Exploring relationships between service quality dimensions and customers satisfaction: Empirical study in context to Indian logistics service providers

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Structured Abstract

Purpose- This study aims to identify service quality dimensions for logistics service providers (LSPs) and to examine their relationships with customer satisfaction and customer loyalty.

Design/methodology/approach– Service quality dimensions are identified from vast literature review. Customers who take services from LSPs were surveyed to collect data on basis of developed survey instrument. Structural Equation Modelling (SEM) is applied to test the proposed research hypotheses.

Findings– The study shows that all the five service quality constructs i.e., "Operational Quality", "Resource Quality", "Information Quality", "Personnel Contact Quality", and "Customization and Innovation Quality" have direct relationship with customer satisfaction. They also have indirect relationship with customer loyalty, implying the full mediation of customer satisfaction.

Practical implications– The results of the study suggest that the logistics service quality (LSQ) can be measured multi-dimensionally. It provides clear implications to LSPs for improvement of service quality. The present research work is expected to be useful for both, logistics service providers and the customer organizations, which take services from LSPs. LSPs can develop strategies to improve their service quality on basis of findings from this study.

Originality/value– The present research will help in extending the existing literature on service quality in context to LSPs.

Keywords- Logistics Service Providers, Service Quality, Customer Satisfaction, Structural Equation Modelling

1. Introduction

In changing business environment, supply chains can take competitive advantage by building organization's competence and fulfilling dynamic customer needs (Mishra et al., 2021). It is increasingly evident that the organizations can achieve competitive success and effective performance through their well-established supply chain processes and logistical activities (Narway et al., 2019, Baral, et al., 2021). To meet the dynamic requirements of organizations,

logistics service providers (LSPs) are focusing largely on service quality. Customer expectations and subsequent identification of factors for logistics service quality (LSQ) frameworks are important with respect to developing nations (Grant et al., 2014; Vu et al., 2020). In emerging economies like India, logistics sector performance has become extremely crucial due to increased opportunities through e-commerce businesses (Gupta et al., 2020). Moreover, Make-in-India project has opened new initiatives for manufacturing sector and calls for better logistics support and performance (Economic times, 2021). In fact, the South-Asian countries have become dependent on India for meeting their local demands which further expects LSPs to be strengthened to meet global standards (Gupta et al., 2021). In order to grab these opportunities, it is important for LSPs to understand and identify the service quality dimensions for delivering quality and satisfactorily services.

In literature, many LSQ frameworks are available but most of the LSQ frameworks are inclined towards developed countries (Juga et al., 2010; Vu et al., 2020). Parasuraman et al. (1985) has explored the importance of factors affecting service quality which impact initial customer perceptions and ultimately affect the customer satisfaction. Several researchers extended Parasuraman's work and contributed in LSQ scale development and measurement of logistics service quality, for instance, Mentzer et al. (1999) extended the SERVQUAL concept in logistics sector in US aiming to identify the important dimensions for evaluating LSQ. The authors have identified nine dimensions (information quality, ordering procedures, order release quantities, timeliness, order accuracy, order quality, order condition, order discrepancy handling, and personnel contact quality) to measure customer perceptions for service quality of logistics service providers. Juga et al. (2010) investigated the role of LSQ in customer satisfaction and loyalty in context to Finland. However, studies related to service quality of logistics sector for developing countries like India remain are limited.

Therefore, we have chosen to conduct an exploratory empirical study for LSPs in India for three reasons. First, logistics sector in India is booming with its current 14% contribution to GDP and worth US $ 160 billion. It is expected to grow at a CAGR of 10 percent to US$215 billion by 2023 (Sudan and Taggar, 2021). Secondly, India's logistics sector needs to grab upcoming opportunities due to increased businesses from e-commerce markets, Make-in-India initiative and demands from South Asian countries. Thirdly, due to varied infrastructural requirements of India, the existing frameworks cannot fit directly and need suitable frameworks. Gupta et al. (2018a) observed that Indian logistics sector is still fragmented and only partially capable of meeting customer needs. Further, rigid government policies and lack of effective strategies may make Indian logistics sector less competitive in global market. However, information technology is taking place at various level of transportation, warehousing and other processes but still several service quality issues are required to address.

So, in order to enhance the level of service quality and for better customer satisfaction, customized service quality framework is required to meet the specific requirements of Indian market. Therefore, our study addresses gaps in understanding the importance of logistics service quality expectations and perceptions among Indian customers. To build a LSQ framework in the Indian context, this study aims to identify the important logistics service quality dimensions of LSPs. It further tries to determine impact of LSQ on customer satisfaction and loyalty. Therefore, to bridge existing research gaps and to extend the logistics literature, we will answer the following research questions in this study:

RQ1- What are the critical service quality dimensions of LSPs in the Indian market?

RQ2- How service quality dimensions are related with customer satisfaction?

To answer the proposed questions, the literature related to service quality factors and frameworks for LSPs, are reviewed in Section 2. The third section consists of development of research hypotheses. In Section 4, the research methodology section includes research process, questionnaire development and data collection procedures. The section 5 details our findings from empirical analysis. Finally, the sixth section has discussion of the data analysis results and the last section concludes the study with future scope of the research work.

2. Literature Review

In this study, the authors initiate the literature review by discussing the origins of customer service quality in general and in SCM and logistics specifically. For an organization, quality services imply as how well the organizations perform its operations to serve their customers. Suppliers have also set their own service quality specifications to achieve the performance level as per their capabilities (Thai, 2013). However, in 1980s, services marketing being the first in literature which was explored with the customer perspectives. Two primary approaches were widely used to measure the service quality- subjective and objective. The first one is mainly applicable when organizations have mentioned their specifications for assessing the services whereas latter is mainly emphasized on comparing customers' expectations before taking services and customer perceptions during and after taking services, which works as per the framework given by Parasuraman et al. (1985).

Parasuraman et al. (1985) SERVQUAL framework explored the service quality by determining the gaps between customer expectations and perceptions from the services acquired. However, SERVQUAL model is widely applied and explored by many researchers but, it has been also criticized by researchers for taking customer expectations and perceptions altogether. Consequently, Cronin and Taylor (1992) introduced SERVPERF model by considering consumer perceptions only. Parasuraman's framework is further expanded by supply chain and logistics researchers and several studies in similar lines have been conducted in developed countries, as for example, Mentzer et al. (2001), Rafiq and Jaafar (2007), Grant et al. (2014), Le et al. (2020), adapted by Parasuraman's conceptual and generic model of service quality.

The basic requirement for LSPs is to understand the customer expectations from the service provided. The customer expectations can be built based on communication with previous users, received in the form of reviews on websites and word-of-mouth from their past experiences. Then, these customer expectations can be converted into definite service specifications. LSPs can design and execute their services as per identified service specifications. The purpose is to understand and meet the customer expectations up to the possible extent. But still few gaps between phases may occur on how well the ideas are transformed into actual operations. In past studies, the frameworks developed not only measure the service quality but also analyze the service quality gaps to meet customer expectations (Figure 1). LSQ issues are identified to fulfil service quality gaps and the corresponding LSQ frameworks are discussed in literature and subsequently in next section.
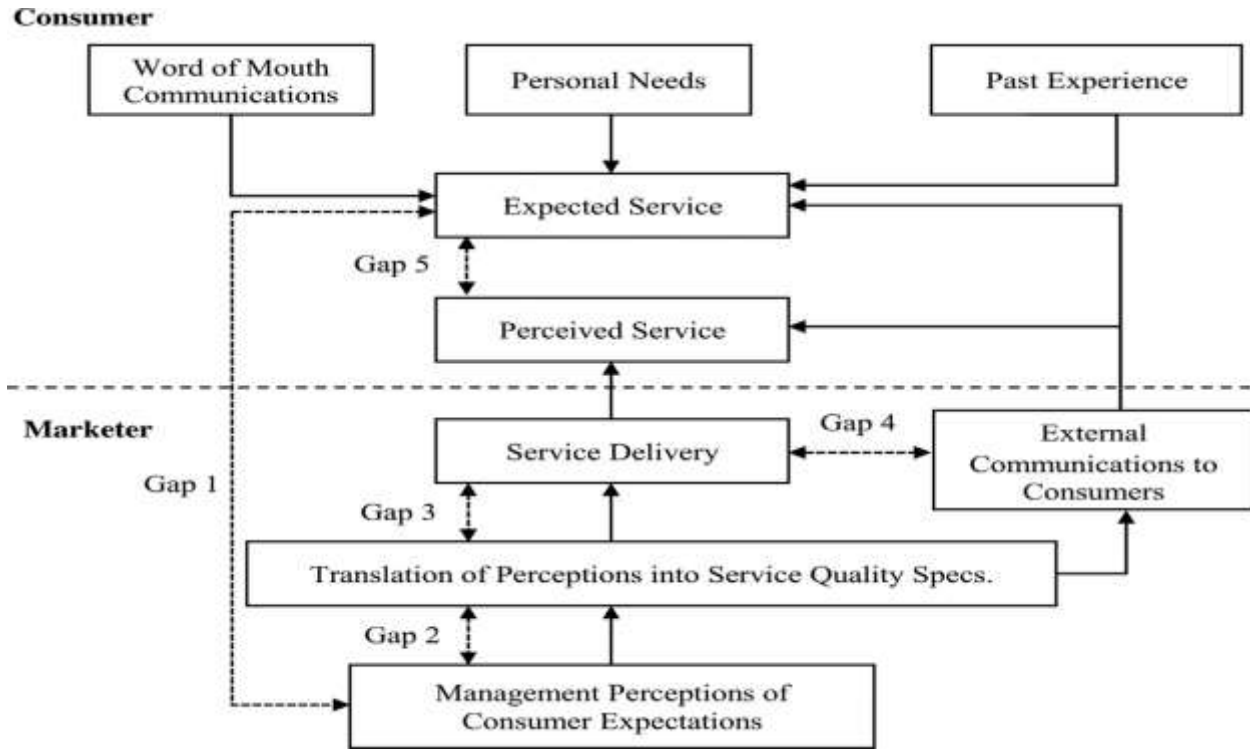
Figure 1: Model of service quality gaps (adapted from Parasuraman et al., 1985)

2.1 Logistics Service Quality (LSQ)

To measure LSQ, several researchers explored physical logistics operations with dimensions of timeliness, availability and condition (Mentzer et al., 2001). Stock and Lambert (1992) considered 13 constructs for developing a world class LSQ for four industry sectors (furniture, plastics resins, imaging products and video tapes). Seth et al. (2006) explored the supply chain service quality framework and considered bi-directional gaps between supplier and firm, firm and distributor and distributor and customer. Mentzer et al. (2001) introduced a LSQ framework with nine service quality dimensions which is further adopted by Rafiq and Jaafar (2007) to examine the perceptions of LSPs customers. Grant (2004) also extended Mentzer's model with the addition of customer service experience and satisfaction as output attributes. Juga et al. (2010) has also extended LSQ and satisfaction towards customer loyalty specifically in outsourcing relationships

Tian et al. (2008) developed a service quality model to establish association between 3PL and customer organizations by considering trust as an important parameter for study. Huang et al. (2014) studied about the service quality of logistics while delivering orders of online retail purchasing in Taiwan and developed a model with 7 constructs and 15 dimensions The synthesis of recent literature conducted for LSQ in different countries are given in Table 1.

Table 1: Synthesis of recent literature on logistics service quality

Year	Authors	Sample	Dimensions	Comments
1989	Mentzer, Gomes & Krapfel	US	3(Availability, timeliness, quality)	Discussed the role of physical distribution service in the marketing. Early development of LSQ concept. Focused mainly on service outcomes.

1997	Beinstock, Mentzer & Bird	-	1(Physical distribution and service quality (PDSQ)- timeliness, availability& condition	PDSQ is second order construct measuring physical distribution of goods and measuring service quality on timeliness, availability and condition
2001	Mentzer, Flint and Hult	US	9 (Personnel contact quality; order release quantities; information quality; ordering procedures; order accuracy; order condition; order quality; order discrepancy handling; timeliness)	Most popular model for measuring LSQ. Two constructs (information quality and ordering procedures) consist of only two items whereas minimum of three items are required for identification unless the scale is correlated with another construct. However, the validation of model remains untested in the context of LSPs.
2003	Stank	US	3 (Relational performance, operational performance, cost performance) – 8 items & customer satisfaction, loyalty and market share	Emphasised on measuring LSPs performance and its impact on market share. However, the results of market share are not validated and subjective.
2006	Davis	North America	2(Operational quality, relational quality) and satisfaction and loyalty	Operational quality implies the operations performed by LSPs for delivering consistent quality and efficiency; relational quality implies understanding of customer's needs and expectations to provide quality services to them efficiently.
2007	Rafiq and Jafaar	UK	Same as Mentzer, Flint and Hult (2001)	The limitations with Mentzer et al. (2001) were improved by adding more items to 'information quality' and 'ordering procedures' construct. Also tested and validate the Mentzer's model.
2010	Juga, Juntunen and Grant (2010)	Finland	3 (Operational service quality, personal service quality and technical service quality) – 13 items and customer satisfaction and loyalty	The number of items considered in constructs (operations service quality, technical service quality and customer satisfaction) are less than 3. So, this arises the question on the validity of the framework.
2013	Thai	Singapore	7 (Personnel contact quality, information quality, order handling quality, physical distribution service quality, timeliness, image & social responsibility) and 32 items	Empirical based study by taking inputs from 86 LSPs and 85 customers. The research work is limited only to develop measurement model which can be extended further by linking with customer satisfaction or LSPs performance as a future scope.
2014	Grant and Philipp	Europe	40 variables for LSQ and loyalty and 10 items of customer satisfaction	B2C LSQ framework developed for European retail markets

2018	Hüseyinoğlu, Sorkun & Börühan	Turkey	Relational LSQ, Operational LSQ, Omni channel Capability, Channel consistency, Cross-channel and social media	Developed framework and found positive impact of operational LSQ on omni-channel capabilities.
2020	Le, Nguyen and Truong	Vietnam	5 (Empathy, Reliability, assurance, Responsiveness and tangibles) and Customer Satisfaction	Adopted SERVQUAL model for measuring port logistics service quality. Under tangibles, technological advancement component is considered which is found to be important factor impacting customer satisfaction.
2020	Uvet	US	Personnel Contact quality, Timeliness, order condition, order discrepancy handling, operational information quality) and customer satisfaction and 19 items	Adopted Mentzer's framework with minor modifications. Considered operational information sharing as item first time for measuring customer satisfaction.
2021	Vasic, Kiibarda, Andrejic and Jovic (2021)	Serbia	8 (Availability, delivery time, shipping costs, delivery reliability, product quality and condition, consumer complaints and return policy, information quality, and e-customers' perception and satisfaction), with 31 items	Developed a framework for measuring LSQ affecting customer satisfaction in e-commerce. Results indicated that all the LSQ constructs have a significant positive impact on the perception and satisfaction of e-customers.

In literature, the recent studies conducted for other countries have provided in-depth insights for LSQ dimensions considered for framework development as discussed in Table 1. However, the literature related to development of LSQ frameworks specifically in context to India is very limited which gives huge scope of studying further LSQ literature in context to India.

Most past studies in context to Indian literature highlighted the service quality issue of LSPs with different perspective. For example, Seth et al. (2006) developed conceptual model for measuring service quality by analysing bi-directional gaps among supplier and focal firm, focal firm and distributor, and distributor and customer. Gupta et al. (2020) identified 17 service quality attributes and 5C's (Commitment, Competence, Communication, Creativity & Customization, and Coordination and Collaboration) for measuring sustainable service quality by using multi-criteria decision-making approach. However, these studies are not directly measuring the impact of LSQ on customer satisfaction and loyalty in India. This paves the way for exploring further and develop a framework for suffice the purpose.

From the literature over the past 20 years about the LSQ issues, we have identified LSQ dimensions as discussed in Table 2.

Table 2: Service quality dimensions

S.No	Service Quality Dimensions	Description	Key Sources
1	Right	Delivers the right product to the right place	Gupta et al. (2021), Gupta and Singh (2020), Le et al. (2020), Rai et al. (2019), Awasthi et al. (2018), Gupta et al. (2018b), Yeung et al. (2012), Stank et al. (2003), Mentzer et al. (2001), Franceschini and Rafele (2000)
2	Capacity	Having sufficient temporary or permanent storage capacity	Gupta and Singh (2020), Le et al. (2020), Rai et al. (2019), Du and Han (2018), Gupta et al. (2018a), Jothimani et al. (2014), Bouzaabia **et al. (2013),** Juga et al. (2010), Farmer (1988)
3	Promised	Delivers the promised services without failure	Le et al. (2020), Prakash (2019), Awasthi et al. (2018), Gupta et al. (2018a), Jothimani et al. (2014), Juga et al. (2010), Davis (2006)**,** Franceschini and Rafele (2000)
4	Loss	Delivers goods without loss or damage	Jothimani et al. (2014), Juga et al. (2010), Huang et al. (2009), Thai (2008), Stank et al. (2003), Mentzer et al. (2001), Parasuraman et al. (1985,1988)
5	Doc	Handles trade documents effectively	Gupta and Singh (2020), Prakash (2019), Awasthi et al. (2018), Gupta et al. (2018b), Thai (2008)
6	Prompt	Gives prompt services	Rai et al. (2019), Du and Han (2018), Gupta et al. (2018b), Zailani et al. (2018), Jothimani et al. (2014), Yeung et al. (2012), Ghobadian (1994)
7	Inventory	Gives adequate importance to your inventory controls	Gupta et al. (2021); Rai et al. (2019), Zailani et al. (2018), Gupta et al. (2018a),
8	Time	Delivers goods on scheduled date/time	Juga et al. (2010), Rafiq and Jafaar, (2007), Mentzer et al. (2001)
9	Consistency	Shows consistency in services	Le et al. (2020), Vu et al. (2020), Gupta et al. (2018b), Huseyinoglu et al. (2018), Huo et al. (2008), Parasuraman et al. (1985)
10	Fleet	Availability of fleet and physical facility	Awasthi et al. (2018), Gupta et al. (2018a), Yeo et al. (2015), Hamdan and Rogers (2008), Thai (2008), Ghobadian (1994), Farmer (1988) Parasuraman et al. (1985)
11	Workforce	Availability of adequate workforce	Gupta and Singh (2020), Juga et al. (2010), Hamdan and Rogers (2008), Thai (2008)
12	Financial	Financial stability	Ozbekler and Ozturkoglu (2020); Awasthi et al. (2018), Gupta et al. (2018b); Jothimani et al. (2014), Yeung et al. (2012), Huo et al. (2008), Stank et al. (2003)
13	Network	Geographical reach and network coverage	Gupta et al. (2021); Gupta and Singh (2020); Gupta et al. (2018a);
14	Modern	Fleet and physical facility are modern and always function properly	Le et al. (2020); Yeo et al. (2015), Thai (2008)

15	Infra	Adequate, maintained and updated Information technology (IT) infrastructure	Gupta and Singh (2020); Prakash (2019); Mathauer and Hofmann (2019); Juga et al. (2010), Hamdan and Rogers (2008),
16	Equipment	Availability of physical equipment like Pallets, trolleys, forklifts etc.	Le et al. (2020); Ozbekler and Ozturkoglu (2020); Vu et al. (2020); Yeo et al. (2015)
17	Reverse	Manages reverse logistics	Gupta and Singh (2020)
18	Complete	Information communicated by logistics service provider is complete	Vu et al. (2020); Juga et al. (2010); Saura et al. (2008); Mentzer et al. (2001); Ghobadian, (1994); Farmer (1988); Parasuraman et al. (1985)
19	Timely	Information communicated by the logistics service provider is timely	Le et al. (2020); Gupta et al. (2018a); Juga et al. (2010); Saura et al. (2008); Mentzer et al. (2001)
20	Accurate	Information communicated by logistics service provider is accurate	Huseyinoglu et al. (2018); Mentzer et al. (2001); Ghobadian, (1994); Farmer (1988); Parasuraman et al. (1985)
21	Adequate	Information communicated by logistics service provider is adequate	Zailani et al. (2018); Thai (2013); Saura et al. (2008); Mentzer et al. (2001)
22	Credible	Information communicated by logistics service provider is credible	Le et al. (2020); Vu et al. (2020); Gupta et al. (2018a); Huseyinoglu et al. (2018); Juga et al. (2010); Rafiq and Jaafar (2007); Mentzer et al. (2001)
23	Tracking	Tracking and tracing of shipments	Mathauer and Hofmann (2019); Takele (2019); Gupta et al. (2018a)
24	Application	Application of IT and EDI in customer service	Gupta and Singh (2020); Huma et al. (2019); Gupta et al. (2018b);
25	Confidence	Maintains confidentiality in all operations	Gupta et al. (2020); Shin et al. (2018); Jothimani et al., (2014), Farmer (1988)
26	Effort	Makes an effort to understand my situation	Takele (2019); Huseyinoglu et al. (2018); Parasuraman et al. (1988)
27	Courteous	Maintains courteous behavior while dealing	Wetzel and Hofmann (2020); Le et al. (2020); Parasuraman et al. (1985); Ghobadian (1994)
28	Access	Easily accessible when needed	Wetzel and Hofmann (2020); Takele (2019); Juga et al. (2010), Ghobadian (1994), Parasuraman et al. (1985)

29	Queries	Handles queries and complaints effectively	Awasthi et al. (2018); Gupta et al. (2018b); Mentzer et al. (1999, 2001); Farmer (1988)
30	Experience	Product knowledge and experience of the logistics service provider is adequate	Vu et al. (2020); Wetzel and Hofmann (2020); Juga et al. (2010); Mentzer et al. (2001);
31	Attitude	Shows a positive attitude while dealings	Vu et al. (2020); Gupta et al. (2018b); Rafiq and Jaafar (2007); Mentzer et al. (2001); Farmer (1988);
32	Mutual	Builds mutual relationship and trust	Huma et al. (2019); Shin et al. (2018); Thai (2013)
33	Creativity	Shows creativity in its methods of operations	Gupta and Singh (2020); Shin et al. (2018); Yeung et al. (2012)
34	New ways	Seeks out new ways to do things	Gupta and Singh (2020); Huang et al. (2014); Naim et al. (2010)
35	First	My logistics service provider is often the first to initiate with new services	Huma et al. (2019); Mathauer and Hofmann (2019)
36	Environment	Shows concern towards the environment	Gupta and Singh (2020); Naim et al. (2010); Huang et al., 2014
37	Specific	Offers me services that satisfy my specific needs	Gupta and Singh (2020); Vu et al. (2020); Yeung et al. (2012); Stank et al. (2003); Parasuraman et al. (1985); Ghobadian (1994)
38	Changing	Accommodates my changing and urgent requirements	Takele (2019); Huseyinoglu et al. (2018); Jothimani et al. (2014); Huo et al. (2008); Farmer (1988)
39	Ideas	Tries out new ideas frequently	Cichosz et al. (2020); Gupta et al. (2018a); Huo et al. (2008), Farmer (1988)

After identifying LSQ dimensions from literature, a theoretical framework has been developed to establish relationship among LSQ constructs, customer satisfaction and customer loyalty as shown in Figure 2.
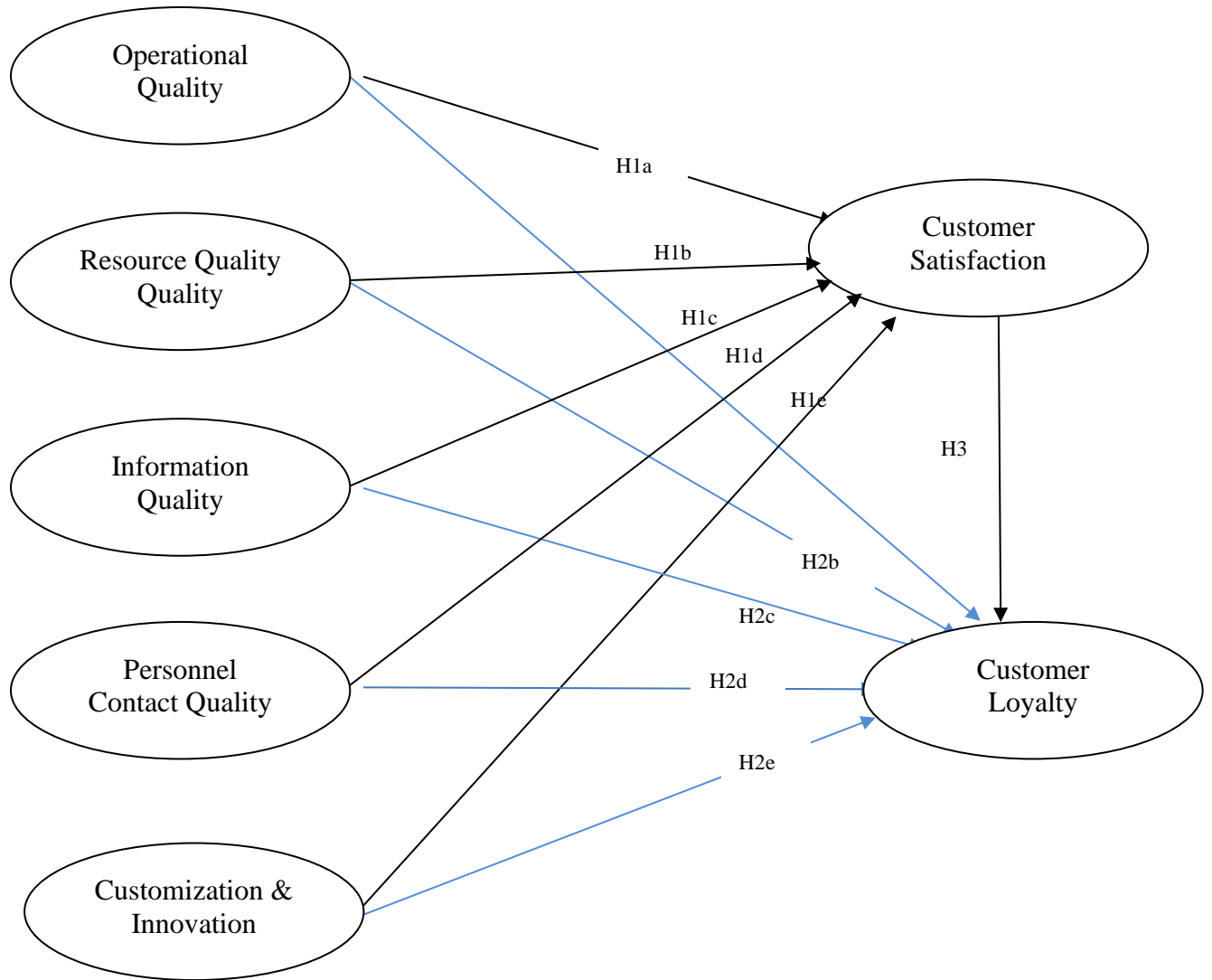
Figure 2: Theoretical Framework for Logistics Service Quality (LSQ)

3. Research Hypotheses

In this section, the authors have built a theoretical framework, as shown in Figure 2, to develop three research hypotheses (H1 to H3). Seven constructs have been developed based on literature review. Operational quality, Resources quality, Information Quality, Personnel contact quality, Customization and innovation in services are taken as constructs. We have tested relationship of these SQ constructs with customer satisfaction and customer loyalty has been tested. Uvet (2020) has developed LSQ framework by considering five constructs- personnel contact quality, timeliness, order condition, order discrepancy handling and operational information sharing and tested research hypotheses for establishing significant relationships with customer satisfaction. The significant relationship of operational service quality with customer loyalty specifically for developing country has already explored in literature (Huma et al., 2019). SERVQUAL framework

has been expanded for measuring service quality in the port logistics industry and resources quality (technical infrastructure and tangibles) is found to be most significant factor responsible for enhancing service quality and ultimately satisfies customer (Le et al., 2020). However, Sorkun et al. (2020) had examined operational LSQ as a mediating role when omni channel capabilities leads to customer satisfaction. Fernandes et al. (2018) considered LSQ into mediating role between logistics capabilities and customer satisfaction. However, in this research work, customer satisfaction would be in mediating role between logistics service quality and customer loyalty.

3.1 Logistics service quality and customer satisfaction

Many authors have related service quality and customers satisfaction as synonymous but theoretically, both are distinct concepts and delivery of quality services will increase customer satisfaction from services (Sureshchandar et al., 2002; Saura et al., 2008; Uvet, 2020). The customer satisfaction level from logistics can be measured on various parameters. The consumer's satisfaction depends on both, internal and external environmental factors. Many authors considered performance measures to ensure customer satisfaction whereas some have defined and focused on internal factors of LSPs to deliver satisfactory services to consumers (Mentzer et al., 1999; Huo et al., 2008). Numerous findings strongly support that the improvements done in logistics service quality by LSPs results in increasing customer satisfaction (Daugherty et al., 1996; Gaudenzi et al., 2020).

The theoretical idea is that the "operational quality" of services provided by LSPs plays a major role in providing satisfactory services to the customer. The delivery of shipments on promised time at the right time without any failure or loss, efficient inventory management, appropriate capacity allocations and handling documents safely will help in improving the operational service quality which will further result in more satisfied customers. The "Resource Quality" component is defined by the availability of fleet and physical facility, adequate workforce, financial stability, geographical reach, adequate and maintained IT infrastructure, use of modern fleet, and manages reverse logistics and impacts satisfaction level of customers. The "Information Quality" component is defined by the information communicated by LSP to the customers must be complete, timely, accurate, adequate and credible. The customer wants to be updated with each transaction of their shipments, their exact location and the time of delivery or delay if any. The quality of information communicated through either offline or online mode helps in satisfying the customer urgent requirements. The "Personnel Contact Quality" component is defined by the effort made by personnel to understand the situation, maintains courteous behavior, maintains confidentiality, easily accessible, handles queries and complaints effectively and have adequate product knowledge and experience. The satisfaction of customer from logistics services also accounts for the behavior and attention of personnel of LSP. The "Customization and Innovation Quality" component is defined by offering services to satisfy specific and urgent requirements, shows creativity in its methods of operations, shows concern toward the environment, seek out new ways to do things, and initiate new services. LSPs must fulfill customer's specific or customized requirements to satisfy them and to establish a strong relationship for business continuity. First hypothesis of study is as follows:

H1: Logistics quality (As per following dimensions) has significant impact on customer satisfaction
a. Operations quality

b. Resource quality
c. Information quality
d. Personnel contact quality
e. Customization and innovation quality

3.2 Logistics service quality and customer loyalty

Loyalty is usually measured in terms of repurchasing the same product, increase sales from other products and recommend the service providers to other business partners (Oliver, 1999). Several authors have discussed the concept of loyalty in logistics (Saura et al., 2008; Bouzaabia et al., 2013). Past studies showed that LSPs capabilities affect the firm performance directly which becomes the main reason for loyalty of customers (Esper et al., 2007; Cho et al., 2008). Many authors proved the link between service quality and customer loyalty with mediating effect of customer satisfaction (Caruana, 2002, Saura et al., 2008).

In this study, further, the relationship among logistics service quality and customer loyalty has been tested. LSPs believe in improvement of LSQ in form of operational, resources, information., personnel and customization and innovation and may show more commitment and loyalty towards the logistics service providers. LSPs have perception that if they invest more in assets like infrastructure, manpower, and network extension, etc. and provide timely and accurate information then the quality of services can be improved, and it may impact on customer loyalty. The courteous behavior of LSPs may impact continuity and outsourcing of more activities by the customers. LSPs can also modify their processes to provide customized and innovative services to enhance customer loyalty. Second hypothesis of study is as follows:

H2: Logistics quality (As per following dimensions) has significant impact on customer loyalty
a. Operations quality
b. Resource quality
c. Information quality
d. Personnel contact quality
e. Customization and innovation quality

3.3 Customer satisfaction and customer loyalty

The literature suggested a strong link between customer satisfaction and loyalty (Saura et al., 2008, Juga et al., 2010, Bouzaabia et al., 2013; Huang et al., 2014). The satisfied customers usually preferred to repeat the same service provider with expectation of same level of services as they had experienced in the past (Stank et al., 2003). Good feedback about logistics service quality is a significant indication of increase in future sales and shows customer loyalty towards LSPs (Grant et al., 2014). Huang et al. (2014) established the relationship among the LSQ, customer satisfaction and loyalty. Bouzaabia et al. (2013) explored LSQ as relational LSQ and Operation LSQ with data set of two countries like Romania and Tunisia. In the literature, various researchers have already established this relationship (Juga et al., 2010;; Izogo and Ogba, 2015). This implies that the satisfied customers from LSQ would like to continue or outsource more activities to the same service provider. Satisfied customers may also like to recommend the LSPs to their business

partners. LSPs can deliver better services to provide more satisfaction to customers which in turn, results in long term commitment of the customers. Therefore, a hypothesis is proposed that customer satisfaction has significant impact on customer loyalty.

H3: Customer Satisfaction has Significant Impact on Customer Loyalty

4. Research Methodology

In this section, both qualitative and quantitative approaches through focused group discussions, direct interviews, and survey analysis have been used. The entire research process framework is shown in Figure 3.
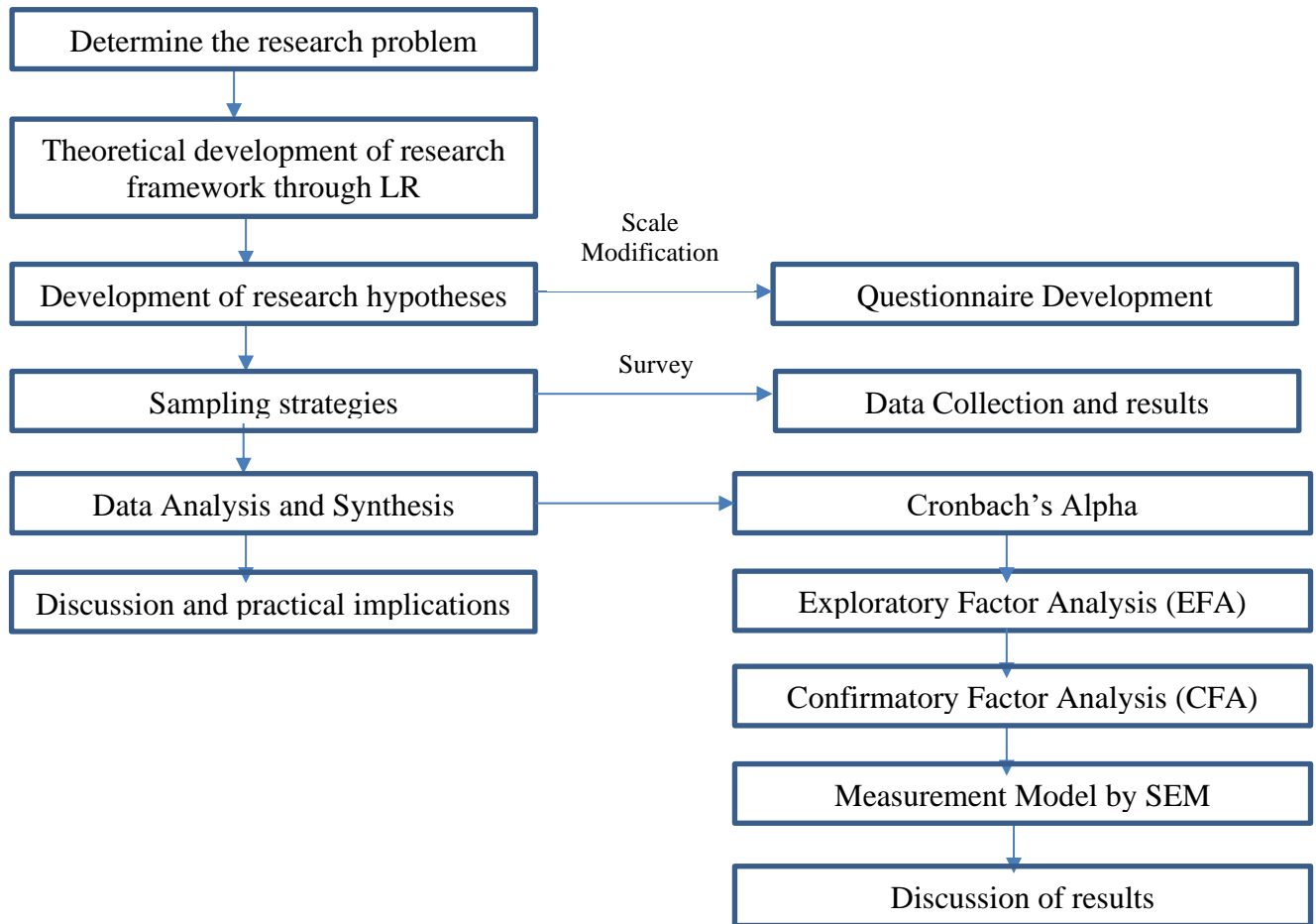

Figure 3: The research process framework

With the limitation of time and resources, the authors used their own synthesis from literature about the related studies, theories, the frameworks and scales along with focused group discussions for measuring the quality of services, customer satisfaction and loyalty. In the first step, the authors

synthesized and adopted the scale from past studies and modified the scale to draft suitable questionnaire for the survey. Each factor is analysed thoroughly in order to avoid any problems like unclear questions, unconstructive questions, vague or ambiguous questions, restricted language, and misplaced modifiers etc. At the preliminary stage, four to five rounds of focused group discussions were conducted with industry experts to modify and rewording of questions in the questionnaire so that it meets the purpose of the study. Some of the questions were revised in the questionnaire to make it more respondent-friendly and to align the same with Indian cultural context during focused group discussions. The pilot test was administered to 100 respondents (employees working in operations or supply chain department of various Indian organizations and taking services from LSPs). Initially, the questionnaire had 52 questions and after focused group discussions, revisions had been made and the final questionnaire had 58 questions (Annexure I). Therefore, at this stage of pilot testing, only internal reliability test like Cronbach's alpha (0.948>0.5) was calculated to check the internal consistency, which was acceptable. All the modifications suggested by experts in the questionnaire have been done and form the final scale.

4.1 Questionnaire development and data collection

In this study, the scale measurement is adapted from previous studies and modified after vetting through Indian industry experts to make them relevant in Indian context (Mentzer et al., 2001; Rafiq and Jaafar, 2007; Juga et al., 2010). The existing scales have been modified extensively by adding resource quality and customization and innovation quality constructs. The authors realised after focused group discussions with experts that infrastructure, resources and customization capabilities are specifically important while developing LSQ scale for country like India. Please refer Annexure I for literature of constructs and corresponding variables for developing scales of measurement.

In this research work, the authors have used snowball sampling for data collection. In snowball sampling, primary data source nominates other potential data sources for participating in the survey. It is completely based on referrals and known as chain-referral sampling method. In this study, snowball sampling is appropriate sampling technique in order to collect data from the customers of logistics service providers with the limitation of time, budget and resources. The final questionnaire for survey included 39 service quality dimensions for LSQ and 9 factors for customer satisfaction and loyalty. So, the minimum sample size is n ≥ 5 * 48 = 240 samples. Therefore, 240 valid survey responses are required to ensure accuracy of the research work. In this study, 800 questionaries have been circulated through both offline and online mode. Out of 800 responses, 294 survey responses are collected. There were 24 incomplete and unengaged responses out of 294 responses. Therefore, 24 responses were eliminated from the entire data set and finally, 270 responses were left for further analysis. The respondents are the representatives of the companies which directly takes services from the Indian LSPs.

5. Data Analysis

Here, the authors have done detailed data analysis using SPSS (Graphics version 22) and AMOS (Graphics version 22). In this section, the sample composition, scale reliability results, exploratory and confirmatory factor analysis along with hypothesis testing are discussed. The mediating effect of customer satisfaction is further tested.

5.1 Sample composition

In this study, the questionnaire had ten demographic questions. The analysis on sample composition on the demographic questions like name, designation, organization, overall experience, annual turnover of the organization, number of employees in the organization, industry sector to which respondent's organization belongs, services taking from logistics service providers and current logistics service providers etc. are discussed in Table 3.

Table 3: Descriptive analysis of research sample

SNo.	Research sample	N	Percentage
1.	**Type of Business**		
	Auto-Components	59	21.8
	Automobile	29	10.7
	Consumer Durables	20	7.4
	Electronics	25	9.2
	FMCG	22	8.1
	Pharmaceuticals	22	8.1
	Retail	15	5.56
	Others	78	28.8
2.	**Services taking from LSPs**		
	Transportation	72	26.7
	Transportation & warehousing	28	10.4
	Warehousing	20	7.4
	All the above	150	55.5
3.	**Annual turnover**		
	Less than 5 crores	27	10%
	5-50 crores	38	14%
	51-100 crores	62	23%
	More than 100 crores	143	53%
4.	**Number of Employees**		
	1-100	51	19%
	101-500	30	11%
	501-1000	54	20%
	More than 1000	135	50%
5.	**Overall experience of respondents**		
	0-2 years	89	33%
	2-5 years	30	11%
	5-10 years	84	31%
	More than 10 years	67	25%

5.2 Scale reliability results

In this study, the Cronbach's alpha value is 0.946 for the entire data set, which is greater than 0.7 for a reliable multi-item scale. Validity can be defined as the extent to which the data collection method measures accurately what it is intended to measure (Saunders, 2011). Different types of validity can be checked to ensure the results obtained from the designated test. In this research, the content validity of the instrument has been ensured by identifying all the service quality dimensions from the literature review and questionnaire was thoroughly reviewed by industry professionals. The verification of the reliability of the LSQ dimensions, customer satisfaction and customer loyalty are summarized as below in Table 4:

Table 4 Cronbach's Alpha Value of Constructs

Constructs	Number of items	Cronbach Alpha	Item-total-correlation
Operational Quality (OQ)	8	0.971	0.675
Resources Quality (RQ)	7	0.978	0.824
Information Quality (IQ)	7	0.944	0.638
Personnel Contact Quality (PCQ)	5	0.972	0.972
Customization and Innovation Quality (CIQ)	6	0.970	0.970
Customer Satisfaction (CS)	5	0.966	0.966
Customer Loyalty (CL)	4	0.952	0.952

The Cronbach alpha values for all constructs are in the desired level. The coefficients of the item-total correlation total variables are accepted for all the constructs. As a result, the variables of all scales meet the criteria and can be processed for exploratory factor analysis.

5.3 Exploratory Factor analysis (EFA)

The overall LSQ scales are grouped under one factor and its variables scales are grouped under five factors. The EFA results are obtained using Varimax rotation method. The results of EFA for LSQ scale and its variables are shown in Table 5. The prior tests Kaiser – Meyer – Olkin (KMO) test and Bartlett's test of Sphericity conducted to check the appropriateness of the respondent data for EFA. The KMO value of 0.930, which is more than the suggested value of 0.7 (Field, 2009). The value of Bartlett's test of Sphericity is also significant (p=.000) for factor analysis as the desired value should be p<0.05.

Five factors were extracted with Eigen values greater than 1.0 (2.553). Factor loadings are found by Principal Component Analysis (PCA) method and Varimax rotation method. The factor loadings for each item were received and determine the contribution of each item in establishing the factors. The factor loadings more than ±0.6 are practically significant and depict the strong correlation among item and the corresponding factor. In our case, the factor structure was established but some factor loadings were less than 0.6 (Table 5). Those items are the candidate for deletion to make the factor structure more robust. To make the framework more robust, six variables are deleted from the data based on observations made by using EFA resulting in 5 factors

with 33 observation variables. Further, the revised data is used for Confirmatory Factor Analysis (CFA) to establish the scale validity.

The customer satisfaction scale and customer loyalty scale are grouped under one group respectively and EFA results are obtained using Varimax rotation approach (Table 6). The Bartlett test results in significant values of Bartletts of sphericity (p=.000) and KMO value = 0.765 > 0.7 shows that factor analysis is appropriate for customer satisfaction. Similarly, KMO value = 0.876 >0.7 and significant value of Bartlett test for customer loyalty. EFA of customer satisfaction is grouped under one factor with PCA and Varimax rotation method. Eigen values are found to be greater than 1 (1.675) which meets all the requirements. The factor loadings of all the five constructs are more than 0.6 so they are appropriate and used for further analysis. The EFA results for customer loyalty are also meeting the desired requirements and factor loadings are found to be more than 0.6. All the 4 variables are grouped under customer loyalty and considered for further analysis by confirmatory factor analysis.

Table 5: EFA results of logistics service quality and its variables

Kaiser-Meyer-Olkin Measure of Sampling Adequacy					0.930
Bartlett's Test of Sphericity			Approx. Chi-Square		16247.547
			Df		1128
			Sig.		.000
Variables			Components		
	1	2	3	4	5
Right	0.903				
Capacity	0.871				
Promised	.868				
Loss	.867				
Doc	.864				
Prompt	.855				
Inventory	.852				
Time	.832				
Fleet		.919			
Workforce		.908			
Financial		.900			
Network		.900			
Modern		.896			
ITinfra		.866			
Reverse		.851			
Complete			.840		
Timely			.814		
Accurate			.801		

Adequate			.799		
Credible			.795		
Tracking			.767		
Application			.749		
Equipment			.548		
Mutual			.533		
Consistency			.522		
Attitude			.509		
Ideas			.467		
Confidence				.503	
Effort				.923	
Courteous				.923	
Access				.918	
Queries				.899	
Experience				.891	
Creativity					.936
Newways					.933
First					.915
Environment					.901
Specific					.885
Changing					.881

Table 6: EFA results of customer satisfaction and customer loyalty

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		**Customer Satisfaction**	**Customer Loyalty**
		. 0.765	0.876
Bartlett's Test of Sphericity	Approx. Chi-Square	247.547	256.843
	Df	6	6
	Sig.	.000	.000
Variables		Component	
Satisoverall		.774	
Satisprocess		.760	
Satisfleet		.758	
Satismgmt		.754	
Delight		.743	
Committed			.873
Outsource			.854
Recommend			.823
Continue			.807

5.4 Confirmatory Factor Analysis (CFA)

In our measurement model, all seven constructs are having more than three items. In this study, the measurement model has 7 constructs in which 5 constructs are exogenous variables whereas 2 constructs are endogenous variables. Following tests are performed for assessing the measurement model.

Composite Reliability (CR)-It measures the reliability of the constructs in the measurement model. in this research, all the CR values are greater than 0.70 and hence we can conclude that all the constructs in the measurement model have good reliability (Table 7).

Convergent Validity-It defines the extent to which all the items converge to a specific component. All the significant factor loadings are more than 0.50. This clearly indicates that all the items are adequate and converging to their corresponding constructs. The two more conditions that are AVE>0.50 and CR>AVE. also need to satisfy in order to have convergent validity (Hair et al., 2010; Xu et al., 2013). These values are also meeting the criteria and shown in Table 7.

Table 7: Reliability and Item loadings of Measurement Model

S. No.	Constructs	Composite Reliability	Average Variance Extracted	Maximum Shared Variance	Average Shared Variance
1	Operational Quality (OQ)	0.938	0.807	0.233	0.120
2	Resources Quality (RQ)	0.945	0.865	0.270	0.119
3	Information Quality (IQ)	0.913	0.717	0.309	0.169
4	Personnel contact quality	0.932	0.847	0.132	0.058
5	Customization and innovation Quality (CIQ)	0.936	0.840	0.138	0.050
6	Customer Satisfaction (CS)	0.934	0.854	0.335	0.228
7	Customer Loyalty (CL)	0.908	0.841	0.335	0.140

Discriminant Validity-It shows the extent to which inter-correlation among constructs should be minimum (Le et al., 2020). Hair et al. (2010) suggested two methods for measuring discriminant validity. Second, Average Variances Extracted (AVE) is calculated for all constructs as a summary indicator of convergence. AVE should be higher than 0.5 to suggest adequate validity of the model. In order to have discriminant validity, AVE should be higher than the Maximum Shared Variance (MSV) and Average Shared Variance (ASV). All the CR, AVE, MSV and ASV values are meeting the desired criteria. Therefore, there is no issue of validity in CFA. The results of discriminant validity are also shown in Table 8.

Table 8: Results of Discriminant Validity test (Fornell-Larcker criterion)

Constructs	CL	OQ	IQ	PCQ	CS	CI	RS
CL	0.917						
OQ	0.379	0.899					
IQ	0.441	0.483	0.847				
PCQ	0.269	0.196	0.297	0.920			

CS	0.579	0.477	0.556	0.364	**0.924**		
CI	0.247	0.183	0.270	0.075	0.372	**0.916**	
RS	0.329	0.363	0.416	0.246	0.520	0.200	**0.930**

The results shown in Figure 4 show that the model has Chi^2 = 1674.914 with 796 df (Degree of Freedom).; Chi^2 / df = 2.104 <5, p-value=.000 (<.005) which satisfies the criteria (Hooper et al., 2008). The other indices used to measure the goodness of fit are Comparative Fit Index (CFI) = 0.951> 0.95, Tucker Lewis Index (TLI) = 0.936 > 0.9 and Normed Fit Index (NFI) =0.894 > 0.9 (slightly lesser value than desired) etc. whereas badness of fit is usually measured by Root Mean Square of Error Approximation (RMSEA) =.064 (<0.09) are appropriate fit. Therefore, the measurement model represents an acceptable model fit.

Based on above analysis, it can be summarised that the research model has achieved the convergent and discriminant validity.

Chi^2 = 1674.914 with 796 df
Chi^2 / df = 2.104
CFI) = 0.951; TLI = 0.936.
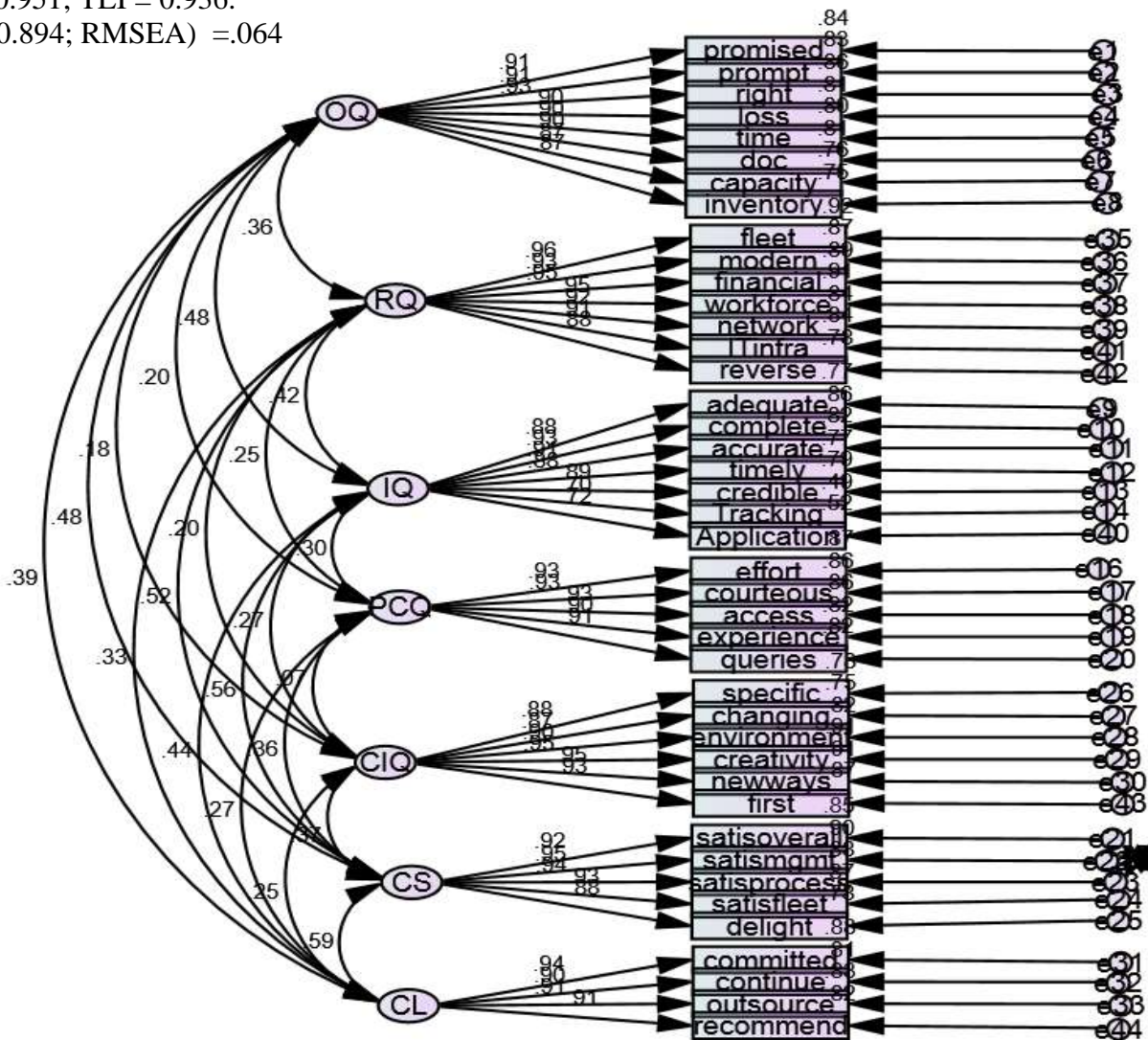NFI) =0.894; RMSEA) =.064

Figure 4: Confirmatory Factor Analysis (CFA)

5.5 Hypotheses Testing

The Structural Equation Modelling (SEM) is applied for testing the research model and processed using Amos Graphics Version 22. In this research, the measurement model will be accepted without any modification to the items incorporated in the respective constructs. Before establishing a structural model, the specifications as the dependent (endogenous) or independent (exogenous) constructs must be done. In the structural model (Figure 5), the relationship between endogenous and exogenous variables has been established.
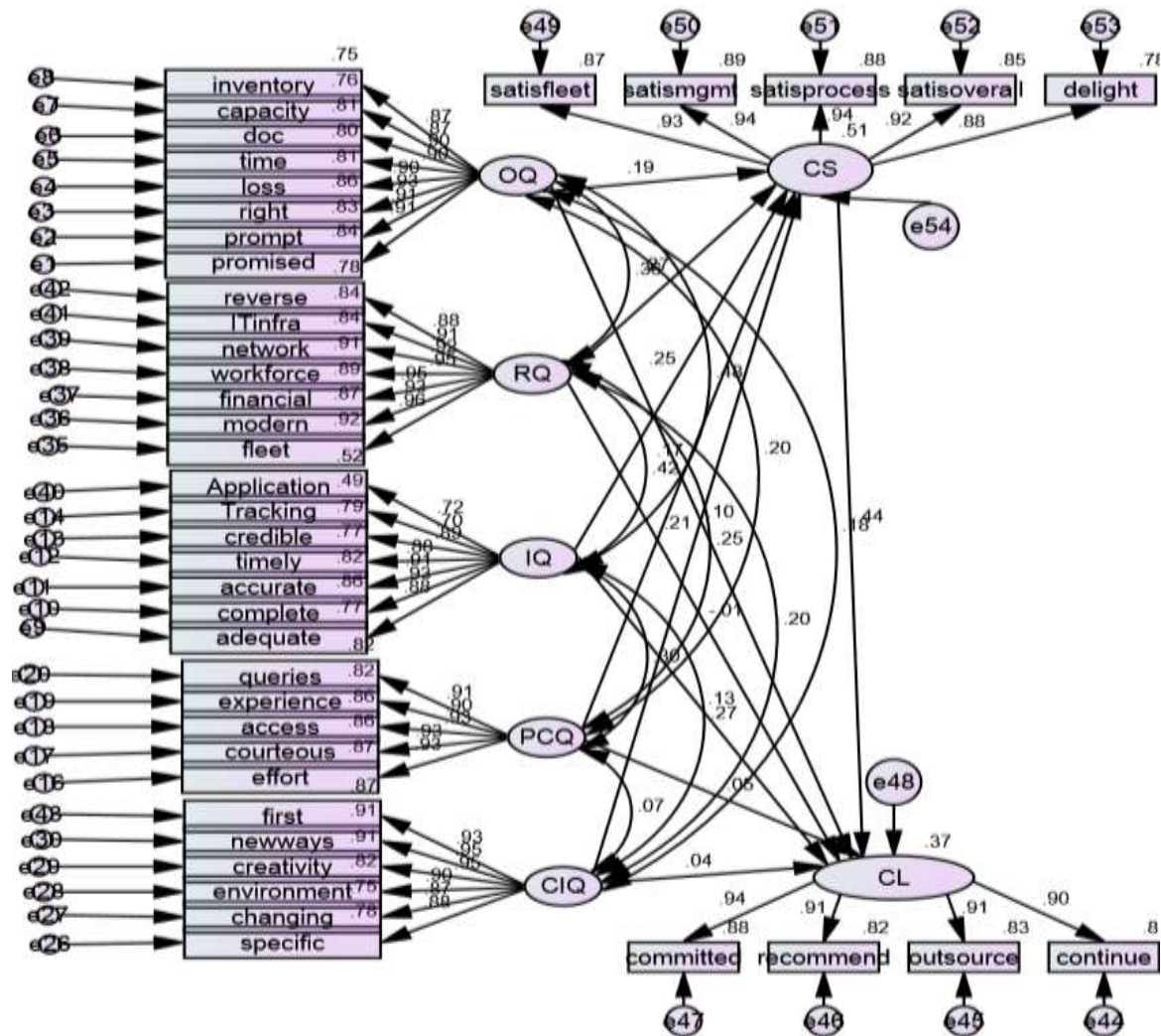
Figure 5: Structural model

The structural model will assist in analysing and testing all proposed hypothesis at 5% significant level. The results of the structural model show that six out of eleven hypotheses i.e. H1a, H1b, H1c, H1d, H1e, H3 were supported at p<0.05 significance level. Five out of eleven hypotheses were not supported at p-value exceeds 0.05. Table 9 represents the p-values for all the constructs and corresponding hypothesis.

Table 9: Structural model results

Hypotheses	Estimates (β)	Unstandardized Regression Weights	S.E	CR	p-value	Remarks
H1a:OQ→ CS	.190	.189	.053	3.542	***	Supported
H1b:RQ→ CS	.265	.205	.040	5.101	***	Supported
H1c:IQ → CS	.248	.269	.063	4.276	***	Supported

H1d: PCQ → CS	.171	.143	.040	3.533	***	Supported
H1e:CIQ →CS	.205	.168	.039	4.279	***	Supported
H2a:OQ →CL	.102	.098	.060	1.639	.101	Not Supported
H2b: RQ →CL	-.013	-.010	.046	-.213	.831	Not Supported
H2c:IQ →CL	.127	.135	.072	1.885	.059	Not Supported
H2d:PCQ →CL	.053	.043	.046	.944	.345	Not Supported
H2e:CIQ →CL	.035	.028	.044	.638	.524	Not Supported
H3: CS→ CL	.443	.432	.074	5.832	***	Supported

Note: ***Significant at p<0.005 and S.E. – Standard Error; C.R. – Estimate/S.E.

5.6 Testing of Customer Satisfaction construct as a mediator variable

In this research, the authors identified the re-specification of the model and checked for the mediating effect of customer satisfaction with all exogenous and endogenous variables. A mediating component in SEM is one which comes between two other constructs (one is the exogenous construct and other is the endogenous construct) in the structural model (Chauhan et al., 2016).

Firstly, the direct effect of the independent variable and the dependent variable is checked in absence of mediator variable (Baron and Kenny, 1986). In this case, the direct effect of all endogenous variables on an endogenous variable (customer loyalty) is checked and the effects were captured and noted in Table 10 with a column named "Direct without mediator". Further, Customer Satisfaction (CS) is again added to the structural model and the analysis results are observed and pen down in the third column of Table 10 under the column name "Direct with mediator". Barron and Kenny (1986) suggested that these analysis outcomes can lead to three results, that is, no mediation, partial mediation, and full mediation. If the relationship of the independent variable with the dependent variable becomes insignificant in presence of the mediator variable, then the effects of the independent variable are said to be completely or fully mediated by the mediator. If all the conditions met, the relationship of independent variables remains significant with the dependent variable in presence of the mediator, then the effects of the independent variable are said to be "partially" mediated by the mediator. If any of the conditions are not satisfied, then there is no mediation.

To test the mediating effect, the following hypotheses is developed.

H4: Customer satisfaction (As per following dimensions) has mediating effect on customer loyalty.
a. Operations quality
b. Resource quality
c. Information quality
d. Personnel contact quality

e. Customization and innovation quality

Results were captured for "direct without mediator", direct with mediator", "indirect effects" and noted down in Table 10. The effect of no mediation, partial and full mediation was also observed. Results shows that all LSQ constructs are not directly impacting customer loyalty but mediating fully through customer satisfaction.

Table 10: Testing of Mediation

Hypotheses	Relationship	Direct without mediator	Direct with mediator	Indirect Effects	Decision
H4a	OQ -> CS -> CL	0.186 (0.004)	0.102 (0.223)	0.084 (0.004)	Full Mediation
H4b	RQ -> CS -> CL	0.104 (0.003)	-0.13 (0.826)	0.117 (0.001)	Full Mediation
H4c	IQ -> CS -> CL	0.236 (0.000)	0.127 (0.124)	0.110 (0.000)	Full Mediation
H4d	PCQ -> CS -> CL	0.129 (0.027)	0.053 (0.444)	0.076 (0.001)	Full Mediation
H4e	CIQ -> CS -> CL	0.126 (0.028)	0.035 (0.595)	0.091 (0.001)	Full Mediation

6. Discussion

It is observed that the logistics service quality of Indian LSPs is directly affected by five LSQ constructs i.e., operational quality, resources quality, information quality, personnel contact quality and customization and innovation quality at 5% level of significance. Hypotheses are tested and analysed based on responses obtained through a structured questionnaire. At the initial stage, the pilot testing was conducted with data of 100 respondents and Cronbach alpha value is found to be highly significant. Finally, 270 data points out of 294 are found to be relevant for conducting detailed analysis and testing of the proposed framework by using SPSS 22 and AMOS 22. In this study, the Cronbach alpha value for the entire data set is found to be 0.946 which is greater than the minimum threshold of 0.7. Then, Exploratory Factor Analysis technique (EFA) has been used to reduce data initially and to eliminate less important items from the study. Based on EFA, 5 items out of 48 items are omitted due to low factor loadings (<0.6). After EFA, Confirmatory factor analysis (CFA) test was applied to confirm the proposed framework. In CFA, the values of Composite Reliability (CR), Average Variance Extracted (AVE), Average Shared Variance (ASV) and Maximum Shared Variance (MSV) had been found and all the values were coming significant and meeting their desired criteria. The CFA provides a measurement model of LSQ based on goodness of model fit. Further, this measurement model was converted into a structural model by using SEM and the structural relationship among all constructs as dependent and independent variables had been established.

Research hypotheses for testing the significant impact of LSQ constructs on customer satisfaction has been developed and tested (H1a-e). Results shown in Table 9 clearly indicate the positive impact of all LSQ constructs on customer satisfaction which implies that customers highly appreciate the quality of logistics services received from Indian LSPs. Regarding Operational quality and personnel contact quality, the results are somewhat like those reported by Juga et al. (2010). Yeo et al. (2015) reported the significant relationship between resource quality and customer satisfaction. Information quality construct makes significant impact on customer satisfaction. It is also highlighted by Rafiq and Jafaar (2007) in literature. Gupta and Singh (2021) have also recommended use of emerging technologies for improving information quality in logistics sector. However, this framework included customization and innovation quality as one of the constructs of LSQ framework which has significant impact but with lower value as compared to other constructs.

The research hypotheses (H2a-e) for testing impact of all LSQ constructs on customer loyalty has been developed and tested. Results show indirect relationship between LSQ and customer loyalty as their corresponding hypotheses (H2a, H2b, H2c, H2d and H2e) are rejected. In past studies, on the contrary, Jang et al. (2013) demonstrated the high level of logistics services can be responsible for attaining higher levels of shipper's loyalty whereas Juga et al. (2010) found the significant relationship between service quality and customer loyalty. On similar lines, Huma et al. (2020) supported our research results by reporting the significant impact of relational quality over operational quality on customer loyalty and Cotarelo et al. (2020) highlighted that none of the construct has no significant influence on loyalty in the scenarios considered in the study. Moreover, research hypothesis (H3) has been developed to test the impact of customer satisfaction on customer loyalty. Findings show that the customers satisfied from service quality of Indian LSPs and is directly impacted the customer loyalty with 5% level of significance and 95% confidence level (H3 is accepted). Results support the association between constructs are strong which implies customer loyalty can be nurtured by satisfying customers through providing quality services. Extensive past literature supports this hypothesis, for instance, Juga et al. (2020) proved the satisfaction-loyal model in logistics outsourcing; Cotarelo et al. (2020) explored the positive relationship between customer satisfaction and loyalty in omni-channel environment.
Research hypotheses is developed to test the mediating effect of customer satisfaction on customer loyalty (H4a-e). Results indicated full mediation of all LSQ constructs on customer loyalty through customer satisfaction with acceptance of hypotheses (H4a, H4b, H4c, H4d, H4e) at 5% level of significance and 95% confidence level. This means that all the service quality constructs have indirect impact on customer loyalty and first, LSQ constructs play significant role in customer satisfaction then further loyalty can be impacted. In literature, most of the studies resulted in similar manner while testing the moderation effect of customer satisfaction with customer loyalty (Saura et al. 2008; Juga et al., 2010).

7. Implications of the study

7.1 Theoretical Implications

The most important contribution of this research work is extension to the present literature specifically in context of India. The LSQ model is a good fit to the requirements of Indian markets and can provide insights to improve the quality of services of Indian LSPs. Study has identified resource quality and information quality as the most influential factors of LSQ, while others are

customization and innovation quality, operational quality and personnel contact quality. This implies that the customers using logistics services are concerned most about resources availability of LSPs reflected by the dedicated workforce in dealing customer issues, particularly the infrastructural and fleet management, geographical coverage and equipment handling. Additionally, the valid effect of resource quality highlights the importance of investment on technology and infrastructure in enhancing service quality. It has been also observed that the degree of accurate and complete information available to customers will help them to track the real time situation.

The results of the study suggest a comprehensive framework for LSQ. This framework will help professionals to understand the factors which affects service quality of Indian LSPs. In the era of online retail and e-commerce businesses, LSPs can use proposed framework to develop strategies to improve their performance by understanding their strengths and weaknesses.

7.2 Managerial Implications for LSPs

The LSQ framework has given a solution to the LSPs to improve on their processes for providing better satisfaction to their customers. The study has brought many managerial insights for LSPs for strengthening their weak areas and improving business excellence. Findings imply that for operations quality, firstly, LSPs should emphasis on delivery-oriented processes and must ensure on-delivery on time, reliable and safe shipments with efficient capacity and inventory management and proper documentation. Secondly, forming a uniform code of conduct and benchmarking service quality can be set as a base for annual performance assessment of LSPs and can be spread as managerial solution for achieving quality targets. Thirdly, LSPs should continuously streamline their procedures of customs clearance, intra-port movements and door to door delivery at competitive charges.

For the resource quality, firstly, LSPs should emphasize on enhancing and expanding the existing infrastructure and transport capacity by taking support from waterways to avoid traffic jams on roads and delayed consignments through railways. Secondly, warehouse capabilities need to be expanded. Moreover, LSPs should procure modern and high performing equipments to manage transportation and warehouses operations efficiently. Additionally, the old and malfunctioning machines need to be replaced from time to time to ensure smooth and uninterrupted workflow. Thirdly, LSPs need to devise policies for recruiting talented and young employees for effective service quality and for understanding customer requirements. LSPs can develop short term training programs for their existing manpower in order to improve staff expertise, communication competence and problem -solving skills.

Regarding the information quality, firstly, LSPs should adopt latest technologies for tracing and tracking the shipments on real time basis. Secondly, the privacy and security of shared information across entire supply chain is crucial to manage efficiently. Thirdly, LSPs should create a platform for customers where they can give their feedback about logistics services and suggest solutions for unsatisfied responses. Regarding the personnel contact quality, firstly, LSPs should devise policies for complaints and query handling with proper solutions. Therefore, these policies will assist LSPs to resolve issues quickly and provide the appropriate support system to customers. Secondly, LSPs should hire experienced and dedicated personnel to strengthen their processes to deal with requirements of developed countries. Thirdly, LSPs can provide better access to customers by creating more lines to operate especially in case of urgency.

Regarding the customization and innovation quality, firstly, LSPs should expand value-added services such as sorting, labelling, binning, kitting and packaging. Secondly, LSPs should strengthen collaborative ties with national and international logistics players to learn their advanced technologies and utilize them for enhancing LSQ. Thirdly, rewarding policy can be commensurate for encouraging employees to suggest creative and innovative solutions to the existing logistics problems.

7.1 Conclusion, Limitations and Future Scope

In this study, we have tried to identify major LSQ constructs and respective dimensions. Study also tries to analyse relationships of these constructs with customer satisfaction and loyalty. Operations quality, resources quality, information quality, personnel contact quality, customization and innovation quality are major constructs considered for the study. To test and validate the proposed framework, the data was collected through questionnaire-based survey. The demographic data of respondents is analysed using descriptive analysis. EFA technique has been used to eliminate less important items from the study and CFA test is applied to confirm the proposed scale. Further, the structural model is developed by using SEM and the structural relationships among all constructs have been explored. The findings indicate the impact of all LSQ dimensions on customer satisfaction directly whereas customer loyalty have indirect effect.

This research has got some limitations. Despite considerable efforts put by the authors in collecting the data, responses were not uniformly distributed across all regions. Although the measurement models are found to be statistically fit by SEM, the present study can be attempted with a larger sample size. More dimensions related to sustainable operations and digitization can be also added to extend this study in context to digital and circular economy. Empirical studies can be further carried out to analyze relationships among new constructs. Study may be further extended in context to different sectors and countries also.

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