An empirical analysis of service quality factors pertaining to ocean freight forwarding services

S. Subhashini and S. Preetha
Department of Management, Vels University, Tamil Nadu, India

Received 17 January 2018
Revised 25 January 2018
30 March 2018
17 May 2018
29 May 2018
8 June 2018
11 June 2018
Accepted 12 June 2018

Abstract

Purpose – The service sector is the key driver of a country's economic growth. The quality of service is more important for the survival of any organization. It is the interactive process by which the organization understands the customer and satisfies their needs. The main purpose of this study is to identify the factors influencing service quality in ocean freight forwarding and to study the association between the factors.

Design/methodology/approach – This research uses a deductive approach, which understands the theory first and collects the data. A questionnaire is designed to collect the data. The sampling technique used is two-stage sampling. First, the freight forwarders are selected and then the customers, importers and exporters are selected randomly. Likert scales are used to measure quality factors such as tangibility, reliability, responsibility, value, empathy and assurance. The association of factors is empirically evaluated. The SPSS tool is used for the correlation analysis.

Findings – An extensive review of the literature has been done to study and identify these service quality factors influencing customer satisfaction and loyalty. The result of this extensive literature review revealed that tangibility, responsiveness, reliability, trust, empathy and value are the service quality. It has been proved that there exists a significant association between the service quality factors and is positively related to the customer satisfaction.

Originality/value – Some studies have examined the freight forwarders' service quality, but not specifically related to any dimension. This study attempts to bring together the five dimensions of SERVQUAL scale and the value dimension evaluating the cost, freight charges, safety and security criteria in the industry and examines the association between the quality factors and customer satisfaction.

Keywords Customer satisfaction, Value, Service quality, Freight forwarder

Paper type Research paper

1. Introduction

Nowadays shippers outsource their shipping activities to freight forwarders. Freight forwarders perform operation and activities needed for the smooth flow of goods from the place of origin to the destination. A freight forwarder is a third-party logistics (3PL) service provider who links the buyers and the sellers by delivering the products to the customer in an efficient manner. Freight forwarding companies are getting diversified into fast-growing logistics business and changing from traditional activities to adapt into a very new avatar. Transport intelligence (Global Freight Forwarding report, 2016), a market research firm, estimated that the global freight forwarding in 2016 was US $141.9bn, which indicates a growth of 2.7 per cent, and cargo volume growth is estimated at 2.6 per cent when compared to 2015, with 2.1 per cent growth in value/revenue and 2.0 per cent growth in cargo volume. Sixty per cent of global freight market is controlled by

Maritime Business Review
Vol. 3 No. 3, 2018
pp. 276-289
Emerald Publishing Limited
2397-3757
DOI 10.1108/MABR-01-2018-0004

the top 20 forwarders. Other forwarders almost cover 40.5 per cent of the market share. The activities of freight forwarders include preparing shipping documents, booking space from the carrier, preparing customs clearance, advising customers on import/export regulations, etc. They also provide some value-added services to both importers and exporters such packing and labelling, proving own transport, warehousing, providing distribution services. For the shipments leaving or entering India, the freight forwarders act as an interface with all the government agencies and companies involved in making the cargo available at the destination. The shippers select the forwarders if they are the better service provider with a better deal. The freight forwarders also provide good planning to ensure a cost-effective method of moving the cargo to the destination country at the required time. Providing the shippers with good quality of service increases their loyalty. The quality of service determines the shippers' satisfaction and loyalty. The shippers perceive the quality of service of the service provider in three ways: high quality, where the shippers' perceived quality of service is greater than the expected service; acceptable quality, where the perceived quality of service is equal to the expected service; and bad quality, where the perceived quality of service is much lower than the expected service.

It becomes necessary to study the service quality factors in ocean freight forwarding to check if the perceived service quality is less than the expected service. Therefore, the objectives of this study is to identify the crucial service quality factors pertaining to ocean freight forwarding services based on the SERVQUAL scale and examine the associations between the factors.

2. Review of literature on SERVQUAL scale

Parusuraman (1985) revealed ten dimensions consumers use to frame the expectations and the perceived services. It has also been identified that there exist five key gaps with regards to the quality of services from the service provider side which are affecting the service quality perceived by the consumers. The five key gaps from the study of Parasuramansuram *et al.* (1991) indicated that gaps exist between consumer expectation and management perception, management perception and service quality specifications, service quality specifications and service delivery, service delivery and external communication, as well as expected service and perceived service.

Lovelock (1994) identified the sixth gap which is the gap between perceived service and service delivery. The service quality was measured with the service performance scale which was to measure the perceived service. The initial ten dimensions identified by Parusuraman *et al.* (1991) have been reduced to five dimensions, namely, tangibility, reliability, responsibility, assurance and empathy (Table I). It has also been stated that the cost and price factors can be taken into a separate dimension to study service quality. This SERVQUAL is more widely used in different service sectors to evaluate the service quality. It has also been stated that the cost dimension must be taken separately apart from the five dimensions. Chowdhary and Prakash (2007) revealed that the value dimension is more important while evaluating the service quality.

2.1 Literature on ocean freight forwarding service quality

Apart from the SERVQUAL dimensions, Shin *et al.* (2011) stated that speed and accuracy are essential to evaluate the service quality in ocean freight forwarding. Yuen and Thai (2015) addressed that speed and value are crucial factors in the shipping industry. The transit time of the transportation services, frequency, accuracy and those factors that contribute to the speed of shipment are evaluated under speed dimension. The total cost, freight charges and

safety and security of shipments are evaluated under the value dimension. Lin and Liang (2011) observed four dimensions such as convenience of operation process, aggregated service, excellent transit handling and rationalization of freight rate while exploring the service quality of freight forwarders in Taiwan market. Results revealed five priority items, such as EDI, cargo tracing service, availability of cargo space, competence of emergency handling and the ability of claims handling and freight rate that influence the shippers' satisfaction. Arif (2015) identified that price, individual attention, on time delivery, tracking and tracing would improve the service quality and would boost the financial performance of the shipping company. Reliability, accuracy, safety, speed, protection of shipments, delivery time, politeness of employees, qualification of employees, technical condition and appearance of the vehicle, communication, credibility, flexibility are the criteria necessary in freight forwarding industry (Simkova *et al.*, 2013).

2.2 Service quality under SERVQUAL dimension

2.2.1 Tangibility. Parusuraman *et al.* (1985) identified a well-furnished office as a tangible dimension. It has been stated that the SERVQUAL dimension can be modified accordingly with respect to the service sector under study. Thus, SERVQUAL needs to be refined so that it fits the context. Lu (2003) proposed five service attributes such as availability of cargo space, low cargo damage, accurate documentation, reliability of schedule, courtesy on inquiry. Premeaux *et al.* (2002) indicated that the containers must be seaworthy so that there is low cargo damage. It is one of the important attributes for influencing the perceived service quality.

O'Neill and Palmer (2003) and Zeithaml *et al.* (2006) stated tangibles as physical cues that are part of the service delivery process. The assets of outsource company comprise physical facilities and information technology and software systems. Liang *et al.* (2006) addressed that computer EDI, cargo tracing ability also influence the service quality. Wen and Huang (2007) and Wong *et al.* (2008) showed that the condition of containers influences the service quality perceived by the shipper. Availability of special equipment includes reefers and flat tracks, container availability, etc. Wong *et al.* (2008) identified computer hardware and software facilities, internet connection and shipment tracking facility play a vital roles in enhancing service quality.

Tansakul and Kulsomsiri (2013) suggested that tangibles are of two types, physical facilities and information technology facilities, such as tracking devices, software systems, etc., which facilitate the service. The appearance of physical facilities, staff sufficiency, availability and utilization of resources, IT system and capabilities are all evaluated under the tangibility dimension.

Table I.
Service quality dimensions

Dimension	Definition
Tangibility	Ability to provide physical facilities, equipment and appearance
Reliability	Ability to perform the promised service dependably and accurately
Assurance	Ability to inspire trust and confidence
Responsiveness	Willingness to help customers and provide prompt service
Empathy	Caring and individualized attention to customers
Value	Cost and price flexibility aspects
Safety	Safety of the cargo

Source: Parasuraman *et al.* (1985)

2.2.2 Reliability. Reliability is defined as the ability of the service provider in providing the service accurately and dependably. Honouring work schedules, error-free records, customers feeling safe during transactions, informing exactly when services will be performed are the factors identified by reviewing the study done by the authors pertaining to ocean freight forwarding to measure reliability. (Sirisoponsilp and Wonginta, 2003) Adherence to commit sailing schedule (Lu, 2003) error-free documentation, accepting requests for diversion or re-consignment of cargo (Wen and Huang, 2007), transit time reliability and consistency are considered as the evaluation criteria.

2.2.3 Responsibility. Responsibility was defined by Parusuraman *et al.* (1988), as the service provided providing prompt services. Lu (2003) suggested that sales people's regular visits to customers play a vital role in improving the service quality. Kannan *et al.* (2010) identified that the on-time issuance of the arrival and delay notices, the on-time release of B/L, freight invoices were considered crucial from the shipper's point of view. Wen and Huang (2007) identified that safe transportation of cargo is a measure of service quality. Wong *et al.* (2008) indicated that on-time pickup and delivery of cargo are service quality criteria in the shipping industry. Emergency situations need extra attention and care from the service provider for smooth movement of cargo to the destination. Competence in emergency handling, prompt service and flexibility are classified under the dimension of responsibility (Lin and Liang, 2011; Wenyong, 2010).

2.2.4 Assurance. Assurance is defined as the ability of the service provider to instil trust and confidence (Zeithmal *et al.*, 2006; Buttle, 1996). The interaction between the freight forwarder and the shipper must enhances a degree of confidence and trust (Sirisoponsilp and Wonginta, 2003). Politeness and courtesy of employees, knowledge and competence of employees, honouring promise, communicating effectively and consistently being courteous are some of the service quality criteria under the assurance dimension (Wen and Huang, 2007). On-time and proper communication about shipment matters are perceived as an essential criterion from the shippers' perspective (Wen and Huang, 2007).

2.2.5 Empathy. Parasuraman and Zeithmal (1988) stated empathy as personal attention given to an individual customer, employees' willingness to help, listening to customer complaints and providing a prompt response, understanding customer needs and keeping the best interest of customers at heart.

2.2.6 Value. Yuen and Thai (2015) evaluated the liner service quality identifies that freight cost, safety and security are also criteria influencing shippers' satisfaction. Simkova and Knoecny's (2013) study on the service quality of the ocean freight forwarders found 12 service quality factors including safety and protection of shipments that were perceived as important by the shippers. Wen and Huang (2007) analysed that the safe transportation of cargo, willingness to negotiate rates, extending credit facilities to shippers are criteria that can be classified under the value dimension (Kannan *et al.*, 2010; Wong *et al.*, 2008).

2.2.7 Service quality and customer satisfaction. Perceived service quality and customer satisfaction relationships, direct and indirect influence of service quality on customer satisfaction and customer loyalty have been empirically examined in service literature. The construct customer satisfaction has been the most important element of research for over years. It is defined as "customer's fulfilment response to a consumption experience or some part of it". It is the customer's pleasurable fulfilment response. Oliver (1993) stated that service quality should be given priority to enhance customer satisfaction. Anderson and Fornell (1994) and Brown and Swartz (1989) indicated that the quality of service positively correlates with customer satisfaction and service quality strongly influences satisfaction (Cronin and Taylor, 1992). Improvement of quality should be based on the needs of customer which would result in enhanced customer satisfaction (Anderson *et al.*, 1994)

Customer satisfaction plays a vital role in determining customer loyalty. Dick and Basu (1994) revealed that satisfaction has a significant positive effect on loyalty, and there is a positive linear association among the service quality variables. Iacobucci *et al.* (1995) suggested the difference between the service quality and customer satisfaction is that quality relates to the management's service delivery and satisfaction refers to a customer's expectation with the service. There happens to be very little research on studies related to the improvement of freight forwarding services. This study uses an exploratory factor analysis to examine the criteria of ocean freight forwarders' service quality in Chennai on the basis of SERVQUAL dimensions.

Sureshchandar *et al.* (2002) pointed out that there exists a crucial relationship between service quality and satisfaction. Caruana (2002) concluded that customer satisfaction plays a mediating role between the service quality and customer loyalty. The results of this research concluded that service quality is an important gateway to customer satisfaction and explains variance of 53 per cent. Othman and Owen (2001) framed a model called CARTER, consisting of 34 attributes related to dimension complaint, assurance, reliability, tangibility, empathy and responsiveness

Liang and Zhang (2009) indicated that customer satisfaction lead to positive customer behavioural intentions. Senic and Marinkovic (2014) proved that customers who are satisfied exhibit loyalty to the service provider by recommending the services to others which would positively influence the financial performance of the firm (Lam *et al.*, 2004).

Mowen and Chakraborty (1995) used 12 dimensions instead of 5 basic SERVQUAL dimensions to study the quality of services pertaining to medical services. Yoon and Suh (2004) promoted the traditional five dimensions into six dimensions, namely, reliability, empathy, assurance, responsiveness, process and education, which best adapted to the study about IT consultancy services. Wenyong *et al.* (2010) developed a system of quality evaluation for freight forwarding through SERVQUAL with 5 dimensions and 17 items and proved that reliability is the most important dimension. Liang (2006) identified the service requirements for international freight forwarders and found that the key attributes were the provision of door-to-door delivery, operation efficiency and transport cost and stated that empathy and responsiveness are the bottleneck problems and even though reliability and assurance are satisfied, but they are still key for improvement. According to the knowledge of the authors, there exists relatively very little research on service quality pertaining to freight forwarding. Ding and Tsai (2012) studied the basis criteria of evaluating the service quality of freight forwarding services in Taiwan which includes 57 criteria under dimensions such as freight and shipping schedule, supportive transport items, contingency handling ability, company reputation and internal management. The study induced 24 criteria from 57 criteria, and the first 5 important criteria include freight cost, transport time, sailing frequency, convenience of service and service scope and location.

An in-depth study of the literature revealed that most studies focused on finding the SERVQUAL factors to measure the quality of service pertaining to service providers (Table II). Many studies have been conducted to compare the expected and perceived service quality among 3PL service providers. There exist very few studies on the perceived service quality related to freight forwarding services. Hence, this study focuses on shippers' perceived service quality and analysing the factors and its association with customer satisfaction.

3. Methodology

3.1 Research hypothesis

Many empirical studies have stated the link between the service quality factors and customer satisfaction in different service sectors (Cronin and Taylor, 1992;

Criteria	Items	Sources
Physical facilities	Corporate website, well-furnished office, telecommunications equipment, computers, printers, fax machines, internet facilities, sufficient staff, sufficient number of agents	Wong *et al.* (2008), Parasuraman and Zeithmal (1988)
ICT	Online shipment tracking, e-booking	Liang *et al.* (2006), Lu (2002)
Committed schedules	Adherence to committed schedules	Siriponsilp and Wonginta (2003)
Documentation quality	Error-free documentation	Lu (2003)
Flexibility	Accepts request for re-consignment of cargo	Premeaux (2002), Siriponsilp and Wonginta (2003)
Time reliability	Provides transit time reliability and consistency	Wen and Huang (2007), Wong (2008)
Equipment availability	Availability of cargo space	Wen and Huang (2007), Siriponsilp and Wonginta (2003), Lin and Liang (2011)
Sales call regularity	Sales people regular visits	Ding and Tsai (2012), Lu (2003), Premeaux (2002)
On-time release of documents	On-time release of B/L, freight invoices	Kannan *et al.* (2010)
Safety	Safe transportation of cargo	Wen and Huang (2007)
On-time pick-up and delivery	On-time pick-up and delivery of cargo	Wong *et al.* (2008)
Handling emergency	Competency in emergency handling	Lin and Liang (2011)
Information	Informing exactly when service will be performed	Parasuraman and Zeithmal (1988)
Claim Settlement	Speed and ease of claims	Wenyong (2010)
Low freight	Low freight rates	Yuen (2015), Lu (2003)
Value and Counselling service	Route plan that enables fast delivery at a reasonable cost	Yuen (2015), Ding and Tsai (2012)
Credit facility	Extending credit facilities to customers	Kannan *et al.* (2010)
Pricing facilities	Willingness to negotiate rates to match customers	Wong *et al.* (2008), Lu (2003)
Competence of employees	Knowledge and competence of employees	Parasuraman and Zeithmal (1988), Lu (2003), Wen and Huang (2007)
Communication	On-time and proper communication about shipment matters	Wen and Huang (2007)
Assurance	Honouring promises	Parasuraman and Zeithmal (1988)
Courtesy	Politeness and courtesy of employees	Parasuraman and Zeithmal (1988), Lu (2003)
Trust	Feeling safe in transactions	Lu (2003), Sirisoponsilp and Wonginta (2003)
Responsiveness	Employees' willingness to help	Parasuraman and Zeithmal (1988), Lu (2003)
Complaint handling	Listening to complaints and showing sincere interest in solving problem	Lu (2003), Parasuraman and Zeithmal (1988)
Personal attention and understanding the customer	Understanding customer specific needs and assessing customer future needs	Parasuraman and Zeithmal (1988)

Table II.
Service quality elements in ocean freight forwarding

Anderson, 1994). Anderson (1994) studied the link between the perceived performance and customer satisfaction and proved that perceived performance has a significant impact on satisfaction. The expectation disconfirmation theory by Oliver (1993) explained that the customer satisfaction resulted from a comparison between the expectation of customer and outcome performance. The outcome of the performance of the service provider influences the customer satisfaction and that customer satisfaction increases by increasing the perceived performance. Cronin and Taylor (1992) suggested that service quality can be evaluated by the performance of the service provider. Teas (1993) stated that an individual evaluates the service quality of the service provider by the performance. The main aim of the study is to investigate the association between service quality factors and the influence of tangibility, responsibility, reliability and value on customer satisfaction in freight forwarding. Through an extensive review of the literature, the following hypothesis has been framed:

H1. There is an association between the service quality factors.

H2. Service quality in terms of tangibility, reliability, responsibility and value positively influences customer satisfaction in ocean freight forwarding services.

3.2 Sampling technique

The sampling method applied is sub-sampling. It is a two-stage sampling. First, the freight forwarders are selected randomly from the list provided by *EXIM Shipping Times*, one of newspapers in Chennai. Then the importers and exporters are selected randomly from the freight forwarders list. Information was drawn from a mail survey of 135 randomly selected importers and exporters. Most of the respondents were presidents, CEOs and owners. The number of responses returned were 100. The respondents have a history of using freight forwarding services and so they possess knowledge and familiarity on the quality of service. Sixty responses were from importers and 40 from exporters. The questionnaire was divided into two sections. The first part consists of the demographic questions related to the type of business, designation, size of company and years of experience. The second part has 31 questions on the factors of service quality and 6 questions based on customer satisfaction. A five-point Likert scale from strongly agree to strongly disagree has been adapted to measure the service quality factors and customer satisfaction. Customer satisfaction is measured using six statements such as:

(1) Compared to other freight forwarders, I know my freight forwarder gives me high quality service.
(2) I am completely satisfied with the services delivered by my freight forwarder.
(3) I feel absolutely delighted with my freight forwarders services.
(4) I feel relaxed clearing goods with my freight forwarder.
(5) Overall, I feel happy about the shipping experience.
(6) My freight forwarder makes all processes known to me, and I am happy with that.

Service quality statements are as given below in service quality statements:

- My freight forwarder has an informational corporate website.
- My freight forwarder has well-furnished office with communication equipment.
- My freight forwarder has sufficient staff to handle my work.
- My freight forwarder has online shipment tracking facility.

- My freight forwarder has e-booking facility.
- My freight forwarder has a sufficient network of agents.
- Employees of my freight forwarder are polite and courteous
- My freight forwarder provides route plan that enables fast delivery at reasonable cost.
- My freight forwarder informs exactly when services will be performed.
- My freight forwarder's employees are knowledgeable and competent enough.
- My freight forwarder offers low freight rates.
- My freight forwarder extends credit facilities.
- My freight forwarder has the willingness to negotiate rates.
- My freight forwarder's employees have the willingness to help.
- My freight forwarder accepts requests for re-consignment of cargo.
- My freight forwarder provides transit-time reliability and consistency.
- My freight forwarder listens to complaints and shows interest in solving problem.
- I feel safe in transactions.
- My freight forwarder assesses my future needs.
- My freight forwarder honours promises made.
- My freight forwarder provides on-time and proper communication on shipment matters.
- Speed of service process and ease of claims.
- Safe transportation of cargo.
- On-time release of B/L, freight invoices.
- On-time issuance of arrival and delay notices.
- On-time pick-up and delivery of cargo.
- Provides error-free documentation.
- Competency in emergency handling.
- My freight forwarder adheres to committed schedule.
- Availability of cargo space.
- My freight forwarder's sales people regularly visit me.

3.3 Statistical analysis

Statistical Package for Social Sciences (SPSS) is used for analysis. Factor analysis is used to verify the construction of scale. Pearson correlation is used to analyse the association between the service quality factors – tangibility, reliability, responsibility, value, assurance, empathy, customer satisfaction. Multiple regression has been analysed to find the relationship between tangibility, reliability, responsibility, value and customer satisfaction. Cronbach's analysis has been done to examine the reliability of the questionnaire, as the reliability increases, the fraction of error decreases (Tavakol and Dennick, 2011). Reliability is 0.884 for the 37 items, which suggests that the questionnaire is reliable.

4. Results of analyses

Factor analysis is performed using SPSS 21. Factor analysis is a method to verify the construction of scale and construct indices. It could also be used to justify dropping of questions. Principal component was the extraction method used, and after the extraction of factors, varimax rotation method was used, which is an orthogonal rotation that produce factor loading that may be high or low and makes it easier to match each item with a factor.

The appropriateness of the collected data is checked through Kaiser–Meyer–Olkin measure of sampling adequacy and Bartlett's test of sphericity. A KMO index greater than 0.5 is accepted (Kaiser, 1974), and the test is significant if the p value is less than 0.05 and (Field, 2005), it states the appropriateness of the analysis. The KMO value is 0.578 and is above the accepted limit of 0.5. In addition, the high chi-square value of 2669.8 and 0.001 significance levels proves that the data collected are appropriate.

MacCaullum *et al.* (2001) suggested that all items should have communalities of more than 0.60 to justify the analysis with a small sample size, and hence, factor loadings above 0.6 are considered and other statements which had factor loadings less than 0.6 are omitted. The total number of statements from 31 has been reduced to 28. Seven factors induced from this analysis are, namely: reliability, responsibility, tangibility, value, assurance, empathy and safety. Table III shows that the total cumulative variance is above 60 per cent which is considered acceptable in social sciences. The first five principal components have fulfilled the actual requirement of the 60 per cent limit and above. The percentage of cumulative eigenvalue is raised to 72.547 when considering two more components, and therefore, seven components are retained to study the service quality of ocean freight forwarders in Chennai.

The Pearson correlation test is used to determine the associations between the factors (Table IV). The analysis shows that there exists significant correlation between the service quality factors, and the correlation is significant at the 0.01 level. The correlation coefficient between reliability and tangibility is 0.862 which indicates a positive relationship between reliability and tangibility, and the percentage of relationship is 74 per cent. The percentage of relationship between value and responsibility is 72.2 per cent, assurance and responsibility is 68.8 per cent, empathy and responsibility is 44 per cent and safety and reliability is 23.5 per cent. The above results also state that there is no correlation between safety and empathy, as safety is a precautionary measure and employees' willingness to listen to complaints and employees' willingness to help have no association with safety. Accordingly, the results support *H1*. There exists an association between the service quality factors.

Table IV explains that the partial regression coefficients of responsibility, reliability, value and tangibility are 0.275, 0.521, 0.213 and 0.081, respectively; the R-value is 0.980, and the R-square value is 0.961. The above regression equation states that for each unit increase in the factors such as responsibility, reliability, value and tangibility, customer satisfaction increases by 0.275, 0.521, 0.213 and 0.081, respectively. This clearly states that the above factors play a significant role in enhancing customer satisfaction. Among the seven factors discussed earlier, reliability, responsibility, value and tangibility play a key role in influencing customer satisfaction. Hence, *H2* was partially supported. There exists a significant and positive influence of tangibility, reliability, responsibility and value on customer satisfaction (Table V).

5. Conclusions

To enhance service quality in freight forwarding, managers should know the service attributes that must be improved based on the expectations of the shippers. This study has revealed through an extensive literature review and exploratory factor analysis that well-

Factors	Statement	Cronbach's α	Factor loading	Eigenvalue	Percentage of variance	Cumulative percentage
Reliability	Availability of cargo space		0.937	6.809	21.963	21.963
	My freight forwarder adheres to committed schedule		0.899			
	My freight forwarder provides transit-time reliability and consistency		0.848			
	Feeling safe in transactions	0.849	0.842			
	My freight forwarder provides on-time and proper communication on shipment matters		0.818			
	Assesses my future needs		0.791			
	My freight forwarder accepts requests for re-consignment of cargo		0.750			
	My freight forwarder provides error-free documentation		0.646			
Responsibility	On-time pick-up and delivery of cargo		0.813	4.000	12.904	34.864
	On-time release of B/L, freight invoices		0.734			
	My freight forwarders' sales people regularly visit me		0.722			
	On-time issuance of arrival and delay notices	0.836	0.699			
	Competency in emergency handling		0.637			
	Speed of service process and ease of claims		0.615			
Tangibility	My freight forwarder has online shipment tracking facility		0.773	3.392	10.942	45.808
	My freight forwarder has sufficient staff to handle my work		0.738			
	My freight forwarder has e-booking facility		0.732			
	My freight forwarder has well-furnished office with communication equipment		0.721			
	My freight forwarder has a sufficient network of agents	0.821	0.692			
Value	My freight forwarder extends credit facilities		0.806	2.968	9.574	55.382
	My freight forwarder has willingness to negotiate rates		0.774			
	My freight forwarder provides route plan that enables fast delivery at reasonable cost		0.747			
	My freight forwarder has willingness to negotiate rates	0.837	0.735			
Assurance	My freight forwarder's employees are knowledgeable and competent enough		0.827	1.979	6.385	61.767
	Employees of my freight forwarder are polite and courteous	0.818	0.797			
Empathy	Listens to complaints and shows interest in solving problem	0.811	0.773	1.783	5.752	67.520
	Employees have the willingness to help		0.717			
Safety	Safe transportation of cargo	0.833	0.786	1.558	5.027	72.547

Table III.
Factor analysis results

equipped office, sufficient staff, online booking, shipment tracking, good network of agents (tangibles), committed schedule, error-free documentation, accepting requests for re-consignment of cargo, transit time reliability and consistency, cargo space availability, on-time communication, feeling safe in transactions (reliability), sales people regular visit, on-time issuance of B/L, arrival and delay notices, pick-up and delivery of cargo, competence in emergency handling, speed and ease of claims (responsibility), route plan, freight rates, credit facilities, willingness to negotiate rates (value), knowledge and politeness of employees (assurance), willingness to help, sincere interest in solving problems (empathy) and safe transportation of cargo are the 28 attributes of service quality pertaining to freight forwarding services in Chennai. The study has identified the association between factors and influence of reliability, responsibility, value and tangibility factors on the satisfaction of shippers. To effectively compete in the market, freight forwarders should provide dedicated service and should provide differentiated service to satisfy customer needs. Moreover, the study enables future researchers to frame service quality models to further evaluate the relationship between service quality factors customer satisfaction. The study has highlighted the importance of the service quality factors that are more important for enhancement of freight forwarding business. Moreover, sea freight in India contributes more than 70 per cent of international trade through sea ports. The performance in the logistics industry in international trade is very important to the economic growth of a country. This sector is now recognised as one of the core pillars that shapes the economy of a country. Freight forwarding companies should focus on improving the quality of factors to improve customer satisfaction which in turn would increase the number of loyal customers leading to an increase in the overall profit.

The present study examined the association between the tangibility, responsibility, reliability, value, assurance, empathy and its influence on customer satisfaction pertaining

Table IV.
Correlations between service quality factors

Service quality factors	Reliability	Value	Assurance	Empathy	Tangibility	Responsibility	Safety
Reliability	1						
Value	0.660**	1					
Assurance	0.750**	0.712**	1				
Empathy	0.329**	0.457**	0.522**	1			
Tangibility	0.862**	0.575**	0.585**	0.452**	1		
Responsibility	0.731**	0.854**	0.835**	0.678**	0.699**	1	
Safety	0.485**	0.268**	0.267**	0.091	0.475**	0.368**	1

Note: **Correlation is significant at the 0.01 level

Table V.
Regression analysis results

Variable	Unstandardized coefficients	Standardized coefficients	Significance
Constant	−1.662		0.004
Responsibility (X1)	1.850	0.275	0.001
Reliability (X2)	2.337	0.512	0.001
Value (X3)	1.039	0.213	0.001
Tangibility (X4)	0.593	0.081	0.003

Note: $Y = 0.275X1 + 0.512X2 + 0.213X3 + 0.081X4$

to freight forwarding services in Chennai. Moreover, service failure and service recovery factors were not considered in this study. Future research could be conducted on identifying failure and recovery factors and its influence on customer satisfaction and loyalty pertaining to freight forwarding services.

References

Anderson, E.W. and Fornell, C. (1994), "A customer satisfaction research prospectus", in Rust, R.T. and Oliver, R.L. (Eds), *Service Quality: New Directions in Theory and Practice*, Sage, Thousand Oaks, CA, pp. 241-268.

Arif, M.Z.U. (2015), "Analysis of customer perception on the core service quality of freight forwarding business of Kuehne + Nagel ltd.: empirical evidence from Bangladesh", *International Journal of Trade and Commerce-IIARTC*, Vol. 4 No. 1, pp. 218-232.

Brown, S.W. and Swartz, T.A. (1989), "A gap analysis of professional service quality", *Journal of Marketing*, Vol. 53 No. 2, pp. 92-98.

Buttle, F. (1996), "SERVQUAL: review, critique, research agenda", *European Journal of Marketing*, Vol. 30 No. 1, pp. 126-139.

Caruana, A. (2002), "Service loyalty: the effects of service quality and the mediating role of customer satisfaction", *European Journal of Marketing*, Vol. 36 Nos 7/8, pp. 811-828.

Chowdhary, N. and Prakash, M. (2007), "Prioritizing service quality dimensions", *Managing Service Quality*, Vol. 17 No. 5, pp. 493-509.

Cronin, J.J. and Taylor, S.A. (1992), "Measuring service quality: a reexamination and extension", *Journal of Marketing*, Vol. 56 No. 3, pp. 55-68.

Dick, A.S. and Basu, K. (1994), "Customer loyalty: toward an integrated conceptual framework", *Journal of the Academy of Marketing Science*, Vol. 22 No. 2, pp. 99-113.

Ding, J.F. and Tsai, P.P. (2012), "Evaluating quality improvement of service recovery for ocean freight forwarders in Taiwan", *Information Technology Journal*, Vol. 11 No. 11, pp. 1579-1587.

Field, A. (2005), *Discovering Statistics Using SPSS*, Sage, London.

Global Freight Forwarding report (2016), available at: www.ti-insight.com

Iacobucci, D., Ostrom, A. and Grayson, K. (1995), "Distinguishing service quality and customer satisfaction: the voice of the consumer", *Journal of Consumer Psychology*, Vol. 4 No. 3, pp. 277-303.

Kaiser, H.F. (1974), "An index of factorial simplicity", *Psychometrica*, Vol. 39 No. 1, pp. 31-36.

Kannan, V., Bose, S.K. and Kannan, N.G. (2010), "Ocean container carrier selection criteria and their perceived importance in the Indian environment: a shipper-Only Study", *The IUP Journal of Operations Management*, Vol. 9 No. 4, pp. 35-55.

Lam, S.Y., Shankar, V., Erramilli, K.M. and Murthy, B. (2004), "Customer value, satisfaction, loyalty, and switching costs: an illustration from a business to business service context", *Journal of the Academy of Marketing Science*, Vol. 32 No. 3, pp. 293-311.

Liang, G.S., Chou, T.Y. and Kan, S.F. (2006), "Applying fuzzy quality function deployment to identify service management requirements for an ocean freight forwarder", *Total Quality Management Business Excellence*, Vol. 17 No. 5, pp. 39-554.

Liang, X. and Zhang, S. (2009), "Investigation of customer satisfaction in student food service", *International Journal of Quality and Service Sciences*, Vol. 1 No. 1, pp. 113-124.

Lin, W.C. and Liang, G.S. (2011), "Applying fuzzy zot to explore the customer service quality to the ocean freight forwarding industry in emerging Taiwan market", *Research Journal of Business Management*, Vol. 5 No. 2, pp. 77-88.

Lovelock, C. (1994), *Product Plus*, Mc Graw Hill, New York, NY.

Lu, C.S. (2003), "The impact of carrier service attributes on shipper-carrier partnering relationships: a shipper's perspective", *Transportation Research, Part E: Logistics and Transportation Review*, Vol. 39 No. 5, pp. 399-415.

MacCaullum, R.C., Widaman, K.F., Preacher, K.J. and Hong, S. (2001), "Sample size in factor analysis: the role of model error", *Multivariate Behavioral Research*, Vol. 36 No. 4, pp. 611-637.

Mowen, J.C. and Chakraborty, G. (1995), "Diagnosing service quality in the medical service channel", *Journal of Healthcare Marketing*, Vol. 15 No. 4, pp. 42-49.

Oliver, R.L. (1993), "A conceptual model of service quality and service satisfaction: compatible goals, different concepts", in Swartz, T.A., Bowen, D.E. and Brown, S.W. (Eds), *Advances in Service Marketing and Management*, JAI Press, Greenwich, CT, Vol. 2, pp. 65-85.

O'Neil, M. and Palmer, A. (2003), "An exploratory study of the effects of experience on customer perceptions of the service quality construct", *Managing Service Quality*, Vol. 13 No. 3, pp. 187-196.

Othman, A.Q. and Owen, L. (2001), "Adopting and measuring customer service quality in Islamic banks: case study in Kuwait Finance House", *International Journal of Financial Services*, Vol. 3 No. 1, pp. 1-26.

Parasuraman, A. and Zeithmal, V.A. (1988), "SERVQUAL: a multiple-Item Scale for measuring consumer perceptions of service quality", *Journal of Retailing*, Vol. 64 No. 1, pp. 13-35.

Parusuraman, A., Zeithmal, V.A. and Berry, L.L. (1985), "A conceptual model of service quality and its implications for future research", *Journal of Marketing*, Vol. 49 No. 4, pp. 41-50.

Parasuramansuram, A., Berry, L.L. and Zeithmal, V.A. (1991), "Refinement and reassessment of the servqual dimension", *Journal of Retailing*, Vol. 67 No. 4, pp. 420-450.

Premeaux, S.R. (2002), "Motor carrier selection criteria: perceptual differences between shippers and motor carriers", *Transportation Journal*, Winter, Vol. 42 No. 2, pp. 28-38.

Senic, V. and Marinkovic, V. (2014), "Examining the effect of different components of customer value on attitudinal loyalty and behavioural intention", *International Journal of Quality and Service Sciences*, Vol. 6 Nos 2/3, pp. 134-142.

Shin, C.H., Choi, M.S. and Yang, Y.O. (2011), "Development of scale for the service quality from entry to departure of container ports", *Journal of Korean Institute of Port Research*, Vol. 34 No. 5, pp. 389-395.

Simkova, I. and Knoecny, V. (2013), "The evaluation of service quality in forwarding, operation and economics of transport and communications", *Perner's Contacts*, Vol. 8 No. 4.

Sirisoponsilp, S. and Wonginta, T. (2003), "Factors infuencing the selection of motor carriers", *Journal of the Eastern Asia Society for Transportation Studies*, Vol. 5, pp. 2225-2235.

Sureshchandar, G.S., Rajendran, C. and Anantharaman, R.N. (2002), "The relationship between service quality and customer satisfaction – a factor specific approach", *Journal of Service Marketing*, Vol. 16 No. 4, pp. 363-379.

Tansakul, C. and Kulsomsiri, J.B. (2013), "A gap analysis in service quality of Thai logistics service provider", *Proceedings of 4th International Conference on Engineering Project and Production Management*.

Tavakol, M. and Dennick, R. (2011), "Making sense of Cronbach's alpha", *International Journal of Medical Education*, Vol. 2, pp. 53-55.

Teas, K.R. (1993), "Expectations, performance evaluation, and consumers' perceptions of quality", *Journal of Marketing*, Vol. 57 No. 4, pp. 18-34.

Wen, C.H. and Huang, J.Y. (2007), "A discrete choice model of ocean carrier choice", *Journal of the Eastern Asia Society for Transportation Studies*, Vol. 7, pp. 795-807.

Wenyong, Z., Jing, Z. and Hongxiang, C. (2010), "Service quality evaluation of international freight forwarders", 2010 7th International Conference on Service Systems and Service Management (ICSSSM), *IEEE*.

Wong, P.C., Yan, H. and Bamford, C. (2008), "Evaluation of factors for carrier selection in the China pearl river Delta", *Maritime Policy Management*, Vol. 35 No. 1, pp. 27-52.

Yoon, S. and Suh, H. (2004), "Ensuring IT consulting SERVQUAL and user satisfaction: a modified measurement tool", *Information System Frontiers*, Vol. 6 No. 4, pp. 41-351.

Yuen, K.F. and Thai, V.V. (2015), "Service quality and customer satisfaction in liner shipping", *International Journal of Quality and Service Sciences*, Vol. 7 Nos 2/3, pp. 170-183.

Zeithmal, V.A., Bitner, M.J. and Gremler, D.D. (2006), *Services Marketing: Integrating Customer Focus Across the Firm*, 4th ed., McGraw-Hill, Boston.

Further reading

Bitner, M.J. and Hubbert, A.R. (1994), "Encounter satisfaction versus overall satisfaction versus quality: the customer's voice", in Rust, R.T. and Oliver, R.L. (Eds), *Service Quality: New Directions in Theory and Practice*, Sage, Thousand Oaks, CA, pp. 72-94.

Gronroos, C. (2000), *Service Management and Marketing: A Customer Relationship Management Approach*, 2nd ed., John Wiley and Sons, Hoboken, ISBN:13-9780471720348, p. 394.

Qin, H. and Prybutok, V.R. (2009), "Service quality, customer satisfaction and behaviour intentions in fast-food restaurants", *International Journal of Quality and Service Sciences*, Vol. 1 No. 1, pp. 78-95.

Rosen, L.D., Karwan, R.K. and Scribner, L.L. (2010), "Service quality measurement and the disconfirmation model: taking care in interpretation", *Total Quality Management and Business Excellence*, Vol. 14 No. 1, pp. 3-14.

Corresponding author

S. Subhashini can be contacted at: pavanaarush@gmail.com