytical contributions of both methods of data collection and analysis. Compared to other research, structural equation modelling (PLS-SEM), which was rarely used in data analysis, particularly in the areas of logistic services, offers multiple advantages, such as concurrently assessing a set of variables and their inter-relationships. The study confirmed that customer satisfaction, trust and commitment are important mediating mechanism that further enhances the LSQ and RI link. The model designed and evaluated in this study is therefore considered to be the valuable academic contribution of the logistics service quality literature in the e-retail context.

In addition, the significant direct causal relationship between customer satisfaction, trust and commitment resulting from the empirical investigation in the context of logistics supply chain service strengthens the marketing literature in services. Logistics service quality has long been noted to play a key role in contributing to the performance and corporate success of an company, but research in this respect is scarce and there has been no commonly accepted LSQ measurement models.

Conclusions

The study results provide a quality framework for representatives of logistics service provider companies operating in Pakistan's e-retail industry to evaluate the strengths and limitations of their service provision and then identify areas where improvements might be needed. The performance indicators listed in this research can be used by logistics service providers in the e-retail sector as guidance for improving their service performance. This study also has many managerial implications. Any firm who wants to create a competitive advantage in business should give importance to customers quality expectation is each stage of their purchase process. Therefore, logistics firms cannot build any long-term relationship without understanding the fundamental factors behind the customers' perceptions of what constitutes logistics service quality.

The complexities of today's market environments demand improvements in the area of e-logistics process optimization, particularly in the search for creative technologies aimed at responding to new situations. It is highly necessary to adapt rapidly to the complexity of consumer demands in the era of global competition and to apply new technology and information facilitate the management field.

In particular, managers of e-retail supply chain firms should manage their website quality in terms of product pricing, attractive catalogues, accessibility, and content design which customers recognize as important factors for repurchase. Second, regarding quality of delivery service, effective management of pre-delivery calls, quick and safe delivery of products ordered by customers, and time commitment with customers are regarded as an important factor for repurchase. Third, regarding the quality of return service, product claim due to customer dissatisfaction is recognized as an important factor, and various alternatives should be considered to restore the relationship with the customer who returns due to customer's change of mind and service failures. Thus, developing a logistics service quality component and establishing a return policy by linking the customer's pre-purchase, post-purchase, and post-purchase purchasing processes with logistics service quality would reduce economic and temporal losses.

The current study recommends that the integration of logistic service quality (website quality, quality of delivery services, and quality of return services) the e-retailers could determine the increase of its brand awareness and consequently improve the quality of their relationships. Therefore, e-retail logistics service providers need to accelerate the transformation from traditional logistics to information logistics to adapt to the development e-shopping business to build close relationships with customers based on improves level of satisfaction, trust and commitment.

This study has many limitations, despite the considerable contributions listed above. An important limitation of this study is that it is a regional study. Due to time and cost constraints, the study covered four main cities of Pakistan. In addition, the study was limited to survey design using questionnaire to collect primary data from respondents, and it was assumed that the participants gave sincere and correct answers to the questions. Although the robust validation process allowed this study to build a research model that not only explored the factors/dimensions that influence the level of service quality of e-retail logistics services, but also determined the concomitant effect of e-retail logistics service quality on relationship quality, this research however has a number of limitations that need to be a constraint In Pakistan, one of the developing countries, the research model was tested; but since there may be inconsistencies between Pakistan and other countries, the generalization of the results beyond the Pakistani context should be interpreted with caution.

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Appendix:**Details of the operational definition of variables**

Measurement Variable	Items	Scale (Question Count)	Variable Measurement Prior Research
Logistic Service Quality	Website quality	7-point scale (4 questions)	(Ahmad et al., 2017)
			(Akram et al., 2018)
			(Pandey & Chawla, 2018)
			(Kassim & Asiah Abdullah, 2010)
	Delivery quality	7-point scale (5 questions)	Mentzer et al.(2001)
			(Bai et al., 2016)
			(Raman, 2019)
			(Zhu & Wang, 2018)
	Return Quality	7-point scale (4 questions)	(Cao et al., 2018)
			(Chen & Ma, 2020)
			(Oghazi et al., 2018)
			(Y. Wang et al., 2019)
Relationship Quality	Trust	7-point scale (3 questions)	(Bilgihan, 2016)
			(Giao et al., 2020)
			(Limbourg et al., 2016)
	Commitment	7-point scale (3 questions)	(Pappas, 2016)
	Customer satisfaction	7-point scale (3 questions)	(Rehman et al., 2019)
			(Li & Chang, 2016)
			(Nadeem et al., 2020)
Repurchase Intention	1. Satisfaction with websites & information 2. Satisfaction with delivery service quality 3. Satisfaction with return service	7-point scale (3 questions)	(Duarte et al., 2018)
			(Elbeltagi & Agag, 2016)
			(Jung & Seock, 2017)
Repurchase Intention	1. Intention to repurchase from e-retailer 2. Intention to recommend others to e-retailer	7-point scale (2 questions)	(Oliver(1980)
			Britner(1990)
			(Ashraf et al., 2016)
Total		24 Question	