Evaluating Customer Satisfaction with Clearing and Forwarding Agents: A SERVQUAL Approach with Application to Kuwait Shuwaikh Port

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ABSTRACT

This study investigated the influence of service quality on customer satisfaction with clearing and forwarding C&F agents using the SERVQUAL model. C&F agents play a crucial role in facilitating the clearance and delivery of goods for businesses, and their service quality is heavily dependent on port operations. This research employs a quantitative approach, using survey data from 397 customers of C&F agents in Kuwait to examine the relationship between service quality dimensions and customer satisfaction. This study analyzes the five SERVQUAL dimensions of tangibles, reliability, responsiveness, assurance, and empathy. Although the correlation analysis shows that all dimensions were statistically significant for customer satisfaction, the regression results reveal that assurance was not significant. Tangibles emerged as the most influential factor, followed by empathy, reliability, and responsiveness. This research contributes to the academic literature and practical industry knowledge by addressing the gap in understanding service quality dynamics in Kuwait's C&F sector. The findings provide valuable insights for industry professionals seeking to enhance service quality and improve customer satisfaction. This study focused on Shuwaikh Port, but it establishes a foundation for future research across other ports and suggests the adoption of mixed-method approaches for a more comprehensive analysis. The results offer practical recommendations for improving C&F services and maintaining competitiveness in this vital sector.

1 Introduction

Ports provide vital links in the global supply chain network involved in logistics, and their turnover constitutes a substantial proportion of national economies. It is important to have reliable and efficient port services to ensure smooth flow of goods in the supply chain. Disruptions can result in dissatisfied shipping lines and cargo owners due to inefficient service delivery from ports (Thai, 2016).

In a business context, the quality of service delivery is one of the factors that contribute to success in a competitive market (Yudiatmaja et al., 2017). The competitive advantage of a port partly depends on the quality of its service offerings, excluding price and service facilities (Tatar, 2023). Given today's competitive and uncertain environment, port operators and relevant government units need to identify the drivers that contribute to the quality and competitiveness of port services (Hsu et al., 2023).

Different methods can be used to evaluate service quality and customer satisfaction in ports. Yeo et al. (2015) suggested that port service quality PSQ is directly related to customer satisfaction. Thai (2016) and Yeo et

al. (2015) aimed to improve port management by developing an efficient and reliable PSQ scale to assess customer satisfaction. Limbourg et al. (2016) used the five service quality (SERVQUAL) model dimensions to assess the PSQ. Authors utilized SERVQUAL as the base of their PSQ model. They recognized the importance of logistics service providers (LSPs) in delivering better services.

This study used the SERVQUAL model to examine the PSQ dimensions that affect customer satisfaction with C&F agents involved in port sector. Previous research on PSQ has focused on shipping companies or shippers instead of other intermediaries, such as C&F agents (see, e.g., Thai, 2016; Yeo et al., 2015). C&F agents are intermediaries between ports and customers. Therefore, PSQ strongly affects the performance of C&F agents and thus contributes to customer satisfaction with C&F agents. Although C&F agents often do not choose the port, feedback to their customers about port performance and quality can influence their future port selection decisions.

The central research question of this study is, "What are the relevant port service quality dimensions that impact customer satisfaction with C&F agents?" By using the five dimensions in the SERVQUAL model, the primary research question is enriched by formulating several secondary research questions:

- How do tangible aspects influence customer satisfaction with C&F agents?
- How does reliability impact on customer satisfaction when dealing with C&F agents?
- How does responsiveness influence customer satisfaction with C&F industry?
- How does assurance influence customer satisfaction when dealing with C&F agents?
- How does empathy influence customer satisfaction with C&F industry?

The SERVQUAL framework has emerged as a valuable analytical tool across multiple industries. We contribute to extant literature in two ways. First, the analysis in this paper provides insights into port service quality from the perspective of C&F agents as intermediary service providers, offering an alternative to direct service assessment. Thus, this study investigates the influence of service quality on customer satisfaction with the services delivered by C&F agents in a port context. Second, although conventional applications of the SERVQUAL model focus on service delivery mechanisms, its implementation in port services presents specific measurement challenges, particularly regarding service outcomes. Therefore, the framework has been refined to incorporate port-specific service elements and address the unique relationship between C&F agents in the private sector and seaports.

The discussion in this paper starts with a literature review on service quality, covering five service quality dimensions, hypotheses, the SERVQUAL model, and a focus on service quality studies in seaports. The second section presents the methodology, including the framework, research philosophy, research method, research approach, time horizon, sampling, and sample. The last section provides details on data collection and data analysis.

2 Literature Review

2.1 The Concept of Service Quality and Customer Satisfaction in a Seaport Context

Industries in the service sector have certain characteristics that greatly affect the marketing stratification process. These are that services are intangible, inseparable from the producers, variable, and perishable. For service-focused enterprises, therefore, the fundamental area of differentiation is the degree of service quality that they provide to customers (Wardhana et al., 2020).

Service quality refers to the level of service that service consumers expect and how it influences their loyalty or disloyalty toward a particular service or brand (Fadare and Adeniran, 2018). It is a critical factor that sets frontline service providers and organizations apart from others in the same industry and acts as a competitive advantage, making them more sought after by customers compared to rival providers of similar services (Aleksandra, 2017; Chinonso & Ejem, 2020; Yudiatmaja et al., 2017). This is because service quality delivery is a method of persuasion for providers of goods and services to encourage consumers to use their goods or services. The business and the services industry, attaining commendable service quality is vital for ensuring long-term success. In the logistics context, service quality determines how well companies in the logistics segment can fulfill and even surpass customers' expectations in different logistics service elements (Chen et al., 2023).

Quality service delivery is based on meeting customer expectations. Customer satisfaction is the result of service quality, which is connected to the quality of the products or services provided to the customer (Tatar, 2023). The service quality dimensions influence the way customers evaluate satisfaction; thus, service quality plays a crucial role in business growth and development (Vu et al., 2020; Yeo et al., 2015). Customer satisfaction is perceived to rise with higher perceived product or service quality (Yeo et al., 2015). Therefore, understanding customers' perceptions and expectations of the level of services provision is critical. Assessing service quality is a method to determine to what extent a service or experience provided meets or exceeds customer perceptions, expectations, and requirements, which include reliability, responsiveness, customer orientation, communication, and conforming to standards (Huma et al., 2020; Yudiatmaja et al., 2017).

Service quality evaluation assists stakeholders in focusing on the areas that are most relevant to their competitive capabilities in the value chain, with the bonus of preventing misdirection of resources. Evaluation allows businesses to adopt and enforce measures to improve customer service quality (Sakyi et al., 2020). Parasuraman et al. (1985) strongly endorsed the use of the SERVQUAL model to assess service quality and identify service quality gaps. The SERVQUAL model is a comprehensive framework that allows organizations to assess and improve the quality of their services. Parasuraman et al. (1985) noted that aligning customer expectations and perceptions regarding service delivery can improve service quality.

SERVQUAL includes five dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1988). Hsu et al. (2015) noted that the SERVQUAL scale is widely acknowledged as a benchmark instrument for measuring service quality in various service sectors, and they used the scale to assess customers' perceptions of service quality in services and retail sectors. In the shipping sector, Hemalatha et al. (2018) used the SERVQUAL model to measure the service quality of container terminal operators. Nguyen et al. (2022) also identified SERVQUAL as an instrument for evaluating service quality in the port sector. However, Yeo et al. (2015) observed that the SERVQUAL model does not consider the result of the service encounters because the model only captures the service delivery process. This is evident in the fact that SERVQUAL has been updated and applied by Chang and Thai (2016), Tatar (2023), and Abdul Rahman et al. (2024) to improve the determination of overall service quality.

Service quality is an important aspect of ensuring customer satisfaction in diversified sectors such as seaports (Mwendapole & Jin, 2021). Onyemechi et al. (2017) noted that service quality factors significantly affect the efficiency of seaports in the maritime transport industry. Seaport operators face the challenge of how to preserve and develop their market share as well as to provide relevant services to different types of seaport users, including vessels (loading/unloading), freight owners, shipping agents, sea freight agents and ship cleaners. Seaport services include pilotage, repair, and towage, handling, measurement, provisions, ship sanitation, and marine brokerage (Nguyen et al., 2022). Reliable seaport services lead to customer satisfaction because any failure in seaport operations disrupts the smooth flow of cargo in the subsequent logistics and supply chain processes (Vu et al., 2020).

2.2 Port Service Quality and Customer Satisfaction

According to Abdul Rahman et al. (2024), the first studies to assess port services were conducted by Foster (1979), Slack (1985), and Murphy and Ross (1987).

These researchers integrated the concepts of PSQ and port choice by questioning their study participants about the decision-making aspects of their chosen port.

Various models have been used to examine port service quality: SERVQUAL (Abdul Rahman et al., 2024; Chang & Thai, 2016; Tatar, 2023;), SERVPERF (Adhikari et al., 2023; Kilibarda et al., 2020; Le et al., 2020; Mwendapole & Jin, 2021; Patel & Siddiqui, 2022), and ROPMIS (Alsalfiti and Notteboom, 2025; Phan et al., 2021; Thai, 2016; Yeo et al., 2015). Lu et al. (2011) identified and discussed service quality attributes by employing different measurement tools, including internal consistency reliability, factor analysis, cluster analysis, importance–satisfaction analysis, and analysis of variance. They also underscored the significance of the reliability attribute in defining service quality.

A more recent study by Alsalfiti and Notteboom (2025) examined the PSQ on C&F agent satisfaction using the ROPMIS model developed by Thai (2008) based on service quality dimensions. The data were collected from Clearing and Forwarding (C&F) agents, who are the authorized middle persons between the customers and the ports. C&F agents are responsible for ensuring that products reach customers on time. The findings indicated that resource-related PSQ and management-related PSQ are the most significant factors in C&F agent satisfaction. However, since C&F agents are intermediaries, understanding the end customer's satisfaction is equally important for a complete picture of service quality effectiveness. This research extends the work of Alsalfiti & Notteboom (2025) by focusing on the satisfaction of customers who receive products cleared and delivered by C&F agents. This creates a clear foundation for this research, focusing on end-customer satisfaction and its relationship with C&F agent performance and PSQ, by utilizing the SERVQUAL model, which was the basis for developing the ROMIS model.

Several previous studies have used the SERVQUAL model to assess PSQ. Ugboma et al. (2004) determined the key factors that define service quality and compared the observed quality of service provided at two ports in Nigeria based on the SERVQUAL model. They found that the service delivered at the port had a positive effect on customer service quality and suggested that port managers should focus on the sub-areas with the lowest ratings and the highest gap between customer expectations and perceptions. Onyemechi et al. (2017) also examined port services in Nigeria using the SERVQUAL model. The study participants comprised 223 port users. The analysis indicated the importance of terminal accessibility, handling equipment, reliability, security, worker expertise, complaints, cargo damage, customer requirements, additional services, problem-solving, post-delivery services, and cooperation between private and public entities. Sakyi et al. (2020) also examined the service quality at the terminal level in a Nigerian seaport using

the SERVQUAL model. They found a significant gap in the information available concerning customers' expectations and perceptions of seaport terminal service quality in Africa.

To examine the validity and suitability of SERVQUAL in the Korean context, Yeo et al. (2015) undertook research on service quality and customer satisfaction among 99 port users from 28 container ports. Their findings indicated that port service quality could be measured across five dimensions: resources, management, process, social responsibility and image/reputation. Of all the factors identified, management, social responsibility, and image had the highest effect on customer satisfaction. Thai (2016) focused on the Port of Singapore and sampled 175 port users, including cargo owners, shipping lines, LSPs, and freight forwarders.

Previous studies include a study by Sayareh et al. (2016), who evaluated the service quality of ports in Iran using the SERVQUAL model and analyzing data from 127 port users. Their findings highlighted large discrepancies between the customers' expectations and perceived values in all five SERVQUAL dimensions The lowest value was empath, while tangibles had the highest value. Shanaki et al. (2012) confirmed a relationship between service quality and customer satisfaction in a study conducted at Shahid Rajayi Port in Iran. They analyzed three customer groups related to the port: the investor company that leased the land for investment and provided the necessary tools for investment /activities, the owners of the commodities that relied on the port for importing their goods, and shipping companies that transported goods through the port.

Nonetheless, more knowledge is about the average service quality of seaports is needed globally (Abdul Rahman et al., 2024; Phan et al., 2021; Sakyi et al., 2020). Phan et al. (2021) noted that the service quality literature on the maritime and port sectors in general is currently lacking. Yeo et al. (2015) observed that a considerable void in the literature exists in the literature on identifying appropriate indexes for measuring service quality, especially in the maritime context and ports in particular. These knowledge gaps show the need for integrated studies on PSQ, specifically regarding the service quality differences between geographical regions and the shortcomings of current models, with a focus on evaluating service quality in the maritime industry. More research should be conducted on this subject to improve our understanding of the quality of services offered by shipping businesses and in port operations.

Tiruneh (2017), in their study, argued that the elements of service quality, such as tangibility, reliability, responsiveness, assurance, and empathy, were highly influential for customers. Finally, they indicated that empathy was the most influential factor for customer satisfaction compared to responsiveness and reliability.

This research investigates how service quality influences customer satisfaction with C&F agents in Kuwait. The five service quality dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The next section describes the methodology employed in this study, including the empirical data collection, statistical analysis, and analysis of the findings to address the formulated hypotheses and research questions. The main aim is to deepen the understanding of the factors contributing to customer satisfaction with C&F agents, with a case study focusing on Shuwaikh port to demonstrate the adopted methodological approach.

3 Methodology

This section defines the conceptual framework used and provides an overview of the methods used to test the variables and the research hypotheses

3.1 Conceptual Framework

This study applies SERVQUAL to investigate customer satisfaction with C&F agents, an area that has yet to be well explored. The adoption of the SERVQUAL model in this study was influenced by several key factors.

First, SERVQUAL has been identified as a popular tool for comparing service quality in many industries, including the maritime industry (Hemalatta et al., 2018; Hsu et al., 2015; Nguyen et al., 2022). The comprehensive framework provides a structured approach to assessing service quality in terms of five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. This structured approach assists researchers and port managers understand the complex global service quality of ports (Parasuraman et al., 1988; Ugboma et al., 2004).

SERVQUAL's adaptability is another factor that contributes to its utility, as scholars have further augmented the specifics of PSQ with other dimensions, including resources, management, process, social responsibility, and image/reputation (Thai, 2016; Yeo et al., 2015). This adaptability has helped render the model deployable in diverse countries and different governance and operational contexts to offer insights into the quality of port services across different nations, including Nigeria (Onyemechi et al., 2017; Ugboma et al., 2004), Korea (Yeo et al., 2015), Singapore (Thai, 2016), and Iran (Sayareh et al., 2016). While SERVQUAL has some limitations, such as its calibration of the service process rather than service delivery results (Yeo et al., 2015), its application and modifications make it relevant and applicable to PSQ research (Abdul Rahman et al., 2024; Chang & Thai, 2016; Tatar, 2023). The model's successful application in numerous PSQ studies, combined with its adaptability, makes it an invaluable tool for researchers and port managers for the continuous enhancement of port services around the world.
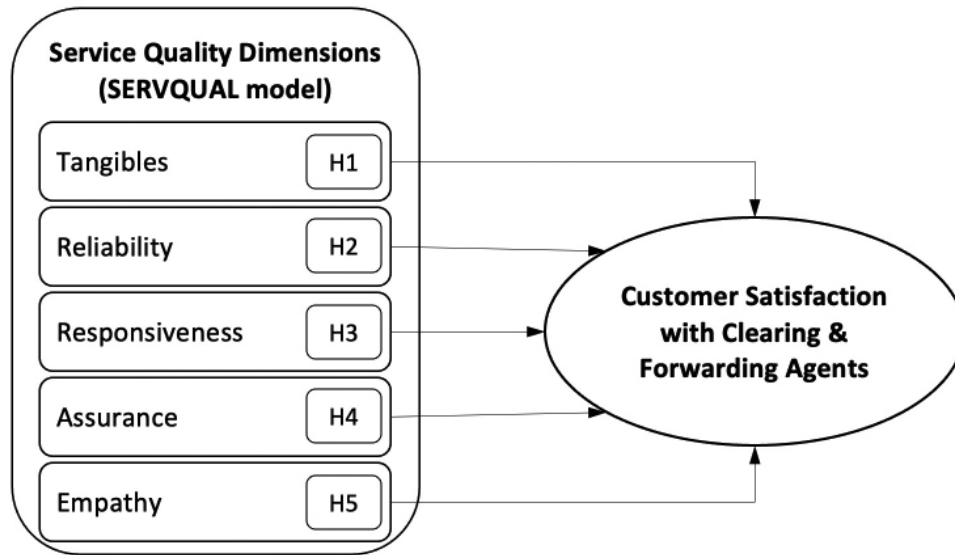
Figure 1 Conceptual Framework (Based on Le et al., 2020)

In this study, the SERVQUAL model is used to examine customer satisfaction with C&F agents acting as customers' representatives at Shuwaikh Port in Kuwait. Based on a comprehensive study by Le et al. (2020) on the intricacies of port logistics service quality and its impact on customer satisfaction, a conceptual framework and analytical framework are is proposed. Concerning service quality, this study explores several direct service quality dimensions and establishes significant factors influencing customer satisfaction with port logistics. In addition to studying and analyzing the direct impact of the five service quality dimensions (i.e., tangibles, reliability, responsiveness, assurance, and empathy) on customer satisfaction, the impact of overall service quality on customer satisfaction is examined. (Figure 1).

3.2 Hypothesis formulation on the five PSQ dimensions in the SERVQUAL model

The five service quality dimensions of the adopted SERVQUAL model are described in more detail below.

Tangibles are physical entities involved in service provision. They include property or fixed assets used for these services, such as offices and buildings in which the services are provided, machinery, equipment and tools, clothes, and other infrastructure in direct use to provide services. These elements are critical to the service delivery process and improve customers' perceptions of the quality of the services being delivered to them (Le et al., 2020). Research also shows that employee clothing can improve port branding. When a port provides a motivating and safe environment with modern equipment, its employees perform better, leading to the integration of port facilities and staff services to

produce more extensive and better service quality (Min, 2022; Talley et al., 2014). This leads to the first hypothesis:

- H1: Tangibles positively impact customer satisfaction with C&F agents.

Reliability means that the business always delivers the promised service (Mwendapole & Jin, 2021). Reliability in the service quality literature is defined as the ability to deliver the promised service on time and with precision. Reliability is important for promotional activities that help establish customer expectations (Adhikari et al., 2023). It is having a significant influence on customer satisfaction because it measures the ability of a service provider to meet the promises made. Researchers have noted that customers highly value the reliability of a service in terms of the level of dependability of the provider (Le et al., 2020; Nguyen et al., 2022; Wang et al., 2023). This selectively that when the service is reliable, customers are confident that their needs will be met uniformly and frequently without any interruption. This, in turn, creates the effect of increasing levels of customer satisfaction and customer loyalty. Zhang et al. (2019) confirmed that reliability influences the perception of service quality and consequently customer satisfaction. Reliability demonstrates an organization's willingness to provide the promised services and works hand in hand with operating efficiency and operational accuracy, which are crucial for sustaining the reliability of any process (Devesh, 2019). Providing services as accurately and as stably as possible is the key to providing reliable service (Blut, 2016). Customers may only conform to service standards when they think that the service they are receiving is adequate (Hamzah et al., 2017). The second hypothesis is as follows:

- H2: Reliability positively impacts customer satisfaction with C&F agents.

Responsiveness concerns are being alert and willing to help customers and resolve problems, mistakes, or unforeseen conditions (Le et al., 2020). Endara et al. (2019) defined responsiveness as the ability of workers to provide adequate and prompt support and to accomplish tasks, whether manual or electronic, on time. Uddin et al. (2015) also noted that responsiveness includes the ability to promptly perform tasks, as well as perform them manually or otherwise. Al-Damen (2017) defined it as the willingness to help customers and act in a friendlily manner toward them with an immediate response. The responsiveness dimension indicates the extent to which workers provide adequate and timely client support (Endara et al., 2019). In the maritime industry, to remain competitive, it is germane to respond appropriately to different scenarios (Hsu et al., 2023). This increases the need to coordinate diverse actors in the transport chain when dealing with maritime logistics. This includes improving traffic and cargo circulation in ports through multiple transportation processes while reducing costs and maximizing efficiency (Ding et al., 2021). The third hypothesis is as follows:

- H3: Responsiveness positively impacts customer satisfaction with C&F agents.

Assurance is about building and maintaining customer confidence. Precious trust is earned and sustained by mastering several essential ingredients that are equally balanced. Among these, professionalism, courtesy, and respect are central to the development of a good working relationship with customers. Another area of concern is communication effectiveness because providing clear and comprehensible information is essential to help minimize possible misunderstandings or confusion. All these integrations not only assist in closer customer relations or interaction but also enhance customer satisfaction and, hence, customer loyalty, which are factors of extra importance to any successful business operation in the long run (Le et al., 2020). An effective port can be efficient in several ways, such as cutting down customs clearance time, guaranteeing adequate ship arrivals, and unloading cargo on time (Talley et al., 2014). For instance, timely modifications at a port can increase docking sheds, thus reducing vessel turnaround times (Xiao et al., 2021). A significantly positive relationship between assurance and satisfaction has been recorded by many scholars in various businesses (Kant & Jaiswal, 2017; Yarimoglu, 2014). This leads to the fourth hypothesis:

- H4: Assurance positively impacts customer satisfaction with C&F agents.

Empathy includes how employees deliver services. This includes attentiveness, consideration, understanding customer needs, and fostering a sense of security and safety (Le et al., 2020). As Murray et al. (2019) 'explained that empathy involves sharing and responding to someone else's thoughts, feelings, behaviors, and experiences. So, it is a rich, layered concept that calls for engagement on an emotional, intellectual, and compassionate level (Powell & Roberts, 2017). Kholaif and Xiao (2023) described empathy as the ability to provide attentive, and personalized care to customers. According to Lee et al. (2011) and Khan et al. (2021), employees' empathy level directly impacts customers' positive emotions. Furthermore, they found a substantial positive correlation between these positive emotions and customer satisfaction with employee interactions. Set against the backdrop of a bustling seaport, our dedicated team is positioned to prioritize the interests of our valued customers. We leverage our deep understanding of the sector and the distinctive needs of each client to deliver a service that is not only of the highest quality but also meticulously tailored to meet individual requirements. Our commitment to excellence is reflected in our ability to consistently exceed our client's expectations, a testament to our rigorous service ethos (Ding et al., 2021). The fifth hypothesis related to empathy is:

- H5: Empathy positively impacts customer satisfaction with C&F agents.

3.3 Case selection

The study focuses on Shuwaikh port in Kuwait, which serves as Kuwait's gateway to the world, playing a crucial role in the country's growth and evolution. Kuwait's strategic location (Figure 2) has provided a significant advantage in maritime trade, and historically, the nation's

Figure 2 Kuwait Map

Figure 3 Shuwaikh Port

economy was heavily dependent on sea-based activities before the discovery of oil. Once oil was discovered, it took the lead as the primary income source, but the importance of Kuwait's ports in facilitating global trade remains undeniable (AlRukaibi et al., 2020).

Kuwait's seaports play a crucial role in connecting the country to the world. The nation's development has been intrinsically linked to its maritime infrastructure. Kuwait's economy heavily relies on sea-based activities. A milestone in port management came with the establishment of the Kuwait Ports Authority in 1977, tasked with overseeing port operations and commerce. Kuwait is home to three main ports: Shuwaikh Port, Doha Port, and Shuaiba ports (AlRukaibi et al., 2020).

The country's most significant port, Shuwaikh (also known as Ash-Ashuwaykh; Figure 3), is situated west of Kuwait City on Kuwait Bay's southern shores. Managed by the Kuwait Ports Authority, Shuwaikh Port serves as the nation's primary commercial hub. The port covers 4.4 million square meters, with a 1.2 million square meter basin. It features diverse piers to accommodate various vessel types, extensive open storage (450,000+ sq. m), and substantial warehouse capacity (170,000 sq. m). Shuwaikh Port's annual container handling exceeds 500,000 units. Beyond cargo operations, it functions as a vital hub for passenger cruise ships and transport boats, underlining its significance in Kuwait's maritime infrastructure (Arab Sea Ports Federation, 2024).

3.4 Data collection and sampling technique

This research is based on a cross-sectional time horizon, and this research design collects data only at a certain time. Since this permits the comparison of one variable or phenomenon to another at a particular time, it offers a cross-sectional view of a study population or sample without capturing temporal shifts or evolution (Greener & Martelli, 2018).

This research uses a closed-end questionnaire survey to validate the hypotheses formulated in this study. The questionnaire was developed using the survey items from Le et al. (2020) and designed as closed-end based on 5-point scale that ranged from (1) strongly disagree to (5) strongly agree. The survey questionnaires were filled out by 500 customers in Kuwait who use C&F agents to clear their products from Shuwaikh Port and have them delivered to their location. The time taken for data collection was four weeks. The final version of the questionnaire was designed and implemented online using SurveyMonkey.com.

The study employs random sampling to choose the sample, administer the questionnaires, and independently sample the target population. This method reduces bias, enables precise evaluation of the data collected, and increases the accuracy and degree of external validity of the results. It allows the identification of the variables of interest and conclusions based on the responses given by the selected sample of respondents (Saunders et al., 2019).

The target population in this study is customers that rely on C&F agents for proper clearance of their products from the port. These customers come from several businesses. They depend on C&F agents for help in the clearance process, as it involves several formalities that are technically complicated. This research sought to identify the challenges faced by these customers, the advantages they obtain from using C&F agents, and the effect of these agents on the flow of merchandise through the port for this sample customer. The efficiency of these C&F agents consequently impacts on customer satisfaction.

The sample includes different small and medium businesses in Kuwait, focusing on products such as automobiles, electronics, accessories, construction, furniture, footwear, clothing, perfumes, and the retail food sector. The questionnaire was sent to employees who

are responsible for ordering and receiving goods and are employed in a procurement/purchasing department, receiving department, inventory department, supply chain department, or logistics department. The website link to an online questionnaire was sent to the different employees in these departments to answer. The questionnaire link was shared via email and WhatsApp. The contact details, such as email addresses and WhatsApp information, were collected from the employees and their managers after contacting them by phone.

Data collection was conducted through systematic weekly follow-ups. Over a four-week period, the researcher gathered 416 surveys. After excluding 19 incomplete responses, the final dataset comprised 397 valid surveys for analysis.

3.5 Data Analysis

The data analysis for this research was conducted using SPSS, beginning with validity testing through factor loading checks (retaining items with loading ≥ 0.50) to establish data credibility, followed by reliability testing using Cronbach's Alpha to confirm internal consistency (values > 0.70) as suggested by Hair et al. (2019). The analysis then proceeded with descriptive analysis to examine demographic characteristics and explain the distribution of survey data, followed by a correlation analysis to determine relationships between variables (using p-value ≤ 0.05 as significance threshold) and their direction (positive or negative). Finally, linear regression analysis was employed for hypothesis testing and causality between factors, providing estimates of how changes in independent factors influence the dependent factor, which helped inform conclusions and future research directions.

4 Results

4.1 Validity & Reliability

The validity and reliability were studied using factor analysis and Cronbach's Alpha. Item validity was studied using factor loading based on the criteria recommended by Hair et al. (2019), where the values should be above 0.70. Sampling adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) method, accepted for values of 60% and above for each variable. Hair et al. (2019) reported that reliability values should be greater than 0.70 to establish reliability.

Table 1 provides the validity and reliability results using the factor loadings, the KMO, and the Cronbach's Alpha. The factors loadings and Cronbach's Alpha for all the independent variables are within the accepted range. However, for customer satisfaction (the dependent variable), SAT1 (0.418) and SAT2 (0.454) have low a factor loading. However, the Cronbach's Alpha of 0.838 indicates good reliability. Therefore, both SAT1 and SAT2 are retained. Finally, the KMO results for all variables, including customer satisfaction, are above 60% (0.60). Therefore, the KMO results establish the required sampling adequacy.

4.2 Descriptive Analysis

The descriptive analysis of SERVQUAL dimensions reveals varying levels of customer satisfaction with the C&F agent's services.

In terms of tangibles (Table 2), there is generally a positive perception, with 56.4% of customers approving of IT platforms and equipment, 65% appreciating well-designed office spaces, and 57.2% satisfied with employee professional appearance.

The reliability dimension (Table 3) shows strong satisfaction levels, particularly in service delivery where 72.3% affirm prompt and accurate service provision, though accuracy and precision received slightly lower ratings at 54.7%.

Responsiveness metrics in Table 4 demonstrate mixed results, with strong positive feedback for staff availability (57.4%) and service timing communication (59.9%), but notably lower satisfaction regarding assistance during port difficulties (40.9%).

The assurance dimension in Table 5 indicates moderate satisfaction levels, with 57.2% expressing confidence in staff actions, though only 45.5% consistently found staff polite and courteous.

Table 1 Factor Loading and Cronbach's Alpha Reliability

Variables	Factor Loadings	KMO	Cronbach's Alpha	Number of Items
Tangibles (TAN)	0.848 – 0.872	0.717	0.821	3
Reliability (REL)	0.764 – 0.865	0.760	0.861	5
Responsiveness (RES)	0.734 - 0.885	0.733	0.845	4
Assurance (ASU)	0.798 – 0.873	0.825	0.872	4
Empathy (EMP)	0.810 – 0.885	0.854	0.896	5
Customer Satisfaction (SAT)	0.418 – 0.817	0.807	0.838	8
Total Cronbach's Alpha			0.949	29

Table 2 Tangibles Dimension – Responses to Service Quality Items (%)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
TAN1: Our C&F agent has state-of-the-art information technology (IT) platforms and equipment to handle our cargo safely.	9.3	13.4	20.9	42.3	14.1
TAN2: Our C&F agent's office spaces are well-designed, which helps build trust in our company.	3.5	12.1	19.4	41.8	23.2
TAN3: Our C&F agent's employees are dressed professionally and neatly.	6.8	12.8	23.2	40.1	17.1

Table 3 Reliability Dimension – Responses to Service Quality Items (%)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
REL1: Our C&F agent consistently provides reliable and comprehensive logistics services, including cargo clearance, container loading and unloading, inspection, and more.	5.0	9.3	21.9	47.6	16.1
REL2: When we encounter service issues (such as handling, storage, transportation, inspection, fumigation, etc.) at the Port, the C&F agent demonstrates a sincere commitment to resolving them.	10.8	14.9	17.6	41.3	15.4
REL3: The logistics services provided by our C&F agent are consistently dependable.	4.3	4.8	20.9	48.4	21.7
REL4: Our C&F agent consistently delivers the promised services promptly and accurately.	3.5	3.5	20.7	49.9	22.4
REL5: Our C&F agent consistently demonstrates accuracy and precision in logistics services, ensuring no significant mistakes are made.	9.8	12.3	23.2	38.3	16.4

Table 4 Responsiveness Dimension – Responses to Service Quality Items (%)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
RES1: Our C&F agent always keeps us informed about the timing of their customer service.	8.6	10.3	21.2	37.5	22.4
RES2: Our C&F agent's staff efficiently provides logistics services, including customs clearance and inspection support.	8.1	12.8	24.2	45.6	9.3
RES3: The staff members of our C&F agent are always ready to assist us when our cargoes encounter difficulties at the Port.	14.6	16.9	27.7	27.5	13.4
RES4: The staff members of our C&F agent are always available to address our requests.	6.3	9.6	26.7	46.1	11.3

Table 5 Assurance Dimension – Responses to Service Quality Items (%)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
ASU1: The actions of staff members from our C&F agent instill confidence in us.	4.8	10.6	27.5	43.3	13.9
ASU2: I have confidence in the logistics services provided by our C&F agent.	11.6	10.1	24.4	40.6	13.4
ASU3: The staff members of our C&F agent are consistently polite to us.	7.8	12.6	34.0	33.2	12.3
ASU4: The staff members of our C&F agent have enough knowledge to address any inquiries we may have regarding logistics services.	6.5	16.4	28.0	35.0	14.1

Table 6 Empathy Dimension – Responses to Service Quality Items (%)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
EMP1: The staff members of our C&F agent have shown interest in meeting our expectations.	8.8	14.1	25.9	38.3	12.8
EMP2: The staff members at our C&F agent are knowledgeable and attentive to the needs of our logistics services.	7.6	8.6	25.4	43.3	15.1
EMP3: Our C&F agent's staff members are familiar with our specific requirements for transporting cargo, including warehousing, storage, handling, inspection, and more.	7.6	13.1	25.9	40.8	12.6
EMP4: Our C&F agent prioritizes the issues that are most important to us, such as cut-off time, clearance time, and container position.	9.6	12.1	25.9	41.6	10.8
EMP5: Our C&F agent's working schedule is convenient for meeting our needs.	7.3	15.9	21.7	37.5	17.6

Table 7 Customer Satisfaction Metrics for C&F Agents (%)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SAT1: We are pleased with the manners and methods our C&F agent has used to deliver logistics services.	8.8	17.6	25.9	37.5	10.1
SAT2: We are pleased with the services provided by and the working attitudes of the staff members of our C&F agent.	8.8	13.4	25.9	38.8	13.1
SAT3: We are pleased with the cargo management process and cargo customs clearance procedures carried out by our C&F agent.	7.6	16.4	21.7	44.8	9.6
SAT4: Our C&F agent offers superior quality logistics services compared to other agents in Kuwait.	6.8	22.2	23.4	33.2	14.4
SAT5: Logistics services provided by our C&F agent are highly quality in the port logistics industry.	8.3	11.8	18.6	37.5	23.7
SAT6: Logistics services provided by our C&F agent meet our expectations of service quality.	3.5	12.1	19.4	41.8	23.2
SAT7: In general, the logistics services provided by our C&F agent are superior to those of other C&F agents in Kuwait.	6.8	12.8	23.2	40.1	17.1
SAT8: Overall, we are pleased with the logistics services provided by our C&F agent.	4.0	7.6	16.4	49.1	22.9

Regarding empathy (Table 6), while 58.4% appreciate the staff's knowledge and attentiveness to logistics needs, other aspects like convenient working schedules (55.1%) and prioritization of essential issues (52.4%) show room for improvement.

Customer satisfaction survey results in table 7 how generally positive feedback for the C&F agent's services. For logistics service delivery (SAT1), 47.6% express satisfaction, while 26.4% are dissatisfied. Staff service attitudes (SAT2) receive 51.9% positive ratings, with 22.2% dissatisfied. Customs clearance procedures (SAT3) achieve 54.4% satisfaction, though 24% are dissatisfied. Compared to other Kuwait agents (SAT4), 47.6% rate services favorably, while 29% disagree. Industry quality standards (SAT5) show 61.2% satisfaction, with 20.1% dissatisfied. Overall service expectations (SAT6) are met according to 65% of respondents, while 15.6% disagree.

In general, 40.1% agree that logistics services are superior to other C&F agents in Kuwait (SAT7), and 17.1% strongly agree, showing an optimistic view. However, 23.2% remain neutral, and 19.6% are less satisfied. Finally, for overall satisfaction with the logistics services provided (SAT8), a significant portion (49.1%) agree, and 22.9% strongly agree, indicating high satisfaction. Meanwhile, 16.4% remain neutral, and 11.6% are less satisfied.

4.3 Correlation

Correlation is used to examine the association between two variables. Initially, significance is assessed using the 2-tailed significance p-value. A p-value below 0.05 is accepted to establish a 95% confidence level. The correlation values, ranging from -1 to 1, show the strength and direction of the association. A zero value

Table 8 Correlation

		TAN	REL	RES	ASU	EMP	SAT
Tangibles (TAN)	Pearson Corr.	1	.620**	.598**	.518**	.325**	.888**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
Reliability (REL)	Pearson Corr.	.620**	1	.809**	.629**	.335**	.690**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000
Responsiveness (RES)	Pearson Corr.	.598**	.809**	1	.744**	.332**	.676**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
Assurance (ASU)	Pearson Corr.	.518**	.629**	.744**	1	.358**	.599**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
Empathy (EMP)	Pearson Corr.	.325**	.335**	.332**	.358**	1	.563**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000
Customer Satisfaction (SAT)	Pearson Corr.	.888**	.690**	.676**	.599**	.563**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	

indicates no correlation, while a value of 1 represents a perfect correlation. The strength of the correlation is categorized as follows (Akoglu, 2018): 1 to 0.3: weak (negative/positive) correlation, 0.4 to 0.6: moderate (negative/positive) correlation, 0.7 to 0.9: Strong (negative/positive) correlation.

The correlation findings (Table 8) indicate that tangibles (TAN) have the most significant impact on customer satisfaction, followed by reliability (REL) and responsiveness (RES). While still important, assurance (ASU) and Empathy (EMP) have slightly less influence. The findings are discussed further below.

The correlation matrix reveals several notable relationships between the SERVQUAL dimensions. The strongest correlation exists between Tangibles and Satisfaction (0.888), indicating a very strong positive relationship. Additionally, Reliability and Responsiveness show a strong correlation (0.809), while Responsiveness and Assurance also demonstrate a strong positive relationship (0.744). Notably, Empathy shows the weakest correlations with other dimensions, ranging from 0.325 to 0.358. All correlations are statistically significant ($p < .001$).

Tangibles (TAN) correlate strongly with Customer Satisfaction (SAT) at .888** (p<0.01), driven by IT platforms and equipment (TAN1), office design (TAN2), and employee uniforms (TAN3). These physical elements significantly influence satisfaction through quality infrastructure and professional appearance. This indicates that the tangible aspects of the C&F agent's services significantly influence impact on customer satisfaction levels, emphasizing the importance of investing in high-quality physical setups and professional presentations.

Reliability (REL) correlate with customer satisfaction (SAT) at .690** (p<0.01). This covers logistics services, issue resolution, dependability, prompt delivery,

and precision, showing how reliable service impacts satisfaction and highlighting the importance of reliability in enhancing customer satisfaction, emphasizing the need for consistent, accurate, and dependable logistics services.

Responsiveness (RES) correlate with SAT at .676** (p<0.01), covering service timing updates, staff efficiency, cargo assistance, and request handling. This shows underscore the importance of responsiveness in enhancing customer satisfaction, emphasizing the need for timely communication, efficient service, and readiness to assist customers promptly.

Assurance (ASU) correlate with SAT at .599** (p<0.01), including staff confidence, service quality, politeness, and knowledge. This demonstrates how the importance of assurance in enhancing customer satisfaction, emphasizing the need for staff to instill confidence, be polite, and possess adequate knowledge to respond effectively to customer inquiries.

Empathy (EMP) correlate with SAT at .563** (p<0.01), covering customer expectations, logistics expertise, issue prioritization, and scheduling. This shows the importance of empathy in enhancing customer satisfaction, emphasizing the need for staff to be attentive, knowledgeable, and responsive to customers' needs and priorities.

In brief, while all variables positively influence customer satisfaction, Tangibles stand out as the most impactful factor, underscoring the importance of high-quality physical setups and professional presentation.

4.4 Regression Analysis

Regression studies the relationship of independent variables to the dependent variable. The results are studied using the adjusted R-square from the model summary, the ANOVA significance, and the coefficient results.

Table 9 Regression Analysis

Model Summary	ANOVA	Coefficient			Hypotheses Results
Adjusted R Square	Sig.	Independent Variables	Sig.	Beta	
0.891	.000	TAN: Tangibles	0.000	0.675	H1: Supported
		REL: Reliability	0.002	0.094	H2 Supported
		RES: Responsiveness	0.012	0.084	H3: Supported
		ASU: Assurance	0.243	0.030	H4: Not supported
		EMP: Empathy	0.000	0.273	H5: Supported

Dependent Variable: Customer Satisfaction (SAT)

Table 9 provides the coefficient results. The results are studied using significance, where the p-value should be below 0.05 and the standardized coefficient value. The results indicate significance with tangibles (p-value = 0.000), reliability (p-value = 0.002), responsiveness (p-value = 0.012), and empathy (p-value = 0.000). The only assurance is not significant, with a p-value of 0.243.

The beta value indicates that all four significant independent customer satisfaction values have a positive impact. The strongest positive impact is that of tangibles (β = 0.675), followed by empathy (β = 0.273), reliability (β = 0.094), and responsiveness (β = 0.084).

4.5 Hypotheses Testing Discussion

The regression results are summarized in Figure 4.

The findings indicate that **tangibles**, including IT platforms, equipment, office spaces, and employee appearance, enhance customer satisfaction through improved efficiency, client confidence, and quality commitment. Research confirms that physical aspects significantly impact service quality perception (Le et al., 2020). Professional staff appearance and modern facilities improve efficiency and service quality (Talley et al., 2014; Min, 2022), while pleasant atmospheres enhance customer service (Xiao et al., 2021). The findings and literature highlight the significance of investing in tangibles to improve service delivery and customer confidence, as well as the crucial role tangibles play in influencing customer satisfaction and the general perception of service quality. This demonstrates the importance of tangibles in service delivery and customer satisfaction.

- **H1**: Tangible positively impacts customer satisfaction in the C&F agents, as **supported** by a p-value of 0.000 and a beta of 0.675.

The findings indicate that **reliability** is paramount in logistics services provided by C&F agents, encompassing consistently dependable services, problem resolution, and precise operations. Literature supports this, noting reliability as the consistent delivery of promised services (Mwendapole & Jin, 2021; Adhikari et al., 2023). Studies show reliability is crucial for customer satisfaction and trust (Zhang et al., 2019). Research confirms that reliable service delivery builds customer confidence (Devesh, 2019; Blut, 2016), while
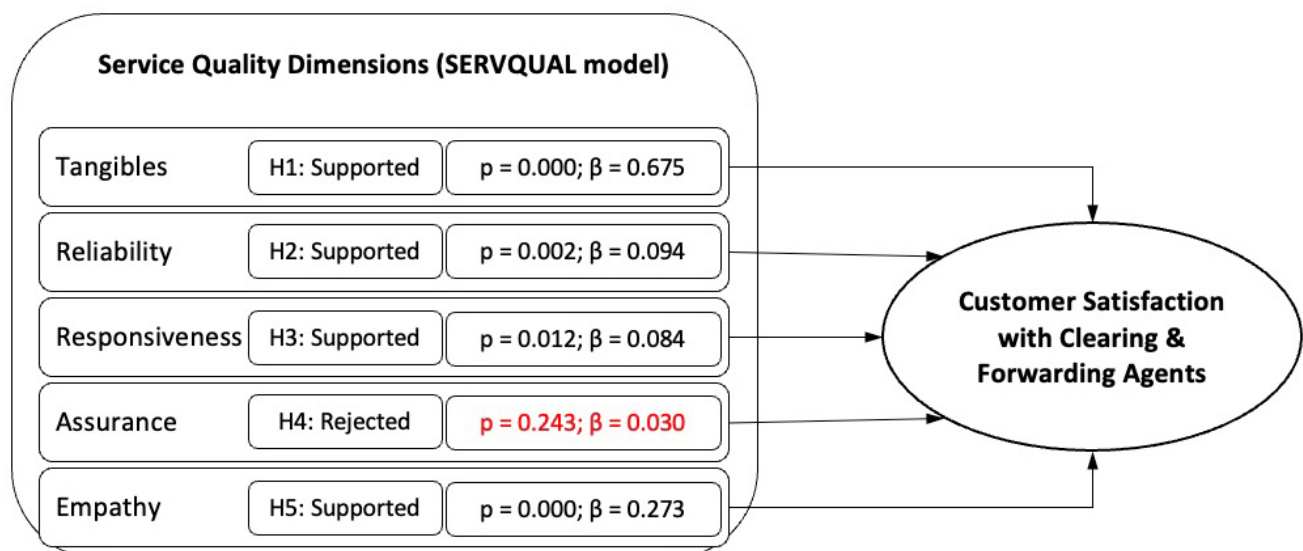
Figure 4 Summary of Regression Results

inadequate service may lead to customer dissatisfaction (Hamzah et al., 2017). The match of the results obtained by the author with the volumes of literature strengthens the understanding of the relevance of reliability in the formation of customer satisfaction and the requirement for accurate and consistent logistics services.

- **H2**: Reliability positively impacts customer satisfaction in the C&F agents, as **supported** by a p-value of 0.002 and a beta of 0.094.

The findings highlight the importance of **responsiveness** in logistics services, focusing on customer communication, service efficiency, and staff assistance. Studies support this, emphasizing proactive customer service (Le et al., 2020; Endara et al., 2019; Al-damen, 2017) and efficient task completion (Endara et al., 2019; Uddin et al., 2015). In maritime logistics, responsiveness enables optimal port operations through coordinated actions (Hsu et al., 2023; Ding et al., 2021). Both findings and literature agree that responsiveness is critical to high-quality logistics services, enhancing customer satisfaction and operational effectiveness.

- **H3**: Responsiveness positively impacts customer satisfaction in the clearing and forwarding agents, as **supported** by a p-value of 0.012 and a beta of 0.084.

Though insignificant in regression outcomes, **assurance** remains crucial for customer satisfaction due to its positive correlation. It encompasses confidence-building, politeness, and staff preparedness. Professional relationships and effective communication foster customer loyalty (Le et al., 2020). Operational efficiency enhances assurance through reduced processing times (Talley et al., 2014; Xiao et al., 2021). Multiple studies confirm assurance's positive impact on satisfaction (Yarimoglu, 2014; Kant & Jaiswal, 2017). Thus, the assurance's role in customer satisfaction remains significant despite regression results.

- **H4**: The p-value of 0.243 does not support the claim that assurance positively impacts customer satisfaction in the C&F agents.

The SERVQUAL assurance dimension with C&F agents indicates a moderate positive correlation but was not significant with regression. This can be attributed to various reasons. The unique relationship between C&F agents as intermediaries is limited by their dependence on port authorities. Furthermore, C&F agents operate in a highly regulated environments where certain levels of competence and knowledge are prerequisites for making assurance a basic expectation rather than a differentiating factor. Finally, this may also refer to the need for C&F agents to strengthen their relationships with their customers.

The findings indicate that **empathy** significantly impacts customer satisfaction through staff showing genuine interest, understanding needs, and maintaining flexibility. Literature defines empathy as attentiveness and consideration (Le et al., 2020), with emotional and intellectual engagement (Murray et al., 2019; Powell and Roberts, 2017). Studies confirm employee empathy positively affect customer emotions and satisfaction (Lee et al., 2011; Khan et al., 2021). Research emphasizes understanding sector-specific needs for quality service delivery (Ding et al., 2021). Both findings and literature confirm empathy's role in service excellence through attentiveness, understanding, and flexibility.

- **H5**: Empathy positively impacts customer satisfaction in the clearing and forwarding agents, as **supported** by a p-value of 0.000 and a beta of 0.273.

5 Conclusions

This paper used the SERVQUAL model was used to evaluate the service quality delivered by C&F agents. To demonstrate the methodological approach, empirical data were gathered through a survey of customers of C&F agents operating in and around Shuwaikh Port, Kuwait.

To feed the modeling approach, this research scrutinized studies from various geographical contexts to identify common service quality patterns and validate the results of SERVQUAL dimensions, as shown in the existing literature. Although the study provides an understanding of the Kuwaiti context, it provides recommendations on best practices for C&F agents to understand areas of improvement while considering local conditions. Although this research focused on Shuwaikh Port in Kuwait, the methodological approach and results demonstrate a level of scalability and applicability to other ports. The SERVQUAL dimensions represent common service quality aspects. Furthermore, the intermediary role of C&F agents is quite similar worldwide. Thus, the local results of this research mark a first step toward bringing the understanding of the role of C&F agents in relation to service quality to a more global level.

This research contributes to the existing body of knowledge by thoroughly exploring the various service quality dimensions that impact on customer satisfaction in the context of C&F agents as intermediaries between ports and customers. By delving into how tangible aspects, reliability, responsiveness, assurance, and empathy influence customer satisfaction, this study provides valuable insights that are beneficial for both academic researchers and industry practitioners. This research not only examines these dimensions but also analyzes their interplay and relative importance, thereby offering a deeper understanding of the factors that contribute to customer satisfaction in this niche.

The extensive literature review highlights the critical importance of service quality across various sectors, including logistics and seaports, and introduces the SERVQUAL model as a widely recognized and used tool for measuring service quality. The present study enriches

the existing literature by providing a comprehensive analysis of the mediating factors of service quality that influence customer satisfaction in relation to C&F agents. Literature has limited emphasis on the mediating role of C&F agents between port staff and customers (the end users). Many customers do not get in touch with the port directly. They depend on the services of C&F agents to collect their products from the ports and have them delivered to their locations. Therefore, the satisfaction of customers with receiving their products on time depends on the service quality of the C&F agents. The literature does not address this relationship, which is a gap that this research addresses. This research uses the service quality framework to understand the specific factors that drive customer satisfaction in this specialized industry, thereby enhancing the relevance and applicability of the SERVQUAL model in new contexts. This study exposes how functional service qualities, such as reliability, responsiveness, assurance, and empathy, contribute to customer satisfaction and is useful for both scholars and practitioners. This work sampled these dimensions and investigated the interaction characteristics and importance ratios, to provide a clear understanding of the factors that lead to customer satisfaction in this field.

The identification of key service quality dimensions and their respective impacts on customer satisfaction can guide port authorities and logistics service providers in refining and enhancing their service offerings. This, in turn, can help them maintain their competitive edge in an increasingly globalized and competitive market. The research offers specific, actionable recommendations that can be implemented to improve service quality and customer satisfaction, thereby benefiting the industry.

The limitations of this research relate to the limited geographical scope of the empirical application, the stakeholder coverage, the chosen time frame, sample limitations, technological considerations, and environmental factors.

The geographical scope is indeed limited to the Kuwait Shuwaikh Port. Future research should consider expanding the scope to include other ports to provide a more comprehensive analysis of PSQ in relation to C&F agents. Comparative studies involving ports from the same and other regions could offer valuable insights into best practices and global standards. Expanding the sample size and including participants from diverse geographic locations and industries would also enhance the generalizability of the findings.

The stakeholder coverage is limited as the data gathering process only focused on customers to understand their satisfaction with C&F agents. Other stakeholders, such as port authorities and staff, also need to be included to provide a more holistic understanding of port service quality and satisfaction. Future research should

include port authorities and staff to add value to the findings. Additionally, future studies could explore the impact of technological advancements on PSQ, investigate the role of environmental sustainability practices in enhancing customer satisfaction, and examine the influence of global economic shifts on port operations and service quality.

Another limitation refers to the cross-sectional study (time frame) that provides an understanding of the current context. However, customers' choices of C&F agents and their relationships can change over time. Longitudinal studies examining the evolution of service quality over time would help to understand the long-term effects of implemented improvements and policies.

This research collected data from 397 customers from small and medium-sized businesses in Kuwait. Larger businesses that generate higher port traffic levels are not addressed in this research. Future research can expand the sample to include larger businesses, which will add insights into the reliance and satisfaction of these businesses with C&F agents' service quality.

The SERVQUAL dimensions identified the gaps and customer satisfaction levels; however, technological factors need to be addressed specifically, as ports rely strongly on technology for day-to-day operations. This research has not extensively explored the role of technology. Future research can investigate the role of emerging technologies such as artificial intelligence (AI), blockchain, the Internet of Things (IoT), and the use of chatbots to provide customer assistance.

Finally, the role of environmental and sustainability practices, which are key aspects in the Kuwait 2035 vision, is not investigated. Future research should therefore examine the environmental and sustainable practices aligned with the Kuwait 2035 vision and how these influence customer satisfaction and port service quality, thereby developing green service quality metrics.

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