International Journal of Business Innovation and Research

ISSN online: 1751-0260 - ISSN print: 1751-0252
https://www.inderscience.com/ijbir

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DOI: 10.1504/IJBIR.2024.10067827

Article History:

Received:	14 February 2024
Last revised:	02 October 2024
Accepted:	02 October 2024
Published online:	14 November 2024

Service quality, customer satisfaction and loyalty in the freight forwarding industry: the moderating role of animosity and CRM

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Abstract: The purpose of this study was to investigate the moderating effect of CRM and CA and the mediating effect of CSAT between LSQ and CL. Recent geopolitical events, particularly the political crises in many regions, have aggravated the operations of the ever-competitive freight forwarding industry. The authors gathered data from exporters in India (N = 240). To test the hypotheses, the study used AMOS software to carry out confirmatory factor analysis (CFA) and the Hayes PROCESS macro. The authors ran both models, i.e., 4 and the 12 of Hayes PROCESS macro, to test the mediation and moderated moderated-mediation hypotheses, respectively. The results proved the direct relationship between LSQ, CSAT and CL and confirmed the mediating effect of CSAT. This study also revealed that CA and CRM moderate the relationships between LSQ and CSAT and between LSQ and CL. This study recommends repackaging marketing communication strategies and repackaging marketing strategies while keeping in mind the sensitivities of clients. This study has robust theoretical and managerial implications.

Keywords: customer relationship management; CRM; customer animosity; customer loyalty; customer satisfaction; freight forwarders; logistics service quality.

Reference to this paper should be made as follows: Balaji, K.E., Yoganandan, G. and Vasan, M. (2024) 'Service quality, customer satisfaction and loyalty in the freight forwarding industry: the moderating role of animosity and CRM', *Int. J. Business Innovation and Research*, Vol. 35, No. 5, pp.1–29.

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1 Introduction

Sustained efforts by economies around the globe to integrate their economy with other economies have contributed to the massive growth in the movement of goods between countries. In most cases, the manufacturing and consumption of goods occur in distant places, making international logistics vital in every stage of the entire gamut of the supply chain (Ansah et al., 2020). International logistics facilitates buyers and sellers globally to procure, manufacture, and distribute materials and products to their designated destinations at the correct times (Shang et al., 2024). Thus, international logistics has become critical for organisations to ensure their competitive advantage over their competitors (Vu et al., 2020; Yoganandan et al., 2024). International logistics' scope and role are increasing daily (Politis et al., 2014; Dohale et al., 2022). An enabling international business environment provides ample opportunity for freight forwarders to achieve better customer satisfaction (CSAT) and customer loyalty (CL) (Vu et al., 2020). Logistics is an integral part of any such initiative in which the exporter has to reach out to their customers in other countries (Ahn, 2023; Alkhatib, 2024). Past studies have shown enough evidence to link logistics efficiency and trade efficiency, although there are variations in the magnitude of such an effect in various economies (Amin and Shahwan, 2020; Gunasekaran and Ngai, 2004). On the one hand, at the operational level, the current international trading system is transforming, with smart logistics evolving and leveraging information technologies to enhance logistics infrastructure, increase industry efficiency, and reduce operational costs, as well as make logistics operations more green and sustainable (Zhao et al., 2023; Karmaoui et al., 2023; Skhvediani et al., 2024; Singh,

2024; Tronnebati and Jawab, 2024; Shahbaz et al., 2024). On the other hand, recent occurrences like the global pandemic and governmental travel restrictions have highlighted the crucial nature of international logistics in the sustainable economic development of economies throughout the globe (Gavalas et al., 2022; Baheti, 2024).

Enterprises such as shipping lines, international freight forwarders, customs agencies, cargo handling firms, container terminals, bonded warehouses, transportation providers, and inspection agencies are involved in port logistics operations, providing logistical solutions to exporters (Bae, 2024; Vasan and Yoganandan, 2024). One such category of companies is the freight forwarders, who act as an essential intermediary between exporters and shipping companies (Lai and Cheng, 2004). They try to source better logistics services on behalf of the exporter among the available shipping companies (Huang et al., 2019). Due to the low initial investments required to start a freight forwarding company, this sector has fierce competition, leading to overcrowding with more small and medium-sized organisations (Yang et al., 2021). Fierce competition compels freight forwarders to offer reduced rates to the customers. They achieve cost reduction either through self-fulfilment or subcontracting. Self-fulfilment denotes using their facilities and vehicles to execute the contract, whereas sub-contraction means outsourcing services from other freight forwarders (Krajewska and Kopfer, 2006). Recently, researchers have observed an emerging trend among freight forwarders in the form of business cooperation (Gunasekaran et al., 2004). Freight forwarders started cooperating to reduce costs or provide superior customer service (Ansah et al., 2020). Nevertheless, there needs to be more understanding of the expected service quality between shippers and freight forwarders (Li et al., 2020). Such gaps in understanding indicate that the value proposition only sometimes matches the expectations of exporters (van den Berg and de Langen, 2015). Many experienced freight forwarders better manage this situation by adopting transaction- and relationship-based marketing (Tsai et al., 2021). Organisations outsource logistics services to enhance service quality (Bertalero et al., 2020; Gupta et al., 2017; Gunasekaran et al., 2001). Size of the logistics providers (Fernandes et al., 2018), Demand pattern (Naumov, 2018), price fluctuations (Zhong et al., 2019), condition of shipment (Jain et al., 2021), application of AI (Miranda et al., 2018; Naz et al., 2022) and timeliness (Rahmat and Faisol, 2016) have a positive effect on LSQ. Marketing and logistics literature has enough evidence to support the relationship between LSQ, CSAT, and CL. Amid a tumultuous geopolitical and economic landscape, the exploration of customer animosity (CA) and its impact on LSQ, CSAT, and CL among exporters in India becomes an intriguing opportunity. Surprisingly, previous research has yet to delve into the influence of CA on LSQ, CSAT, and CL, specifically within the freight forwarding industry. Consequently, to close this gap, this paper investigates the mediating function of customer relationship management (CRM) and the moderating effect of customer animosity (CA) in the correlation between logistics service quality (LSQ), CSAT, and CL within the context of freight forwarders.

2 Theoretical background and literature review

2.1 Service quality

Service quality encompasses the perceived level of quality from the perspective of both the service provider and the service consumer (Yoganandan, 2020). It demonstrates a

company's ability to provide superior customer service through a combination of operations (Junior et al., 2020; Vu et al., 2020). However, there is still a need for an inclusive framework that addresses customer service and logistics-related concerns (Orioli and Veríssimo, 2023). In the past, business organisations commonly perceived service delivery as a static function (Sautter et al., 1999). The modern approach looks into various dimensions of service and thereby assesses the service quality as functional service quality among other dimensions (Acar, 2020; Wang et al., 2020). Service quality was initially conceptualised as a combination of technical and functional aspects in one of the earliest studies conducted by Grönroos (1982). Integrating technical and functional quality played a crucial role in shaping the overall perception of service quality. This model was expanded to include the service environment as a third component (Rust and Oliver, 1994). Another influential model, proposed by Parasuraman et al. (1985), extended the expectation versus performance framework for service quality. They identified five gaps in service quality, suggesting that these gaps influence customer-perceived quality and expected service quality. To refine this measurement scale, Parasuraman et al. (1988) further developed a 22-item scale with five dimensions: tangibility, reliability, responsiveness, assurance, and empathy. This scale has been widely accepted as the benchmark for measuring service quality by researchers across the globe (Singh et al., 2022). Some studies (Kang and James, 2004) find that the European model of service quality, as proposed by Grönroos (1982), is superior to the American model of service quality proposed by Parasuraman et al. (1985). Another well-received instrument was developed focusing on service performance as the accurate measure of service quality (Cronin and Taylor, 1994).

2.2 Logistics service quality and loyalty

LSQ has become a crucial decision variable for logistics service providers (Arabelen and Kaya, 2021). Many researchers have found a triangular relationship between LSQ, CSAT, and CL, showing a direct impact of LSQ on CL (Gil-Saura et al., 2018; Sarkar et al., 2023a; Haque et al., 2023). According to Jang and Kim (2012), a distinct connection exists between logistics service performance and customer loyalty. Kara (2024) argued that improved supply chain performance can give companies a competitive edge. It was found that LSQ can directly impact exporters' post-purchase decisions, even without their explicit satisfaction with the services. Such direct impact implies that customer satisfaction alone cannot determine customer retention, repurchase decisions, and recommendation behaviour among logistics consumers. Customer loyalty (CL) is a lasting commitment to repurchase, encompassing a cognitive attitude towards the selling firm and repeated patronage (Kumar et al., 2024; Stank et al., 2003; Sarkar et al., 2023b). Pereira et al., (2024) and, Khan and Minhaj (2022) demonstrated the positive relationship between service quality and customer retention. The authors propose to define loyalty as the customer's determination to continue allocating purchase-related resources, such as time, effort, money, and emotion, to a brand or organisation with the intent of repeat purchases. A better LSQ can directly translate into an increase in customer loyalty. Based on the above evidence, we propose the following hypothesis.

H1 LSQ has a direct positive influence on CL.

2.3 Logistics service quality and satisfaction

LSQ was considered unique, so attempts were made to find new measurement instruments. Many studies highlighted how LSQ acted as a strong predictor of satisfaction. In extending the work of Parasuraman et al. (1988) into the logistics sector, Mentzer et al. (2001) came out with a new measurement instrument containing nine LSQ construct items contributing to satisfaction. The idea was to achieve excellence in logistics by creating competitive differentiation. The positive link between physical distribution service quality and LSQ is established in later studies (Bienstock et al., 1997). The perceived service quality and expectation model was further validated by later studies (Millen and Maggard, 1997; Hoeyi, 2023). A 24-item model containing six service quality dimensions suggested cost as the sixth dimension (Banomyong and Supatn, 2011). Some studies have preferred measuring the LSQ from three angles: the process, service potential, and outcome (Kersten and Koch, 2010). Studies on LSQ can be conducted from two angles, viz., by surveying the logistics customers to understand their perspective and by surveying the logistics service providers to get a different perspective of what is meant by service quality to service providers (Lai et al., 2022; Prashar, 2020; Vivaldini, 2023). Researchers have noticed that logistics service providers and customers are not always on the same page about the 'must be' quality in various dimensions of logistics service (Sohn et al., 2017). Ultimately, the customer determines the service quality and the organisation's survival (Rahmat and Faisol, 2016). Kilibarda et al. (2016) found that the LSQ of freight forwarders in Serbia could have been better for the satisfaction of customers. Choi et al. (2022) emphasised the significance of strategic performance-based logistics in achieving higher levels of customer satisfaction. The positive linkage between LSQ and CSAT is a must for the survival of freight forwarders (Le et al., 2020). Logistics literature has ample evidence to show the positive influence of LSQ on CSAT (Akıl and Ungan, 2021; Hafez et al., 2021; Meidutė-Kavaliauskienė et al., 2014; Uvet, 2020). Based on the above points, we propose the following hypothesis.

H2 LSQ has a significant positive direct influence on satisfaction.

2.4 Customer satisfaction and loyalty

Logistics literature has pointed out the marked effect of CSAT on CL. Sutrisno et al. (2019) found a positive linkage between CL and satisfaction in courier service delivery. Researchers concur that consumer loyalty should logically follow satisfaction (Ansah et al., 2020; Gil-Saura et al., 2018; Huang et al., 2019). Interestingly, many other studies have also emphasised the influence of customer trust and satisfaction on CL (Restuputri et al., 2021; Deepu and Ravi, 2023). Given the evolving geopolitical and economic circumstances, freight forwarders find themselves in a critical situation where they must strive to establish a loyal customer base by consistently delivering superior logistics services to achieve customer satisfaction (Jang and Kim, 2012; Shokoohyar et al., 2022). Ul Hassan et al. (2020) found that the relationship between service quality, behavioural intention, and loyalty was mediated by technology trust. Wang et al. (2020) emphasised that service quality has a direct and positive impact on CSAT, which in turn has a positive effect on the likelihood of making another purchase. Juga et al. (2010) argued for the significance of perceived higher service quality in fostering satisfaction and

subsequent loyalty, particularly within third-party logistics. Hence, we propose the below hypothesis.

H3 CSAT has a direct positive influence on CL.

2.5 Customer satisfaction as mediator

Extant studies have demonstrated that in addition to the direct impact of CSAT on CL, an indirect effect exists whereby CSAT acts as a mediator between service quality and customer loyalty (Gupta et al., 2023). Keshavarz and Jamshidi (2018) found that perceived customer value, in conjunction with tourist satisfaction, mediates the relationship between service and tourist loyalty. Despite their rarity, a few notable studies have shown a connection between service quality and CL, with CSAT as a mediating factor (Gil-Saura et al., 2018; Hapsari et al., 2016; Sadiq and Adil, 2021). Having the above evidence as a base, we propose the below hypothesis.

H4 CSAT mediates the relationship between LSQ and CL.

2.6 Customer animosity as moderator

Consumer animosity (CA) refers to the persisting hostility stemming from past or ongoing military, political, or economic events that influence consumers' purchasing behaviour in the international marketplace (Klein et al., 1998). It signifies the enduring negative sentiments towards a particular group or country triggered by military conflicts, economic blockades, and more (Fernández-Ferrín et al., 2015). CA is the emotional response of consumers towards countries that have displayed aggression through acts such as war, economic sanctions, support for cross-border terrorism, cultural destruction, and social unrest. Even individuals not directly involved in the conflict may develop emotional attachments due to the animosity caused by events like conflicts and genocides (Kusumawardani and Yolanda, 2021; Lalvand and Owlia, 2024). Souiden et al. (2018) referred to CA as the attitudes of individuals from one country towards the products of another country, particularly if the latter has a negative image or a history of strained relations. CA is an essential predictor of consumers' intention to buy foreign brands (Fong et al., 2022; Hoang et al., 2022; Tabassi, 2012). Researchers widely agree on the detrimental effect of animosity on consumers' intention to buy foreign brands (Campo and Alvarez, 2017; Fernández-Ferrín et al., 2015; Shoham and Gavish, 2016). Keeping the above evidence as the basis, we set the following hypotheses.

H5a CA moderates the positive effect of LSQ on CSAT.

H5b CA moderates the positive effect of LSQ on CL.

2.7 Customer relationship management as moderator

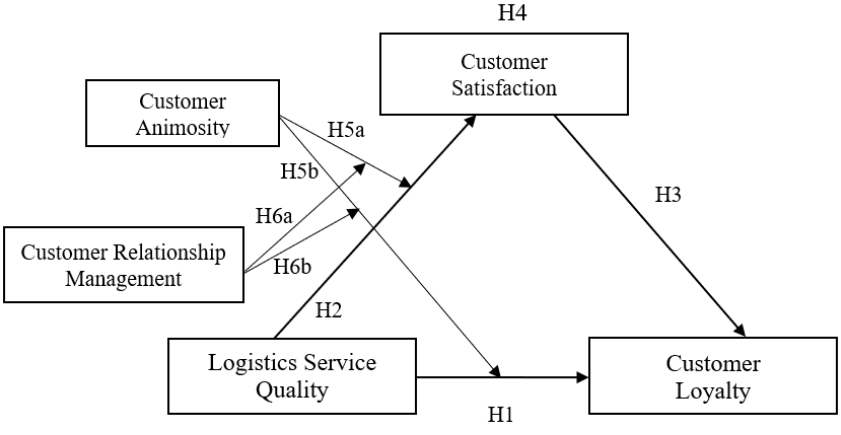
Customer relationship management (CRM) is a valuable tool for continuously enhancing service delivery quality (Prasad and Verma, 2022). It is an integrative process that tries to find the best compromise between corporate investments and customer satisfaction, aiming to maximise profitability (Gebert et al., 2003). We propose to define CRM as a holistic marketing process that considers judicious investment by corporations in managing customer relationships that enhance CL, leading to either business survival or

maximum profit in the long run. Though CRM failure rates are as high as 70% in the industry, organisations renew and retune their CRM initiatives to gain CL (Wetsch, 2006). Hassan et al. (2015) said that CRM significantly affects satisfaction. Numerous studies have revealed a growing trend of companies making significant investments in establishing robust and dependable customer relationship management (CRM) systems (Prasad and Verma, 2022). These studies have agreed on the positive association between CRM, CSAT, and CL (Verhoef, 2003; Azadi et al., 2024). However, only a limited number of studies have specifically explored the moderating impact of CRM on service quality, satisfaction, customer value, and CL (Nyadzayo and Khajehzadeh, 2016). The above evidence was the base for framing the following hypotheses.

H6a LSQ interacts with CRM (second moderator) and CA (first moderator) to influence CSAT.

H6b LSQ interacts with CRM (second moderator) and CA (first moderator) to influence CL.

Figure 1 Hypothesised model



3 Methods

3.1 Context

The current study was exploratory and focused on the moderating effect of CRM and CA and the mediating effect of CSAT between LSQ and CL. This study did not focus on specific countries of freight forwarders. We initiated this research with the presumption that the emerging geopolitical situations, especially the border crisis between India and Pakistan, the border standoff between India and China, and the posture of NATO and Russia, will have a bearing on the satisfaction and loyalty of exporters in India about their logistics service providers. Since many freight forwarders have already invested in CRM activities, we assumed that CRM would positively affect exporters' CSAT and CL. Also, the Russia-Ukraine war and war-like situations in other geographical landscapes, including political agitations and economic sanctions, will hurt CSAT and CL of Indian exporters. We also presumed that CA would moderate the purchase and exporters'

post-purchase behaviour (CSAT and CL). Thus, the objectives of this study are to investigate the moderating effect of CRM and CA, as well as the mediating effect of CSAT between LSQ and CL.

3.2 Study area and sampling

This survey was conducted in Tamil Nadu from July 2022 to December 2022. A structured questionnaire was developed with constructs and statements adapted from past studies. The survey instrument was circulated among the peer network in the industry with a request to pass on the same to willing exporters. Thus, in line with similar studies, we have chosen convenience sampling (Le et al., 2020). The survey instrument contained five constructs: LSQ, CSAT, CL, CRM, and CA. The final questionnaire included 13 variables for LSQ, 5 for CSAT, 4 for CL, 6 for CA, and 5 for CRM. Thus, we have arrived at the minimum sample size of 165 using the formula $n \geq 5 * 33$ (Le et al., 2020). The authors finalised a sample size of 240 to enhance the accuracy of the outcome of this research work.

3.3 Measures

An in-depth literature review helped to identify the constructs, sub-constructs, and items used in the survey instrument. The variables were measured with the help of a 5-point Likert scale (balanced on either extreme as 'strongly disagree' or 'strongly agree'). The LSQ was measured with 13 items adapted from Arabelen and Kaya (2021). The variables relating to CSAT were extracted from Fernandes et al. (2018), and CL-related variables were sourced from Grace and O'Cass (2005) and Zeithaml et al. (1996). CRM was gauged with five statements adapted from Guerola-Navarro et al. (2021). The construct for animosity was measured with the help of six items adapted from Tabassi (2012), Campo and Alvarez (2017) and Shoham and Gavish (2016).

3.4 Data analysis procedure

Descriptive statistics were generated using the SPSS software. In addition, this study employed the AMOS software to conduct confirmatory factor analysis (CFA) in our study. The researchers utilised the Hayes PROCESS macro add-on within SPSS to test the hypotheses. Two models were executed: the four models and 12 models of Hayes PROCESS macros were employed to examine the mediation and moderated moderated mediation hypotheses, respectively. To test the moderated mediation hypotheses, the researchers utilised the bootstrapping technique. Specifically, we applied percentile bootstrap estimation with 20,000 resamples to establish a 95% confidence interval. For a significant effect, the confidence interval should not include zero between its lower and upper limit values.

4 Results

4.1 Sample profile

Table 1 exhibits the firmographics of B2B freight forwarder clients. 37.92% of the clients were sole proprietors. 46.25% of the customers were medium-sized organisations, and

36.67% were 11–15 years old enterprises. 42.5% of the customers of freight forwarders were involved in merchandising operations, and most of their annual turnover ranged between INR.51–75 lakhs per annum.

Table 1 Sample profile

Firmography		*Frequency (N = 240)*	*%*
Nature of organisation	Sole proprietorship	91	37.92
	Partnership	76	31.67
	Private company	44	18.33
	Public Ltd. company	29	12.08
Type of organisation	Large	58	24.17
	Medium	111	46.25
	Small	71	29.58
Age of business (in years)	Below 5	37	15.42
	6–10	72	30.00
	11–15	88	36.67
	Above 15	43	17.92
Nature of business	Manufacturing	81	33.75
	Assembling	57	23.75
	Merchandising	102	42.50
Annual turnover (in lakh Indian rupees)	Below 50	73	30.42
	51–75	105	43.75
	Above 75	62	25.83

4.2 Confirmatory factor analysis

The authors checked the model's fitness using the procedure advocated by Anderson and Gerbing (1988). The model fit indices for CFA were within the acceptable range (χ^2/df = 2.521; RMSEA = .057; RMR = .185; SRMR = .049; TLI (NNFI) = .901; CFI = .896; GFI = .918). The model was sufficient for the relationship among the study variables such as LSQ, CSAT, CL, CA, and CRM.

4.3 Convergent validity

The authors examined convergent validity (CV), which includes average variance (AVE), composite reliability (CR), and reliability (Fornell and Larcker, 1981). Here, the value arrived from the data analysis showed the factor loading scores for all items were between 0.702 and 0.899, which was sufficiently higher than 0.5 (Hair et al., 2010), which confirmed reliability. The calculated CR score spanned from 0.843 to 0.946 for all constructs, exceeding the score of 0.70 suggested by Hair et al. (2010), proving that the internal consistency was good. The CV was also adequate, as we got an AVE score exceeding 0.5 (Fornell and Larcker, 1981). The calculated Cronbach's α scores ranged from 0.731 to 0.904, which denotes this is within the acceptable range (Hair et al., 2010). Thus, CV is also suitable based on AVE and Cronbach's α values (Table 2).

Table 2 Confirmatory factor analysis and measurement properties

Construct	*Items*	*Std loadings*	*Cronbach's α*	*AVE*	*C.R.*
Logistics service quality (Arabelen and Kaya, 2021)	Employees' approach and behaviour while meeting customers' requests	0.875	0.904	0.577	0.946
	Employees' knowledge on customers' needs and requests	0.825			
	Safety and security in delivery	0.810			
	Reliability, regularity, flexibility and availability of service	0.774			
	Consistency of service performance	0.762			
	Timeliness of shipment pickup and delivery	0.758			
	Order placement accessibility and handiness	0.744			
	Shipment tracing capability	0.743			
	Application of IT and EDI in customer service	0.725			
	Company's ethical image	0.723			
	Social responsibility in management and concerning human safety in operations	0.712			
	Environmentally friendly operations	0.714			
	Company's reputation for reliability	0.692			
Customer satisfaction (Fernandes et al., 2018)	Logistics service providers delivering products satisfy our company's expectations	0.855	0.804	0.622	0.891
	Satisfied with addressing our complaints relating to service delivery	0.813			
	Logistics service providers provide good quality services	0.810			
	Logistics service providers handle products properly and safely	0.734			
	Logistics service providers provide within the agreed time limits customer	0.723			
Customer loyalty (Grace and O'Cass, 2005; Zeithaml et al., 1996)	Recommend our company's freight forwarder to other companies	0.851	0.731	0.574	0.843
	Continue the business transactions with the present freight forwarder	0.747			
	Spread a positive opinion about our company's freight forwarder	0.723			
	No intention to approach another freight forwarder	0.701			

Table 2 Confirmatory factor analysis and measurement properties (continued)

Construct	*Items*	*Std loadings*	*Cronbach's α*	*AVE*	*C.R.*
Customer animosity (Tabassi, 2012; Campo and Alvarez, 2017; Shoham and Gavish, 2016)	Companies from hostile countries are not reliable trading partners.	0.899	.752	0.613	0.904
	Companies from hostile countries are treating Indian customers unfairly	0.825			
	I dislike companies from hostile countries because of past historical events	0.779			
	I dislike companies from hostile countries because of its history of oppressing other countries.	0.741			
	Overall, I dislike companies from hostile countries.	0.728			
	Overall, I have negative feelings towards companies from hostile countries.	0.708			
CRM (Guerola-Navarro et al., 2021)	Long-term partnership. Our company actively stresses on customer loyalty or retention programs.	0.812	.747	0.555	0.862
	Information sharing. Our company shares market information with customers (promotion information and competitive product information).	0.765			
	Customer involvement. Our key customers are involved in new product development (NPD) activities with us.	0.727			
	Joint problem-solving. Our key customers work with us to overcome difficulties (inventory management, delivery delay and logistics management).	0.714			
	Technology-based CRM. Our company has the right software to serve our customers.	0.702			

4.4 Discriminant validity

The authors conducted a discriminant validity analysis to determine the distinctiveness of the selected constructs. According to Fornell and Larcker (1981), the square root (SQRT) of the average variance extracted (AVE) for each construct should surpass the squared correlation between constructs. Also, each indicator should exhibit a higher loading on its respective construct than the cross-loadings on other constructs (Chin, 1998). The results from the analysis (Table 3) indicated that all the criteria mentioned above were met, as the values exceeded the recommended thresholds, providing evidence of discriminant validity.

Table 3 Discriminant validity for the measurement model

		1	*2*	*3*	*4*	*5*
1	LSQ	*(0.760)*				
2	CSAT	.651**	*(0.789)*			
3	CL	.615**	.644**	*(0.758)*		
4	CA	.631**	.646**	.617**	*(0.783)*	
5	CRM	.506**	.565**	.591**	629**	*(0.745)*

Notes: **Correlation is significant at the 0.01 level (2-tailed).
Figures in () denote the SQRT of AVE.

4.5 Hypotheses testing (H1–H4)

The study used Hayes PROCESS macros (model 4) to test the mediation relationships (H1-H4).

The results presented in Table 4 indicate a positive and significant regression coefficient of LSQ on CL ($\beta = 0.843$; $t = 15.758$; $p < .001$), supporting H1. Additionally, step 2 of Table 4 demonstrates a positive and significant regression coefficient of LSQ on CSAT ($\beta = 0.922$; $t = 21.365$; $p < .001$), which aligns with the proposed H2. Moreover, the regression coefficient between CSAT and CL (as shown in step 3 of Table 4) is positive and significant ($\beta = 0.469$; $t = 6.298$; $p < .001$), thereby supporting H3.

Hypothesis 4 posits that CSAT mediates the relationship between LSQ and CL. It is suggested to check whether the indirect effect of LSQ through CSAT is significant (Hayes, 2018). The analysis revealed a significant and positive indirect effect of LSQ on CSAT ($\beta = 0.432$; 95% bias-corrected confidence interval [0.285; 0.599]). Notably, the bias-corrected confidence intervals did not contain 'zero,' supporting the mediation effect. The indirect effect was calculated as 0.432 (0.922 × 0.469), while the total effect was determined to be 0.842 (direct effect of 0.410 + indirect effect of 0.432). Furthermore, the partially standardised indirect effect was 0.367 (boot SE = 0.065; boot LLCI and ULCI [0.245; 0.500]), derived from bootstrapping with 20,000 samples. This analysis underscores the crucial role of customer satisfaction (CSAT) as a mediator in the relationship between logistics service quality (LSQ) and customer loyalty (CL), with a significant and positive indirect effect observed. The robustness of the mediation effect, supported by bias-corrected confidence intervals not encompassing zero, further solidifies the findings, affirming Hypothesis 4.

4.6 Testing H5a, H5b, H6a and H6b

To test the moderated moderated mediation hypotheses (Table 5), the authors employed model 12 of the Hayes (2018) PROCESS macros. CA significantly influenced the regression coefficient of the interaction term between LSQ and CSAT (β LSQ × CA = 0.339; $t = 2.428$; $p < .05$). Bootstrapping with 20,000 samples produced a bias-corrected confidence interval (BCCI) of [0.064: 0.614], which did not include zero, supporting H5a. Likewise, the regression coefficient of the interaction term between LSQ and CL was significantly influenced by CA (β LSQ × CA = –0.236; $t = –1.804$; $p < .05$). Bootstrapping with 20,000 samples yielded a BCCI of [–0.468: 0.197], and zero was not present in the confidence intervals, confirming H5b.

Table 4 Testing H1, H2, H3 and the mediation hypothesis (H4) [Hayes' macros model number 4]

Variables		*DV= CL*				*DV = CSAT H2*				*DV = CL*			
		Step 1				*Step 2*				*Step 3*			
		Coeff	*se*	*t*	*p*	*Coeff*	*se*	*t*	*p*	*Coeff*	*se*	*t*	*p*
Constant		.632	.254	2.487	.000	.0329	.205	.154	.877	.617	.236	2.618	.009
LSQ	H1	*.843*	*.053*	*15.758*	*.000*	*.922*	*.043*	*21.365*	*.000*	.410	.085	4.840	.000
CSAT	H3									*.469*	*.075*	*6.298*	*.000*
R2		.511				.657				.581			
F		248.330**				456.444**				164.173**			
df1		1				1				2			
df2		238				238				237			
P		.000				.000				.000			

Total effect

Total effect	*se*	*t*	*p*	*LLCI*	*ULCI*
.842	.053	15.758	.000	.738	.948

Direct effect

Direct effect	*se*	*t*	*p*	*LLCI*	*ULCI*
LSQ → CL	.410	.085	4.840	.000	.243	.577

Bootstrapping indirect effect: H4

Indirect effect	*BOOT se*	*BOOT LLCI*	*BOOT ULCI*
LSQ → CSAT → CL	.432 (.922 x .469)	.080	.285	.599

Notes: N = 240. Boot LLCI refers to lower-bound bootstrapping. Boot ULCL refers to upper-bound bootstrapping. No. of bootstrapping, samples for this bias-corrected bootstrapping is 20,000. The confidence level was .95.

Table 5 Testing of Hypotheses H5a, H5b, H6a and H6b validation

Variables	*DV= CSAT*						*DV= CL*					
	Coeff	*se*	*t*	*P*	*LLCI*	*ULCI*	*Coeff*	*se*	*t*	*p*	*LLCI*	*ULCI*
Constant	6.212	2.847	2.182	.030	.602	11.821	–2.704	3.430	–.788	.001	–9.463	4.055
CSAT							.432	.078	5.521	.000	.278	.587
LSQ	–1.480	.702	–2.109	.036	–2.863	–.097	1.469	.845	1.738	.044	–.196	3.134
CA	–.756	.701	–1.079	.042	–2.136	.625	.201	.838	.239	.011	–1.450	1.851
LSQ × CA (H5a)	*.339*	*.140*	*2.428*	*.016*	*.064*	*.614*						
LSQ × CA (H5b)							*–.236*	*.169*	*–1.804*	*.022*	*–.468*	*.197*
CRM	–.908	.719	–1.263	.208	–2.324	.509	.602	.860	.700	.025	–1.093	2.297
LSQ × CRM	.365	.158	2.309	.022	.054	.676	–.223	.191	–1.170	.043	–.599	.153
CA × CRM	.124	.154	.805	.035	–.179	.426	.027	.184	.147	.025	–.335	.389
LSQ × CA × CRM (H6a)	*–.053*	*.028*	*–1.871*	*.033*	*–.109*	*.003*						
LSQ × CA × CRM (H6b)							*.020*	*.034*	*1.578*	*.034*	*–.047*	*.087*
R^2	.702						607					
F	88.981**						44.683					
df1	7						8					
df2	232						231					
P	.000						.000					
R^2 change	.004						.001					
Δdf1	1						1					
Δdf2	232						231					
F-change	3.500*						.334*					
P	.023						.031					

Index of moderated moderated-mediation

Index	*BOOT SE*	*BOOT LLCI*	*BOOT ULCI*
-.023	.018	–.052	.021

Indices of conditional moderated mediation by CA

CRM	*Index*	*BOOT SE*	*BOOT LLCI*	*BOOT ULCI*
3.800 (L)	.060	.034	–.007	.129
5.000 (M)	.032	.030	–.021	.097
6.000 (H)	.009	.037	–.058	.089

Table 6 Conditional effects of LSQ (focal predictor) at values of moderators (CA × CRM)

CA	*CRM*	*Effect*	*Se*	*T*	*P*	*LLCI*	*ULCI*
L	L	.412	.111	3.694	.000	.192	.632
L	M	.617	.103	5.968	.000	.413	.820
L	H	.788	.159	4.953	.000	.474	.10101
M	L	.596	.126	4.724	.000	.347	.844
M	M	.716	.079	9.031	.000	.560	.872
M	H	.816	.109	7.465	.000	.600	1.031
H	L	.733	.166	4.430	.000	.407	1.059
H	M	.790	.108	7.344	.000	.578	1.002
H	H	.837	.120	6.981	.000	.601	1.073

Moderator value(s) defining Johnson-Neyman significance region(s)

Value	*% below*	*% above*
4.194	23.750	76.250

Note: L – low; M – medium; H – high.

Table 7 Conditional X ∗ W (LSQ × CA) interaction at values of the moderator Z (CRM)

CRM	*Effect*	*se*	*T*	*p*	*LLCI*	*ULCI*
2.400	.212	.083	2.551	.011	.048	.376
2.630	.200	.079	2.541	.012	.045	.355
2.860	.188	.074	2.519	.012	.041	.334
3.090	.175	.071	2.483	.014	.036	.315
3.320	.163	.067	2.427	.016	.031	.296
3.550	.151	.064	2.347	.020	.024	.278
3.780	.139	.062	2.239	.026	.017	.261
4.010	.127	.060	2.102	.037	.008	.245
4.194	*.117*	*.059*	*1.970*	*.050*	*.000*	*.234*
4.240	.114	.059	1.934	.054	–.002	.231
4.470	.102	.059	1.739	.083	–.014	.218
4.700	.090	.059	1.523	.129	–.026	.207
4.930	.078	.060	1.293	.197	–.041	.197
5.160	.066	.062	1.061	.290	–.056	.188
5.390	.054	.064	.832	.406	–.073	.180
5.620	.041	.067	.615	.539	–.091	.174
5.850	.029	.071	.413	.680	–.110	.168
6.080	.017	.074	.228	.820	–.130	.163
6.310	.005	.079	.061	.952	–.150	.159
6.540	–.007	.083	–.089	.929	–.171	.156
6.770	–.020	.088	–.223	.823	–.192	.153
7.000	–.032	.093	–.343	.732	–.214	.151

The regression coefficient for the three-way interaction was found to be negative and significant (β LSQ × CA × CRM = –0.053; t = –1.871; p < .05). Utilising 20,000 bootstrapping samples, the bias-corrected confidence interval (BCCI) was calculated as [–0.109: 0.003], and zero was not encompassed within the confidence intervals. This result suggests that LSQ interacts with CRM and CA to influence CSAT, supporting H6a. Additionally, another regression coefficient for the three-way interaction was also significant (β LSQ × CA × CRM = –0.020; t = 1.578; p < .05). Bootstrapping with 20,000 samples resulted in a BCCI of [–0.047: 0.087], with zero not included in the confidence intervals, supporting H6b.

Moreover, the index of moderated moderated mediation was found to be significant (β = –0.023; boot SE = 0.018; BCCI [–0.052; –0.021]). Further analysis examined the conditional effects of the focal predictor (LSQ) at different levels of the moderators (CA × CRM), revealing significant interaction effects across nine combinations (refer to Table 6). The conditional X ∗ W interaction (LSQ × CA) at various values of the moderator Z (CRM), as indicated in Table 7, unveiled the Johnson-Neyman significance region(s) [value = 4.194; % above = 23.750 and % below = 76.250].

A vital part of the model, conditional moderated moderated mediation, is described by the indirect effect of LSQ on CSAT through CL at given values of CA and CRM.

Table 8 Indirect effect (LSQ → CSAT → CL)

CA	*CRM*	*Effect*	*BootSE*	*BootLLCI*	*BootULCI*
3.667 (L)	3.800	.178	.077	.066	.369
3.667 (L)	5.000	.267	.077	.138	.437
3.667 (L)	6.000	.340	.110	.149	.579
5.000 (M)	3.800	.257	.092	.121	.476
5.000 (M)	5.000	.309	.076	.177	.474
5.000 (M)	6.000	.353	.089	.196	.544
6.000 (H)	3.800	.317	.114	.141	.583
6.000 (H)	5.000	.342	.088	.189	.536
6.000 (H)	6.000	.362	.090	.202	.555

Note: L – low; M – medium; H – high.

A close observation of values delineated that CA and CRM were high, and the interaction effects were significant (i.e., in nine combinations), providing strong evidence supporting moderated mediation (Table 8). Figures 2 and 3 show the interaction plots, which can be inspected visually.

Figure 2 divulges the three-way interaction between the effect of LSQ, CA, and CRM on the CSAT. The authors examined whether there was a relationship between CA and CSAT. When CA was at high levels, CSAT was at lower levels, while LSQ and CRM were also low. On the contrary, when the LSQ was low, higher levels of CA were associated with lower levels of CSAT. Further, when the LSQ increases from a 'low' to a 'high' level, the growth rate for higher CSAT levels than at lower CA levels can be observed. This result also supports H6a.

Figure 2 CA moderates the relationship between CSAT, LSQ and CRM (see online version for colours)

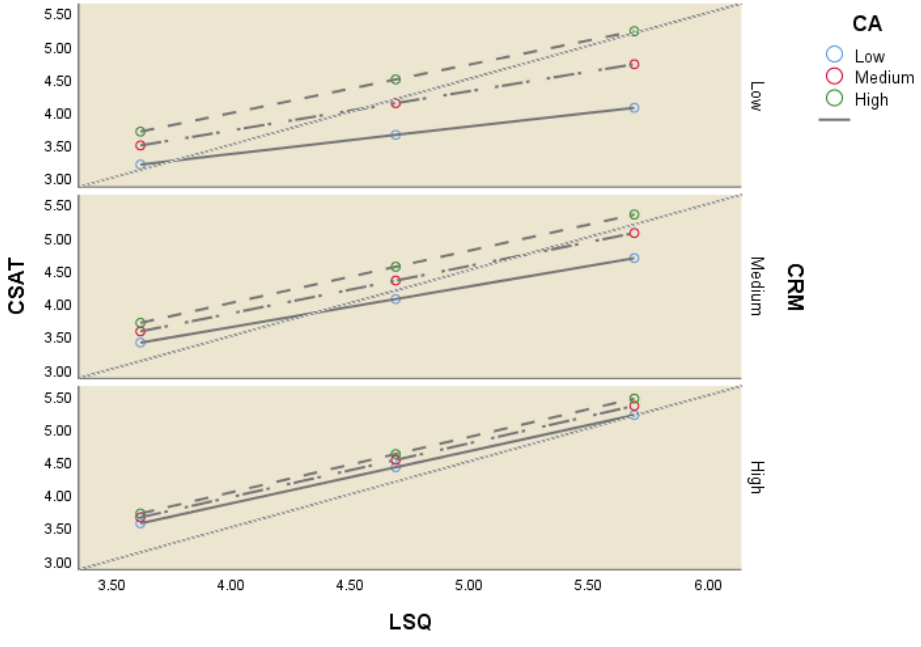


Figure 3 CA moderates the relationship between CL, LSQ and CRM (see online version for colours)

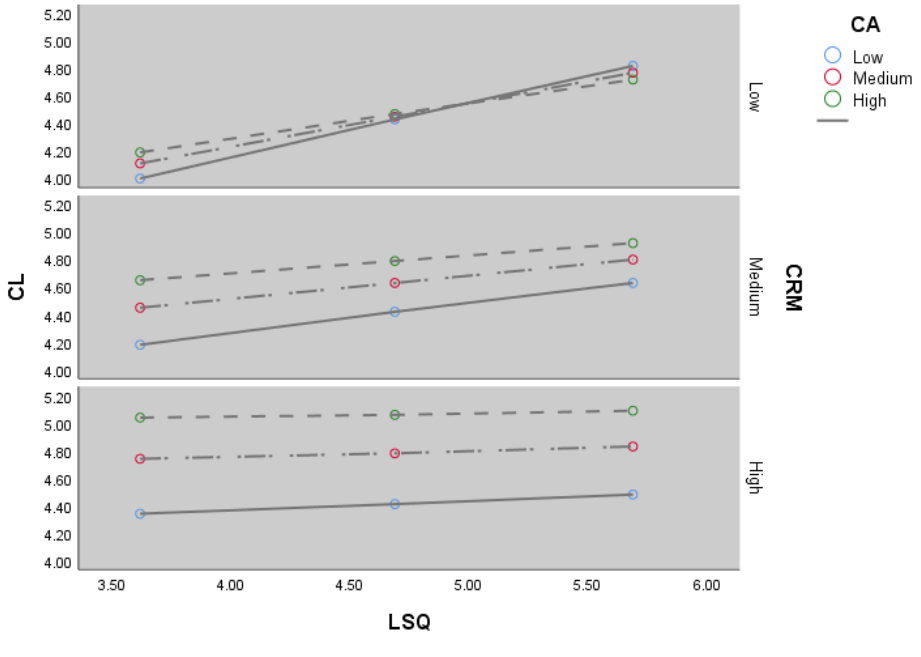


Figure 4 Empirical model

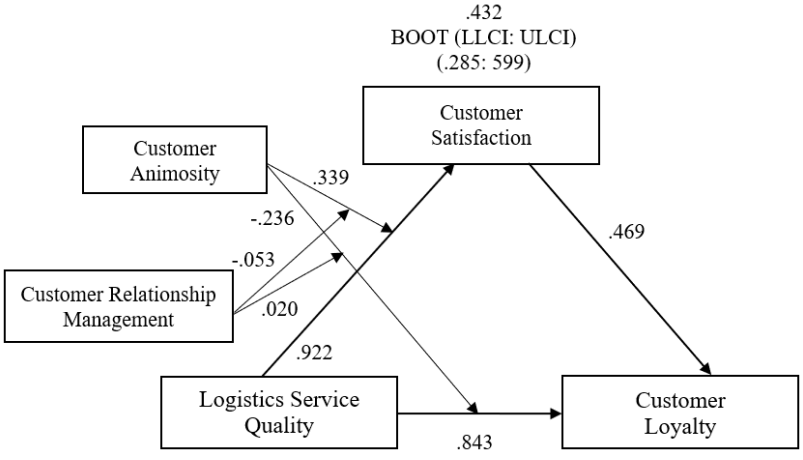


Figure 3 depicts the interaction between LSQ, CA, and CRM on the CL. The lower panel reveals the interaction effect at the higher level of CRM, and the upper panel highlights the interaction effect of CA at lower levels of CRM. The middle panel represents the medium levels of CRM. As we move from the lower panel to the top panel, there is a deviation in the slope of curves. Further, the effect of LSQ was high when the CA was low, and CRM was either low or medium level. However, when the LSQ increases to higher levels, the effect of CA on the CSAT decreases. These results provide enough evidence to support H6b. The empirical model is presented in Figure 4.

5 Discussion

In this study, the researchers examined the connection between logistics service quality (LSQ), customer satisfaction (CSAT), customer loyalty (CL), and customer relationship management (CRM) within the context of consumer animosity (CA). The hypotheses were developed based on a comprehensive literature review and presented as a conceptual model. The findings of this study supported Hypothesis 2, which proposed a direct influence of LSQ on CSAT. These results were consistent with previous studies by Akıl and Ungan (2021) and Hafez et al. (2021). The findings underscored the unique and irreplaceable role of LSQ in positively influencing the satisfaction of logistics consumers, particularly in the long term (Jain et al., 2021). Furthermore, the study also supported Hypothesis 1, which suggested a positive and significant effect of LSQ on CL. This finding aligned with earlier research conducted by Gil-Saura et al. (2018), Jang and Kim (2012) and Deepika et al. (2023). These results highlight the importance of delivering superior value in achieving higher customer satisfaction and fostering customer loyalty. Moreover, the study provided evidence in support of Hypothesis 3, which proposed a positive association between CSAT and CL. These findings were consistent with multiple past studies conducted by Ansah et al. (2020), Huang et al. (2019) and Sutrisno et al. (2019). In line with the findings of Gupta et al. (2023) and Keshavarz and Jamshidi (2018), we showed CSAT mediating the relationship between LSQ and CL (H4 supported). The mediating effect of CSAT proved that despite a direct relationship

between LSQ and CL, CSAT is critical in retaining customers. Also, our findings supported Hypotheses 5a and 5b, indicating that consumer animosity (CA) moderates the relationship between LSQ and CSAT and between LSQ and CL. These results align with previous studies conducted by Klein et al. (1998), Fernández-Ferrín et al. (2015) and Campo and Alvarez (2017). The presence of CA as a moderator can be attributed to the current hostile and unfriendly international political environment. These findings suggest that even when LSQ remains uncompromised, animosity can still negatively affect CSAT and CL.

The moderation effect of CA highlights the importance of considering the broader socio-political context in which logistics services are provided. It indicates that consumer attitudes and emotions influenced by past or ongoing military, political, or economic events can significantly impact their satisfaction and loyalty, regardless of the quality of service they receive (Le and Park, 2023). Understanding and managing consumer animosity becomes crucial for logistics service providers to navigate these challenging circumstances and mitigate their negative consequences (Michalski and Montes-Botella, 2022). According to Fernando et al. (2024), humanitarian logistics could represent a superior option for enhancing firms' standing in the marketplace. Overall, our study sheds light on the complex interplay between LSQ, CA, CSAT, and CL, emphasising the need for logistics providers to be attentive to the prevailing animosity and its potential implications on customer perceptions and behaviours. By acknowledging and addressing consumer animosity, logistics companies can develop strategies to enhance customer satisfaction and foster loyalty, even in politically charged environments.

This study found that LSQ interacts with CRM and CA to influence CSAT [H6a supported], and LSQ interacts with CRM and CA to influence CL [H6b supported]. Many studies have shown evidence of increased CRM activities enhancing CSAT (Prasad and Verma, 2022; Verhoef, 2003; Patel et al., 2024). Based on the findings above, we concluded that a moderated moderated mediation relationship exists between LSQ, CSAT, CL, CA, and CRM. We noted that during the periods of political crisis, logistics service providers have to devise suitable CRM strategies such as technology innovation and TQM-SCM to minimise the effect of CA while keeping undiminished levels of service quality (Aldaihani and Ali, 2023; Kaur et al., 2023; Altarifi et al., 2024).

6 Theoretical implications

This study explored a multilayered framework of a moderated moderated mediation model for the logistics service sector, especially the freight forwarding sector. This study contributes robustly to the existing international logistics literature in many ways. First, most studies in the past have only analysed the triangular, direct relationship between LSQ, CSAT, and CL. Few studies in the recent past investigated the mediating effect of CSAT and the moderating effect of CRM. The authors observed that most of the studies on these relationships were carried out during times of international peace and prosperity. The COVID-19 economic crisis, coupled with geopolitical events throughout the world, including the souring relationship between India and China, Russia and NATO after Russia's so-called special military operation in Ukraine, China and Taiwan, North Korea and the USA, has created an more fluid business climate (Adobor et al., 2023). Newer hostile situations necessitated this study to identify the unexplored combination of

constructs reflecting reality at the ground level. The authors have developed a five-factor moderated moderated mediation framework that captures the moderating role of CA. Our study is novel in extending CA research in the freight forwarding sector. Second, we have made notable contributions to the existing literature by showing the moderating effect of CRM, an under-explored area. Third, this study disclosed the CA and CRM interaction with LSQ to influence CL and CSAT. This result highlighted the complex relationship between the chosen constructs.

7 Managerial implications

The research findings provide insights for international logistics service providers on how global geopolitical events shape the loyalty of their clients (Adeitan et al., 2023). We highlight four crucial managerial implications for logistics service providers and managers. First, emerging business scenarios pressure logistics managers to redesign their marketing activities. Managers must realise that service quality alone will not determine their clients' satisfaction and loyalty. The marketing communication strategies must be redesigned to consider clients' sensitivities from different national backgrounds (Na' et al., 2024). Second, this study underscored that CRM moderates CA. Keeping this in mind, logistics companies could restructure their CRM activities, including actively involving the customers in service design, to lessen the impact of CA (Haq et al., 2023; Khadivar et al., 2023). The adverse effects of CA could be addressed through innovative and customer co-creation-focused service designs that empower and demonstrate value to customers (Iriarte et al., 2023; Kara, 2024). Freight forwarders experience cut-throat competition among themselves as they fear that any lapse in any one of their business interactions would become detrimental to their very existence as their competitors will quickly replace them. Freight forwarders must realise the importance of applying the internet of things and ICT tools (Naz et al., 2022; Kumar and Sisodia, 2023) and establish rapport beyond the professional business relationship with their clients. Third, the multilayered framework revealed the complex association between LSQ, CSAT, and CL. Thus, our study offered critical insights into why customers become disloyal even when the quality of services is high. Furthermore, repackaging their 7Ps in line with the changing political scenario will help the logistics managers win over their clients in the long run.

8 Limitations and direction for future research

This study has a few limitations. This study did not focus on a specific political event at the international level as the reference point. Also, we have not focused on the nationality of the freight forwarders as we understood the sensitivities of the exporters during our preliminary interaction with them. Therefore, future studies could highlight a particular political crisis as a reference point while also considering the service provider's nationality.

9 Conclusions

International logistics has become critical for organisations to ensure their competitive advantage. Emerging political events worldwide have added much complexity to the ever-fluid business climate. Given these circumstances, this study asked a pertinent research question about the association between LSQ, CSAT, CL, CA, and CRM. This study investigated a moderated moderated mediation model for the freight forwarding sector. This research gathered data from exporters in India (N-240). The authors used the Hayes PROCESS macro add-on through SPSS to test the hypotheses. The authors ran both models, i.e., 4 and 12 of Hayes PROCESS macros, to test the mediation and moderated moderated mediation hypotheses, respectively. Through rigorous empirical analysis, we have demonstrated the significant mediating role of CSAT in the relationship between LSQ and CL and the moderating effect of CA on this relationship. This study also revealed that CA and CRM moderate the relationship between LSQ and CSAT, as well as between LSQ and CL.

Moreover, our identification of CA as a critical moderator in this relationship provides theoretical insights into the factors influencing customer satisfaction and loyalty within the logistics industry. For practitioners in the freight forwarding industry, the results offer actionable insights into improving customer satisfaction and loyalty. This study recommends redesigning marketing communication strategies and repackaging marketing strategies while keeping in mind the sensitivities of their clients. This study did not focus on a specific political event at the international level as the reference point. Future studies could use a specific political crisis as a reference point. The outcome of this study makes a substantial contribution to the existing international logistics literature and has robust theoretical and managerial implications.

Credit authorship contribution statement

K.E. Balaji: conceptualisation, investigation, methodology, project administration, resources, writing – original draft preparation. G. Yoganandan: conceptualisation, methodology, writing- original draft preparation, writing – reviewing and editing, supervision. M. Vasan: software, validation, formal analysis, data curation.

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