

Logistics Service Quality and Customer Satisfaction: Evidence from Salalah Port Oman

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Abstract

This study aims to explore the influence of the dimensions of service quality provided by Port of Salalah on customer satisfaction. The study modifies the SERVQUAL model to examine service quality dimensions in the Port setting with five dimensions namely tangibles, empathy, reliability, responsiveness and assurance (TERRA) requirements. The data were collected based on a sample of 300 Salalah Port customers from the administrators that provided logistics services in ports through a questionnaire and analyzed using SPSS. In the case of Port of Salalah, all five dimensions of service quality have a significant and positive impact on Salalah Port customer satisfaction. This paper contributes to the existing literature by offering empirical findings. It highlights the important role of service quality; especially reliability in influencing customer satisfaction in this context. The results provide some useful references for port managers to improve the level of service quality and customer satisfaction as a means to strengthen competitiveness.

Keywords: *Service Quality, Customer Satisfaction, Salalah Port, Oman.*

Introduction

Oman currently has two main strategic seaports in the entire country where commodities are moved from outside and into Oman, with one more to be built- Duqm Port. Sultan Qaboos Harbour was the primary transshipment point into Oman however has now been redeveloped as a visitor port to support tourism within the previous town of Muscat and in order that trucks not ought to travel through city roadways from industrial areas (Cordts et al., 2016). The main ports in Oman are the ports of Sohar and Salalah, each with a free zone to promote export-oriented industries and attract foreign investment, both are strategically located at the opposite ends of the country, while Duqm is located more centrally facing the Indian Ocean away from the Strait of Hormuz. Due to the escalating issues between Iran and the Arab World, the Strait of Hormuz has become an international focal point.

The transportation and logistics system in Oman operates efficiently when port logistics services are of high quality and customer satisfaction is prioritised. Enhancing transport and logistics not only improves efficiency, but also creates employment opportunities, thereby promoting sustainable development (Al Mukhni et al., 2021). The success of the sector depends directly on customer satisfaction and the delivery of quality services. Sapoetra and Basuki (2019) conducted a study which showed the effect of service quality on customer satisfaction and loyalty. Further Ashrafi (2011) indicated the importance of information system in Oman as the influence of IT on organizational productivity and operational performance is strategic for private sector organizations. Proper management of solid wastes,

especially municipal solid waste (MSW), is important for sustainability in energy generation and reducing overall waste production. Proper waste management strategies and recycling of useful components are part of the solutions to achieving cleaner environment, zero waste, as well as for Renewable Energy Sources promotion. In Oman, Environmental sustainability with emissions and greenhouse gases related to municipal waste management (Umar, 2020) In addition, smart grid technology is important in the electric arena for efficient energy management and productive use of energy to make Oman a sustainable nation (The Power Situation in Oman and Prospects of Integrating Smart Grid Technologies, 2021). Furthermore,

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its valuable location in Oman due to its effect on the energy markets makes it a perceptive partner for strategic initiatives such as China (MSRI) (Al Omairi et al., 2021). Increased cooperation with Iran in the Strait of Hormuz has raised Oman as a central location in the region (Chaziza, 2018). The potential for collaboration between Iran and Oman in the Strait of Hormuz has been underscored, underscoring Oman's geopolitical significance in the region (Chaziza, 2018). Moreover, Oman's historical ties with Iran are of paramount importance, particularly with respect to security and logistical cooperation (Noraini & Mohd Ridzuan Md, 2023).

Salalah seaport, established since 1998, has grown very rapidly to become the leading and most reputable multi-harbour in the Oman region and in 2021 was ranked as the 2nd most efficient container port in the world. Salalah Port aims to become a reliable regional supply chain center of technology and human resources. With the support of an excellent integrated supply chain ecosystem which includes Seaports, Free Zones and Airports, the Port of Salalah serves as an effective platform for unhindered international trade. Harmonized sea, land and air multi-modal connectivity enables importers and exporters to easily and quickly access their global markets and increase efficiency and competitiveness (<https://www.salalahport.com.om/>)

This research was conducted in Dhofar Province, specifically this research was conducted in the city of Salalah. Salalah is located in the southern part of Oman, approximately 1000 km from Muscat. Salalah is considered the second largest city in Oman and is located between 40°14' N and 40°05' N and 25°39' E to 26°00' E longitude on the map, as shown in Figure 1



Figure 1: Location Port in Oman, Source (Satellite photo of Google Map, 2022.)

To conclude, port logistics services and customer satisfaction have been pronounced important for the transportation and logistics sectors in Oman. Efficient waste

management, integration of smart grid technologies, and establishing strategic partnerships are supporting factors in Oman's move towards sustainability and its recognized geopolitical importance.

Theoretical Framework

Logistics is an important element of economic development in every country even around the world. In essence, logistics is an essential and central feature of all economic activity, because without a good logistics system, the flow of goods and services will not work properly (Beysenbaev & Dus, 2020). Therefore, the logistics industry has both direct and indirect economic influence, and improvements in logistics management and a push towards more efficient supply chains provide excellent opportunities for economic growth (Muduli & Barve, 2013). They are vital intersections of international trade and sea transport interconnecting even inland flows via land. In recent years, port logistics has evolved as a component of

enterprise service property for large-scale modern logistics and virtual chains in the new era of professionalism. The globalizing vocation of the port leads to a process that needs, on one hand, space by having an adequate area for its services and related companies and activities (Port Logistics), inherence in Porto Moderno. So, the above knowledge of research topics is necessary in focusing on academic papers to combat globalization port logistics and enhance ports' core Port Logistics Competence (Yikui Mo et al 2018).

Researchers have noted some limitations in the approach proposed by Parasuraman et al. (Brady & Cronin, 2001). The limitations of this study include the fact that the gaps were measured based on perceptions rather than objective performance measures (Ladhari, 2008). Furthermore, SERVQUAL emphasises the process rather than the results of service delivery (Dabholkar et al., 2000). Although Cronin Jr and Taylor (1992) favour the SERVPERF model, studies have found inconsistencies in the relationships between service quality, satisfaction, and behavioural intentions. Based on this finding, further empirical studies in specific service contexts are required. In addition, Ugboma et al. (2004), SERVQUAL has not been tailored to the Nigerian port environment, and its applicability to emerging economies has been questioned owing to cultural differences (Malik et al., 2012). Despite these limitations, the literature suggests that service quality positively impacts customer satisfaction in various contexts (Malik et al., 2012; Ugboma et al., 2007). According to Thai (2008) and Yeo et al. (2015), reliability and responsiveness are the key drivers of service quality in the port industry. Although the connection between tangible environment, safety, empathy, and satisfaction has been examined in previous port studies, its significance has not been conclusively clarified. Against this background, it is necessary to test the relative importance of SERVQUAL dimensions in under-researched contexts, such as the port of Salalah in Oman, using empirical analysis. In this study, we examine the applicability of the SERVQUAL model and the relationship between its five dimensions and customer satisfaction.

Literature Review

Service quality and its implications for customer satisfaction have long been conceptualized and tested across many service sectors. The quality of service is a very important factor in the level of customer satisfaction and customer loyalty especially in the context of port logistics (Sapoetra & Basuki, 2019). Several models have been proposed for measuring and assessing the quality of service which indeed one of the most interesting is SERVQUAL model (Parasuraman et al., 1988). SERVQUAL itself comprises five dimensions of service quality (Tangible, Reliability, Responsiveness, Assurance and Empathy: TERRA).

Yet some have criticized the approach taken by the SERVQUAL model. Brady and Cronin Jr (2001), on the other hand, suggest that the model may not capture all of the elements of service quality because it essentially formulates service quality as a gap between what customers expect to receive and their perceptions. Second, the generalizability of the model has been criticized as it lacks a capacity for culture relevance (Malik et al., 2012), which is plausible given that cultural factors can determine customer expectations/perceptions of quality service.

SERVPERF is an example of one such alternative model proposed as a response to these limitations. SERVPERF put more emphasis on the measurement of real service performance instead of just measuring expectations and perceptions gap (Cronin Jr & Taylor, 1992). Although this may indicate that SERVPERF is a more parsimonious and robust measure of service quality in other contexts (e.g. banking services-- Cronin & Taylor, 1992; consumer services-- Cronin & Taylor, 1992).

In the literature of port logistics, recent scholarship has highlighted the salient role played by certain service quality dimensions. For example, Thai (2008) and Yeo et al., (2015) found that both reliability and responsiveness were important antecedents of customer satisfaction in the port sector. But the importance of other dimensions (tangibles, empathy and assurance) is less evident and it might be different depending on each port with its specific operational environment.

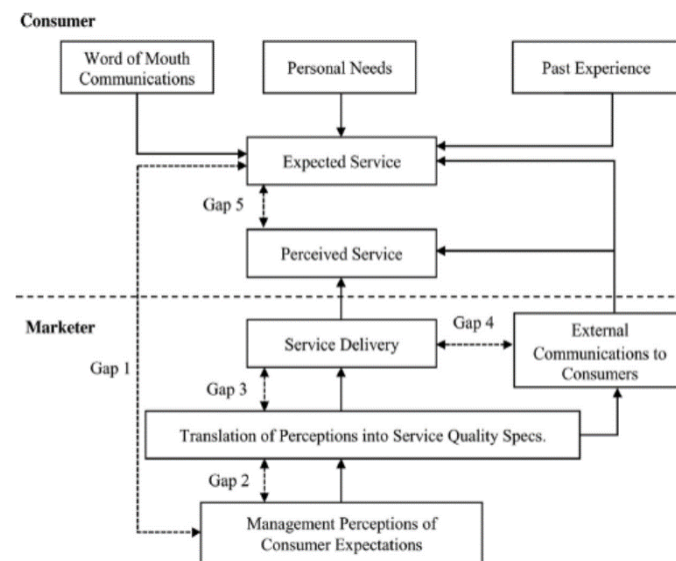
Consequently, to fill these research gaps, the goal of this study is to determine the integration of SERVQUAL model in Salalah Port in Oman. This study aims to examine how well the relationship between

the five-service quality dimensions and customer satisfaction can explain what factors of service quality aspect of services are most important to port users in this context. Furthermore, this research will also add to the current debate on which model would be most relevant for measuring service quality in port logistics sector.

Service Quality Gap Model

Parasuraman et al. (1985) stated that when the business can close the gap between customer expectations and perceptions then service quality is achieved.

Figure 2: "The Service Quality Gap Model"



Source: Adapted from Parasuraman et al., 1985.

Gap 1: GAP between customers expected service and management perceptions of customer expectation Figure 2 It means management has missed how our customers set their expectations with any possible source available. Gap 1 - The discrepancy between what management perceive service levels should be & company policy/service standards and what is required to satisfy customers. A charge from the superior to serve too little of a management or / and not get to meet it Expectations of customers. (3) Gap 3, GAP-Service between service standards /delivery. There are many factors that can contribute to the breakdown of service delivery causing this gap including things such as lack of collaboration, selection or placement of employees, training inadequacies and poorly designed jobs. This involves the media by which the company advertises and communicates, through which customer expectations are formed about service to be received. (4) Gap 4, GAP between service delivery and customer perception or (the services delivered would be higher than external communications-promises excess and complete non-availability of information to potential customers, this will create seem like good service.), Finally, the service evidence managing is an enterprise-wide need for the company to change what it communicates to potential buyers about the real proof of service provision (managing evidence). (5) Gap 5: GAP between customer perception and customer expectation. The last mile is where the rubber meets the road in terms of customer satisfaction. Service delivery gap four is the top way to impact customer delight because these are first to fourth gaps and plays an important role for customer satisfaction. (Parasuraman et al., 1985)

Parasuraman et al., SERVQUAL model (1988) on which Zeithaml et al. Service quality of TERRA dimensions were measured with SERVQUAL scale bases on version ACSI (1995) which developed by Parasuraman et al. Table 1:

Table 1 Dimension of Service Quality (SERVQUAL) Model

Dimension	Definition	
	Parasuraman et al. (1988).	Zeithaml et al. (1990)
Reliability	Timely and consistent service	Perform the promised service reliably and accurately
Responsiveness	Willingness to help customers quickly	Willingness to help customers and provide prompt service
Assurance	Professionalism, courtesy, respect, good communication and having a caring attitude	Knowledgeable, courteous, inspiring customer trust and confidence
Empathy	Attentive, caring, understands needs and creates a sense of security and comfort.	Caring, easy access, good communication, customer understanding and individual attention given to customers
Tangibles	Availability of facilities, equipment, uniforms, equipment used to serve	Appearance of physical facilities, equipment, personnel and written materials

The literature review revealed that for various authors, different service quality dimensions were proposed. A brief picture of all the service quality dimensions recommended or hypothesized by different authors included in Table 2.

Table 2: Possible Approach to Analysing Service Quality Dimensions

Dimensions	Specific elements	Lewis (1993).	Parasuraman et al. (1988).	Sureshchandar et al. (2002).	Avkiran (1999).
Tangibles	Staff uniforms are neat	√	√	√	√
	Professional staff appearance	√	√	√	√
	Building	√	√	√	√
	Leaflet	√	√	√	√
Reliability	Authenticity	√	√	√	√
	prompt service	√	√	√	√
	Record accuracy	√	√	√	√
	Dependability	√	√	√	√
Responsiveness	Staff conduct	√	√	√	√
	Willingness of staff to help customers	√	√	√	√
	provide prompt of service	√	√	√	√
Assurance	Employee knowledge	√	√	√	√
	The courteousness of the staff	√	√	√	√
	Reliability and assurance	√	√	√	√
Empathy	Effective interaction	√	√	√	√
	Personalized care	√	√	√	√
	Customer comprehension	√	√	√	√
	Obtaining access to teller services	√	√	√	√
Social responsibility	Excellent service for a fair price	√	√	√	√
	Employees' awareness of their public duty	√	√	√	√

Source: Lewis (1993), Parasuraman et al. (1988), Sureshchandar et al. (2002), Avkiran (1999)

The SERVPERF Performance

Cronin and Taylor (1992) proposed the term SERVQUAL to measure service quality and customer satisfaction, they found that consumer perception factors were better predictors of levels of SERVICE. Cronin and Taylor's SERVPERF is a positive scale to measure service quality. The overall believe is that detectability of correct SERVQUAL model scale would be a problem as it quite easily assumed to play the role or confuse between customer satisfaction and customer attitudes (belief), in fact ,some mistakes occurs by measuring service quality(disposing errors) using Parasuraman's (the dimensions of service quality : the original measure) Model SERVQUAL.They also posited that service quality as “attitude” and “performance was inherent expectation,” thus measuring business performance rather than consumer perception would be more beneficial in defining service quality.Based on this, service quality is assessed only through customer perception without an assessment of customer expectations, meaning that service quality is considered appropriate at the level of perception(Rasyida et al., 2016).

The SERVQUAL model is a good measure to many industries (Dabholkar, Thorp, & Rentz, 1996). This model is more criticized by the researchers in several studies, their argued that this model need to be comprehensive by sort of applications (Brady & Cronin Jr, 2001) (Dabholkar et al., 1996; Shahin & Samea, 2010). Second, Cronin and Taylor in 1992 proposed a modification to the model that reconceptualises service quality as an overall attitude towards a service provider; they argued that performance alone is the most important aspect of quality. These researchers posits that service quality is a function of consumer attitudes, and performance only represents the measure of service quality. They studied the correlation of service quality to customer satisfaction and purchase intention alleging that "service quality is a precedent for consumer satisfaction". They introduce a new service quality model using SERVQUAL through the lens of performance-only measure of service quality called as SERVPERF. Cronin and Taylor (1992) then advance to operationalize performance using reliability, responsiveness, assurance tangibles and empathy dimensions of service quality measures in the new form anticipated-perceived. However, empirical studies suggest that the SERVQUAL scale is inconsistent or inaccurate in identifying service quality compared to SERVPERF research by Cronin and Taylor (1994).

The Antecedents and Mediator Model

This might also mean, that it is a holistic service quality model, analysing antecedents and mediators and outcomes to paint a full picture of the different concepts of service quality.

Finally, this model identifies 5 factors to ascertain the understanding of service quality; Reliability, Personal attention, Convenience and Features as antecedent components- explaining service quality with antecedents in between which later leads to an outcome called customer satisfaction and behavioural intentions. The model is depicted in Figure 3 below.

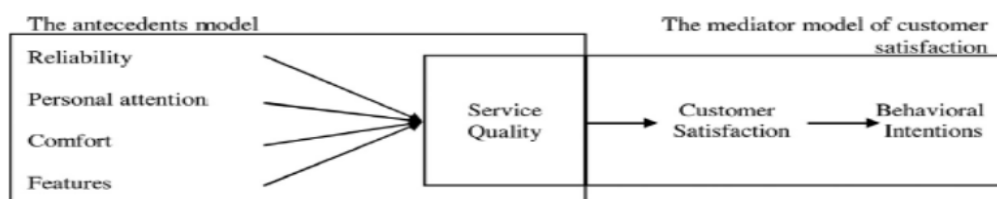


Figure 3: The Antecedents Along with Mediator Model Thorpe (2000); (Dabholkar Et Al., 2000);

Table 3 summarizes the theoretical research models from other studies. Theoretical model analysis Service quality evaluation is a common research topic, and from the perspective of theoretical models, each model uses its own domain in measuring services. SERVQUAL model is applied to analyse the current quality of service in Salalah port as well as suggested solution for logistics quality of service at Oman, Port Service Quality and Service Quality Dimension are shown on Table 3 by the authors.

Table 3: Theoretical Model of Service Quality

Model	Characteristics
(Grönroos, 1984)	Quality technical, functional quality, picture
(Parasuraman et al., 1985)SERVQUAL (Parasuraman et al., 1988)	"Reliability, Responsiveness, Competence, Access, Communication Courtesy, Credibility, Security, Understanding, Tangibles, Reliability Responsiveness, Empathy, Assurance"
(Cronin & Taylor, 1992)	TERRA
(Spreng & Mackoy, 1996)	Convenience, Friendliness, listen, provide accurate information, knowledge
(Dabholkar et al., 2000)	"consistent advices, long-range helps,choosing right products helps, interest in personal life, professionalism"
(López & Poole, 1998)	Efficiency, Timeliness, security
Brady and Cronin (2001)	rational quality, result quality, physical environmental quality
Ugboma, Ibe, and Ogwude (2004)	Five SERVQUAL dimensions
Thai (2008)	Resources, Outcomes, Process, Management, image and social responsibility.
(Cho et al., 2010)	Endogenous quality, exogenous quality, relational quality
(Yeo et al., 2015)	Resources, outcomes, process management, image and social responsibility
(Ramya et al., 2019)	Reliability, responsiveness, Assurance, empathy, tangibility
(Syumantra & Aslami, 2022)	Reliability, responsiveness, safety, empathy, and concrete increases.
(Dunnas, 2022)	Reliability, responsiveness, assurance, empathy, and physical evidence

Table 4 show the summary of the previous research finding on factors of quality service

Parasuraman et al. (1988); (Taylor, 2009; Ugboma et al., 2007; Cronin and Taylor 1992; Dabholkar et al. 2000; Berry, and Zeithaml 1991; They carried out the research from different characteristics and countries and found that each service quality dimension has positive relationship with overall service satisfaction

The literature on service-quality models has been extensively studied, and several seminal models have emerged as highly influential. These include SERVQUAL (Parasuraman et al., 1988), which proposes five key dimensions of service quality (reliability, responsiveness, assurance, empathy, and tangibles), and Cronin and Taylor's (1992) TERRA model. These models provide a strong theoretical foundation for future research.

Reliability and responsiveness are two dimensions that consistently appear across various models, indicating that they are widely regarded as core aspects of service quality. However, different authors have proposed various additional dimensions such as physical environment quality (Brady and Cronin, 2001), endogenous quality, exogenous quality, and relational quality (Cho et al., 2010). This finding highlights the multifaceted nature of the service quality.

Several studies have validated, replicated, or extended SERVQUAL in specific service contexts, such as ports and transportation, demonstrating its versatility and influence. Nevertheless, some researchers have noted limitations of SERVQUAL, such as its gap-based formulation.

Several recent developments have resulted in models, such as SERVQUAL, being built on established frameworks by making small modifications or additions rather than introducing entirely new ideas. It is evident that the key dimensions of service quality evolved in a consensus fashion through the evolution of the models.

Table 4The Synthesis Studies Result on Factors of Quality of Service

Factors/Dimension	Author (year)	Sample	Findings	Characteristics
	Parasuraman et al. (1988)	The U.S.	Positive	TERRA
Empathy	Parasuraman, Berry, and Zeithaml (1991)	The U.S.	Positive	TERRA
	(Cronin Jr & Taylor, 1992)	The U.S.	Positive	TERRA
	Dabholkar et al. (2000)	The U.S.	Positive	customer satisfaction strongly mediates the effect of service quality on behavioural intentions
	Ugboma et al. (2004)	Nigeria	Positive	TERRA
	Ugboma, Ogwude, Ugboma, and Nnadi	Greece		SERVQUAL instrument.

Factors/Dimension	Author (year)	Sample	Findings	Characteristics
	(2007)			
	(Pantouvakis & Dimas, 2013)	Vietnam	Not affecting	Customers' loyalty was influenced by four dimensions of TERRA
	(Nguyen et al., 2018) (Vo Thi & Nguyen Thi Mai, 2012)	Vietnam		TERRA
Reliability	Parasuraman et al. (1988), Parasuraman et al. (1991)	The U.S.	Positive	TERRA
	Cronin and Taylor (1992)	The U.S.	Positive	Overall customer satisfaction was positively related to TERRA
	Dabholkar et al. (2000)*	The U.S.	Positive	Factors relevant to service quality are better conceived as its antecedents
	Ugboma et al. (2004), (Ugboma et al., 2007)	Nigeria	Positive	TERRA
	Pantouvakis and Dimas (2013)	Greece	Positive	TERRA
		Vietnam	Positive	Customers' loyalty is influenced by TERRA and customer satisfaction

	Vo and Nguyen (2012)	Vietnam	Positive	Tangibles, Reliability, Assurance, Empathy Perceived Price
Assurance	Parasuraman et al. (1988), Parasuraman et al. (1991)	The U.S.	Positive	Tangible, Reliability, Responsiveness, Assurance empathic
	Cronin and Taylor (1992)	The U.S.	Positive	TERRA
	Ugboma et al. (2004), Ugboma et al. (2007)	Nigeria	Positive	TERRA
	Pantouvakis and Dimas (2013)	Greece	Not affecting	TERRA
		Vietnam	Positive	Reliability, Responsiveness, website utility, tangibles, Customer satisfaction is affected by reliability, responsiveness, website utility, tangibles, and sympathy.
	Vo and Nguyen (2012)	Vietnam	Positive	Tangibles, Reliability, Assurance, Empathy, Perceived Price
Responsiveness	Parasuraman et al. (1988), Parasuraman et al. (1991)	The U.S.	Positive	TERRA.
	Cronin and Taylor (1992)	The U.S.	Positive	TERRA) are each significantly positively related to overall customer satisfaction

Factors/Dimension	Author (year)	Sample	Findings	Characteristics
	(Ugboma et al., 2004), Ugboma et al. (2007)	Nigeria	Positive	TERRA
	Pantouvakis and Dimas (2013)	Greece	Positive	TERRA
		Vietnam	Positive	TERRA
	Vo and Nguyen (2012)	Vietnam	Positive	Tangibles, Reliability, Assurance, Empathy, Perceived Price

In table 4, this study presented in this paper provides a comprehensive overview of the factors that affect service quality in various countries and contexts. This study utilised the SERVQUAL model and examined five dimensions: tangibles, reliability, responsiveness, security, and empathy (TERRA). The results indicate that TERRA dimensions generally have a positive effect on service quality and customer satisfaction. Reliability and responsiveness have been identified as important factors in several studies. However, some studies have produced mixed results, such as the study by Pantouvakis and Dimas (2013) which found that TERRA factors do not have a significant impact on service quality in Greece. The literature review highlights several important findings. First, the significance of TERRA factors in shaping perceptions of service quality appears to be consistent across different cultural and economic contexts, including the

United States, Nigeria, Vietnam, and Greece. This demonstrated the universality of the SERVQUAL model. Second, most studies have utilised quantitative survey methods to examine the relationship between TERRA and satisfaction. Nevertheless, in relation to perceptions of quality, it would be recommended to carry out more qualitative studies for a deeper knowledge. In addition, longitudinal studies capturing the change of service quality factors over time elucidate the dynamics of service quality. These findings could enable an enhanced understanding of how and the extent to which quality of services has evolved over time as well as its influence on customer satisfaction. Last but not the least, the weight of all these dimensions can shift with customer expectations. Future research could be useful as well to confirm the shifting role of the QSP factors and its relationship to customer's expectations. Although cultural and economic contexts should not be overstressed, they determine the variables impacting service quality to a great extent. Further, studying the context of high power distance and collectivistic context may enrich our understanding of those factors that role in service quality. More research for the validation of service quality on customer satisfaction and loyalty, and the mediating mechanisms helps to improve the design of services. This table provides an overview of the major propositional findings on service quality factors but some limitations are recognized. The first limitation to note is that the majority of these pertinent service failures studies grounded in the SERVQUAL model and conjectured that service quality were operationalized by TERRA dimensions. Other theoretical perspectives may provide additional insights into service quality. Confirmatory and exploratory qualitative studies can help validate the SERVQUAL scale and uncover unexplored factors. Additionally, the model assumes a linear relationship between service quality and satisfaction, which may be more complex and context dependent. The sample used in these studies is uneven and disproportionately focused on U.S. consumers, which could bias the results toward perceptions of individualistic, low-power distance cultures. Self-assessment surveys are also susceptible to social desires and memory biases, which can distort the results. Observational studies and other research methods can help to address these limitations and provide a more comprehensive understanding of service quality factors.

Research Methodology

Statistical Analysis

This research used a qualitative and quantitative approach by distributing questionnaires that is done to get data about Logistics Service Quality and Customer Satisfaction from 300 customers is business employees who rely on logistics services at the port of Salalah in Salalah City, Sultanate of Oman. Data was reviewed before and after collection to ensure the correctness of the recorded information, new code were assigned if it was not coded earlier in order to demarcate or extract particular information for study using frequency table and percentages along with relevant ratios applicable. The data was analyzed with Statistical Package (SPSS).

Research Process

Because this research was carried out based on a combination of qualitative research and quantitative research, the research process was carried out in the following steps (a) finding research problems, (b) formulating a theoretical framework, research model research design (c) previous research, modifying measurement scales and questionnaires final research, (d) Survey data collection, results of data collection (e) synthesis and analysis of data – Cronbach's Alpha, EFA, hypothesis testing, results and discussion to propose research implications

Qualitative field research was conducted. It utilizes group discussion style involving indepth and particular research team members together with theories, studies, models and scales of service quality dimensions as well as customer satisfaction that are classified by the author. In the first step, synthesizes and with some modifications adopts previously used scales (or construct) by other writers which it then translates to have similar meaning but changed in wording to a different scale question entirely during data validation just for use as an item on the questionnaire draft. The questionnaire subsequently was tested by ten maritime and logistics industry professionals working at a logistic company with at least two years of experience in the

field so that there is further discussion among its experts, how to take place adjustment on research variables. The ideas and changes proposed in the discussion were incorporated into upgrading the questionnaire circuitously culminating to construction of measurement scale for study. The current study was preliminary carried out in Salalah City, Oman in May 2022.

The research questionnaire was distributed to 300 customers who use logistics services at the Port of Salalah with a completed questionnaire. Field staff working for businesses that use international port logistics services at the Port of Salalah served as questionnaire respondents. They are representatives of companies that directly use logistics services at the Port of Salalah and carry out customs procedures for shipments. Therefore, their perception and level of satisfaction with the logistics services of the Port of Salalah also reflect the perception and level of satisfaction of their company. This data collection was carried out in the City of Salalah in December 2022

Proposed Research Model

In order to facilitate the further research process, a research model needs to be created and a research model based on the SERVQUAL model to determine the determinant model of service quality and measure customer satisfaction with Salalah Port logistics services as depicted in figure 4.

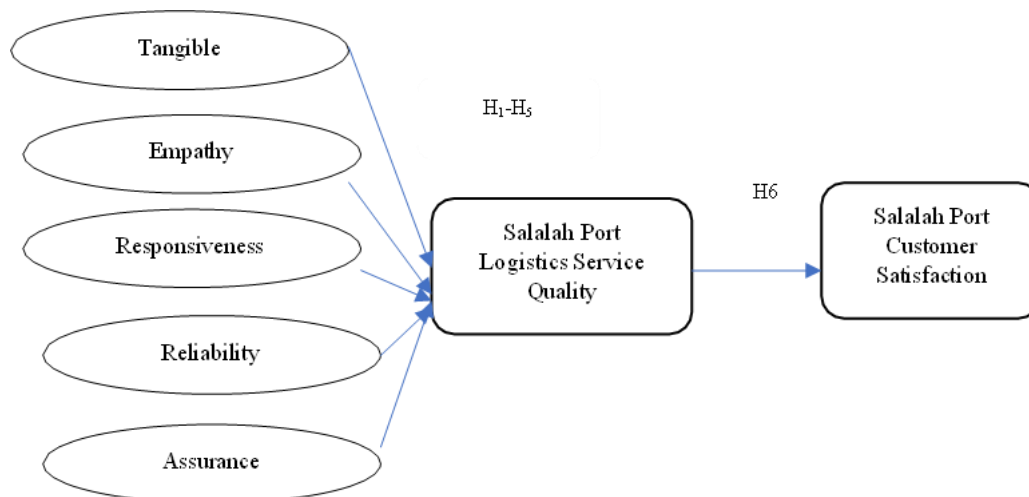


Figure 4: Propose the Study Model

Research Hypotheses

Based on the proposed model, we expect there are positive impact of Salalah Port logistic Service quality dimension- tangible, empathy, reliability, responsiveness, assurance (TERRA) on Salalah Port customer satisfaction, therefore we arrange the hypotheses as follows:

H1: Tangibles affect Salalah Port Logistics Service Quality (Direct effect).

H2: There is significant positive relation between empathy and Salalah Port Logistics Service Quality.

H3: Reliability is Positively Related with Salalah Port Logistics Service Quality. H4: Responsiveness has positive impact on Salalah Port Logistics Service Quality H5: There is a positive influence of Assurance on Salalah Port Logistics Service

Quality

H6: Salalah Port Logistics Service Quality has a positive impact on Salah Port customer satisfaction.

Sampling Method, Sample Size and Scales of Measurement

This study used the sampling method by using a technique of convenience sampling. The original study applies 26 observation variables for service quality and 4 observation variables for customer satisfaction in the table 5. (Then the lowest sample size is $n \geq 5 * 30$

=150 samples. Given this, the researched could not stand less than 150 valid survey responses to ensure that representativeness and accuracy remain credible (D.N. Le, H.T. Nguyen & P. Hoang Truong, 2019). Nonetheless, to achieve sample size, the formula proposed by Easterby-Smith et, al., had been used

$$n = \frac{Z^2 pq}{e^2}$$

$$n = \frac{(1.96)^2 (0.5)(0.5)}{0.05^2}$$

Table 5: Scale Measurement

NO	Variables	Item Questionary
	Tangibles	
1	TA-1	The Salalah port has good equipment
2	TA-2	The work office at Salalah Harbor is spacious, clean, comfortable and creates trust
3	TA-3	Salalah Port staff are neat in appearance
4	TA-4	Salalah Harbor machinery and equipment (e.g., forklifts, warehouses, cranes, wharves, etc.) are always in good working condition.
	Empathy	
5	EMP1	Salalah Harbour Staff express interest in each customer
6	EMP2	Salalah Port Staff always pay attention to the logistics service needs of customers.
7	EMP3	Salalah Harbour Staff understands customer-specific needs on cargo transportation (warehousing, storage, handling, inspection etc).
8	EMP4	Port of Salalah will Carefully Handling the issues that customers care, such as clearance time, container position or other messages.
9	EMP5	Port of Salalah has operating hours to support customer demand
	Reliability	
10	REL1	Salalah Port always performs committed logistics services (cargo clearance, loading and unloading of containers, inspections, etc.)
11	REL2	When the customers face any problems in the service (handling, storage, transport, and inspection of containers or wooden packaging cases to fumigation requirements) from other agencies at Salalah port on time.
12	REL3	Salalah Port logistics services are stable and reliable
13	REL4	Port of Salalah provides the right service at the right time as per commitment.

14	REL5	In the process of providing logistics services, the port of Salalah did not make any significant mistakes.
	Responsiveness	
15	RES1	The Port of Salalah keeps its customers informed about its service times
16	RES2	Salalah port Staff quickly perform logistics services for customers (e.g. customs
17	RES3	Salalah port Staff are always available at the request of customers when cargo encounters problems at the port.
18	RES4	Salalah port Staff are always willing to respond to your requests.
	Assurance	
19	ASS1	The behaviour of the Salalah Harbour staff members leaves you with confidence
20	ASS2	You feel safe while using the logistics services of the Port of Salalah.

NO	Variables	Item Questionary
21	ASS3	Salalah Harbour staff members are always polite and courteous to you
22	ASS4	Port of Salalah staff members have sufficient expertise to answer the questions about logistics services.
	Overall service quality	
23	AOSQ1	Salalah A high quality of logistics services provided by Salalah Port in comparison with other ports around it (Sohar port, Duqm port, Muscat port, etc.)
24	AOSQ2	The logistics services offered by Salalah Port are of far superior quality to other ports in its vicinity (Sohar port, Duqm port, Muscat port etc).
25	AOSQ3	Logistics Service quality in the logistics industry provided by Port of Salalah is among the best in the logistics industry.
26	AOSQ4	Quality of Service -The logistics services provided by the Port of Salalah meet your service quality expectations
	Customer satisfaction	
27	CUSSAT1	How satisfied are you with using the logistics services of the Port of Salalah.
28	CUSSAT2	How satisfied are you with the manners and methods that have been arranged and managed by the Port of Salalah to provide logistics services.
29	CUSSAT3	How satisfied are you with the services provided and the work attitude of the Salalah Harbour staff.
30	CUSSAT4	How satisfied are you with the cargo management process and cargo customs procedures at Salalah Port.

Source: Adapted from Le et al. (2019)

Research Results

Sample Profile

This reflects in a sample from this study from field staff indicating that port logistics services are predominantly perceived as frontline management. Plus, the bulk of the survey were taken from the service industry. This is supported by the fact that in Oman most forwarders are the main users of port logistics services.

Table 6 Respondent's Profiles

Statement	Category	Frequency	Percentage (%)
Types of Business	Service company	98	33
	Trading company	100	33
	Manufacturing company	102	34
	Total	300	100%
Frequency of service usage	1-2 time/month	60	20
	3-4 times/month	90	30
	Over 5 times/month	150	50
	Total	300	100%
Current position	Field staff	210	70

Statement	Category	Frequency	Percentage (%)
	Manager	90	30
	Total	300	100%
Years with current position	1-2 years	135	47
	3-4 years	75	25
	More than 4 years	90	33
	Total	300	100%

Source: Survey Result

Validity and Reliability Results

Based on the questionnaire completed by them, the Kaiser, Meyer-Olkin (KMO) sampling adequacy measure reveals that variables share much of variance among factors and therefore, can be placed for factor analysis application (Shrestha, 2021). The value of Barlett's Test of Sphericity= 0.000(significant as it is less than 0.05) for the analysis process. Above 0.7 and Barlett's Test of Sphericity is significant, with a value smaller than 0.05 the sample is adequate, and the data are appropriate for factor analysis (Tangible 0.944), Empathy (0.940), Reliability (0.972), Responsiveness (0.902), Assurance (0.983), Overall Service Quality (Overall ServQUAL) =5 items) reported in Table 2 Details are shown in Table 7 Full size table

Table 7: Kaiser-Meyer-Olkin and Barlett's Test

Factor	KMO of Sampling	Barlett's Test of Sphericity		
		Approximate Chi-Square	df	sig

Tangible	0.944	1886.632	253	0.000
Empathy	0.940	797.944	21	0.000
Reliability	0.972	1302.494	55	0.000
Responsiveness	0.902	632.647	21	0.000
Assurance	0.983	1311.625	171	0.000
Overall Service Quality	0.901	1464.811	120	0.000
Customer Satisfaction	0.921	1212.522	125	0.000

Source: Survey Result

Upon completing the factor analysis on SERVQUAL dimension, the researcher extracted five individual factors from the 26 questions – Tangible (4 questions), Empathy (5 questions), Reliability (5 questions), and Responsiveness (4 questions), Assurance (4 question) the loading variance component for each question was higher than 0.5.

Cornbach's α : Tangible questions (0.926), Empathy (0.926), Reliability (0.917), responsiveness (905) and Assurances and overall service quality(0993). However the relevant components of SERQUAL were found to be reliable in consonance with internal factors (Table 4). Cronbach's α was calculated for the entire questionnaire, and > 0.7 in all instances attest to construct reliability and validity. This is shown at Table 8 below.

Table 8: Summary of Factor Analysis for SERQUAL

Factor	Items	Factor loading	Cronbach's α
Tangible	TA-1	0.756	0.926
	TA-2	0.796	
	TA-3	0.629	
	TA-4	0.705	
Empathy	EMP1	0.879	0.936
	EMP2	0.931	
	EMP3	0.839	
	EMP4	0.971	
	EMP5	0.932	
Reliability	REL1	0.806	0.917
	REL2	0.863	
	REL3	0.851	
	REL4	0.833	
	REL5	0.990	
Responsiveness	RES1	0.853	0.925
	RES2	0.887	
	RES3	0.865	
	RES4	0.901	
Assurance	ASS1	0.829	0.908
	ASS2	0.882	
	ASS3	0.909	
	ASS4	0.805	
Overall Quality	AOSQ1	0.673	0.993
	AOSQ2	0.765	
	AOSQ3	0.778	

Service	AOSQ4	0.787	
Customer Satisfaction	CUSSAT 1	0.673	0.933
	CUSSAT 2	0.779	
	CUSSAT 3	0.777	
	CUSSAT 4	0.771	

Source: Survey Result

Correlation Result

Table 9 shows the correlation of all TERRA dimension and Overall service quality was significant. which means that TERRA dimension has the ability to increase overall service quality.

	TA	EMP	REL	RES	ASS	QS
TA	1					
EMP	0.998**	1				
REL	0.987**	0.989**	1			

Result of Research Hypotheses

Based on Table 10 which measured the H1-5 hypotheses, started by predicting Salah Port Logistics Service Quality (dependent variable) in line with TERRA dimension (summarized as independent variable), regression analysis was performed. The p value for the Linear Regression model was. 000. Hence, p-value < 5% all dimensions of TERRA were significant predictor for Salah Port Logistics Service Quality.

Table 10 Regression Results of SERVQUAL Dimension and Salah Port Logistics Service Quality

Model	R	R Square		Adjusted R Square		Std. Error of the estimate		Decision
1	0.866 ^a	0.749		0.738		3.229		
ANOVA								
		Sum of square	df	Mean square	F	Sig.		
	Regression	2806.376	4	701.594	67.302	0.000 ^b		
	Residual	938.213	90	10.425				
	Total	3744.589	94					
Coefficients								

		Unstandard ised B	Coefficients Std. Error	Standardi sed Coefficie nts Beta	T	Sig	
	Constant	1.456	2.617		0.557	0.579	
	Tangible	0.500	0.123	0.438	4.063	0.000	H1: Accepted
	Empathy	0.346	0.138	0.303	2.498	0.014	H2: Accepted
	Reliability	0.550	0.232	0.344	2.367	0.020	H3: Accepted
	Responsive ness	0.535	0.138	0.414	3.872	0.000	H4: Accepted
	Assurance	0.525	0.124	0.311	2.427	0.011	H5: Accepted

- DV: Customer Satisfaction
- Predictors: (Constant) TERRA Source: Survey Result

To test the (H6) Table 11 showed the positive impact of Salalah Port Logistics Service Quality and customer satisfaction. The linear regression model was found to be statistically significant with p value= .000. Therefore, Salalah Port Logistics Service Quality were a significant predictor of Salalah Port customer satisfaction because p is less than 5%.

Table 11 Regression results of Salalah Port Logistics Service Quality and Customer Satisfaction

Model	R	R Square		Adjust ed R Square		Std. Error of the estima te		Decision
1	00.889 ^a	0.791		0.790		0.439		
ANOVA								
		Sum of square	df	Mean square	F	Sig.		
	Regression	217.468	1	217.4 68	1126.4 88	0.000 b		
	Residual	57.529	29	0.193				
			8					
	Total	274.997	29					
			9					
Coefficients								
		Unstandard ised B	Coefficients Std. Error	Standard ised Coeffici ents Beta	T	Sig		
	Constant	1.747	0.435		4.012	0.00 0		
	QS	0.716	0.021	0.889	33.56	0.00	H6:	
					3	0	Accepted	

DV: Customer Satisfaction

Predictors: (Constant) Salalah Port Logistics Service Quality Source: Survey Result

Implications and Further Studies

This study examines the effectiveness of the SERVQUAL model for evaluating the quality of service at developing ports. Based on the findings of this study, several practical recommendations are offered to port managers. These recommendations confirm the importance of service reliability in these contexts. Port managers must prioritise investments in staff training, process optimisation, and technology integration to improve customer satisfaction. Port infrastructure and equipment should also be improved.

Salalah can use this study to guide future resource allocations and strategic planning. Ports can enhance their competitiveness by focusing on high-impact service-quality dimensions. Additionally, the findings provide useful insights into the quality of service provided by ports in other emerging economies, since SERVQUAL-based measurements can facilitate continuous monitoring and benchmarking of service quality. Consequently, the evidences of this study provide significant information to better understand how service quality dimensions are related with customer satisfaction in the case of Port of Salalah. That does not mean we should view this research as perfect. First, the scope of the study is limited to a single port in Oman and hence the generalizability of the findings to other ports or any other countries with different economic, cultural, or operational context can be questioned.

The research of the future should include several ports within different regions and countries to form a widespread investigation. This would pave way for a cross-context analysis of service quality perceptions and customer satisfaction, thus allowing the delineation of finer distinctions as well as broader realities. Next, further studies can consider exploring the impact of other factors in different container ports, such as the size and quality of container port and the capacity of cargo to be handled, and also technical infrastructure, alongside service quality perception affecting levels of customer satisfaction. In addition, these dimensions are in terms of the SERVQUAL, so it is suggested that other researches can explore what the individual characteristics of each dimension are and what has been most prominent as valued by the users of port in Oman. This may include qualitative research techniques like interviews or even focus groups to provide a deeper, more in-depth understanding of customer expectations and what they experience.

Addressing these limitations and expanding the range of inquiry points to potential avenues for further research that could play a role in adding complexity or nuance to how service quality and customer satisfaction are understood within the port and logistics industry, ultimately informing policy strategies enabling enhanced port performance and global competitiveness. The study does not speculate how its findings could affect port managers or policymakers. This is a great opportunity to give some insights that can be used to make the port more user's friendly. The discussion wraps up in a fairly short manner, without relating back its main point with significant details on how the study presented is novel or interesting. The conclusion could be more solid, giving a better synthesis of all the results and take-home messages from the study.

Conclusion

The main objective of the research is to investigate the impact of Salalah port service quality on customer satisfaction. It was followed by analyzing the testing of research hypothesis using constructing a Multivariate of regression model. Table 4 Table 5 Post survey data collection Description of Post survey data collection Number of customers uses port Salalah service: chosen this preference by the customer out 300 selected customers.

This paper aims to identify the effect of SERVQUAL dimensions on customer satisfaction in Port of Salalah. It also evaluates the applicability of the SERVQUAL model to an economic port of call. This study provides significant and positive impact on customer satisfaction results in five SERVQUAL dimensions and the main finding of this paper. Reliability was the most imperative measurement regarding these

dimensions on customer satisfaction applied in Salalah Port. The result indicated that TERRA had a significant effect on service quality of Port Salalah and the service quality of port Salalah having a significant impact on customer satisfaction in Salalah Port.

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