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An Analysis of Port Service Quality and Customer Satisfaction: The Case of Korean Container Ports

Gi Tae YEO[a] , Vinh V. THAI[b], Sae Yeon ROH[c]

[a] *Professor, Incheon National University, Korea, E-mail:ktyeo@incheon.ac.kr (First Author)*
[b] *Senior Lecturer, RMIT University, Australia, E-mail:vinh_thai_2000@yahoo.com (Corresponding Author)*
[c] *Research Fellow, Nanyang Technological University, Singapore, E-mail:SROH@ntu.edu.sg*

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ABSTRACT

Ports play a critical role in the economy of many countries and regions. Failure or unreliability of port services can significantly influence port customers—shipping lines and cargo owners—and result in their dissatisfaction. However, what constitutes port service quality (PSQ) and its influence on the satisfaction of port customers has not been well investigated in the literature. Therefore, this study investigates the concept of PSQ and its influence on customer satisfaction in the case of Korean container ports. Following a literature review, a conceptual model of PSQ and its influence on customer satisfaction is proposed. The model was validated through a survey of 313 members of the Korean Port Logistics Association (KPLA). Partial least squares structural equation modeling (PLS-SEM) was conducted to confirm the PSQ dimensions and to examine their relationship with customer satisfaction using SmartPLS 3.2.1 software. PSQ is found to be a five-factor construct, and its management, and image and social responsibility factors have significant positive effects on customer satisfaction. In addition to its academic contribution, this study also contributes to management practices because port managers can use the PSQ scale to measure their customers' satisfaction and justify investments in the quality management of port services.

1. Introduction

Ports are well known as playing an important role in multimodal transport systems and international supply chains, apart from their traditional role as clusters of economic activities. Ports engage in various activities: loading/discharging cargo onto/from vessels; providing value-added services such as labeling, packaging, cross-docking, and others; and acting as warehouse and distribution centers (World Bank, 2007). Ports add more value to shipments that are in the port area by further integrating themselves into value chains. Many ports are increasingly being perceived as integrated and inseparable nodes in their customers' supply chains. Ports play a critical role in the effective and efficient management of

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product and information flow in the supply chain because these transport nodes are important and indispensable. Any failure or unreliability in ports' services results in unhappy customers as a result of the disruption in the smooth movement of these flows in the next stage of the supply chain. This role of ports in the supply chain is increasingly being viewed in both the academic literature and management practices.

Existing studies have researched the importance of ports in regional and national economies and their changing roles in the context of logistics and supply chain management. The literature relating to the measurement of port efficiency and port choice in the logistics and supply chain context is also well developed. Despite the aforementioned importance, what constitutes port service quality (PSQ) and its effect on port customers' satisfaction has yet to be well investigated. In this paper, we aim to address these gaps in the literature by proposing and validating a conceptual model of PSQ and by examining the causal relationship between PSQ and customer satisfaction. This paper is organized as follows. First, a literature review is provided, followed by the proposed conceptual PSQ model. The research methodology is described next, followed by analyses and discussions on the findings of this study. Finally, concluding comments, including implications for academia and management and future research directions, are outlined.

2. Literature Review

2.1. *Service Quality and Port Service Quality*

Throughout the literature, a universal approach to the definition of the concept of quality and its associated dimensions has never been a reality, even though the research agenda has existed for quite some time. Although quality is an exclusive concept, overwhelming studies exist on the subject of quality in the service industry with both concurring and conflicting views (e.g. Anderson and Sullivan, 1993; Bolton and Drew, 1991; Gupta and Zeithanml, 2006; Maarten et al. 2015; Rust et al. 1999; Van Doorn and Verhoef, 2008). The SERVQUAL model is one of the initial and most commonly used tools to measure service quality (Parasurman et al., 1988) and consists of five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Hopkins et al. (1993) evaluated cognitive service quality in the logistics sector using SERVQUAL model, and identified the meeting of customer expectations being the fundamental requirement for customer satisfaction. However, various scholars criticized the SERVQUAL model despite its pervasive application. For example, Cronin and Taylor (1992) proposed the SERVPERF model, which considers only actual performance and, thus, eliminates the expectation component present in the SERVQUAL model. Another common critique of the SERVQUAL model was that its dimensions lack dimensional stability (Carman, 1990), which is limited to applications in the five service industries (Parasuraman et al., 1985, 1988). Many researchers who questioned whether the SERVQUAL model can be applied to all service industries as a generic scale suggested that industry-specific measurement determinants be required to provide more accurate measurements (Babakus and Boller, 1992; Caro and Garcia, 2007; Ladhari, 2008; Van Dkyke et al., 1997).

In addition, the SERVQUAL model arguably neglects the service encounter outcome because it was designed to only address the service delivery process (Baker and Lam, 1993). Grönroos (1984) developed a model consisting of the three dimensions of technical quality, functional quality, and corporate image, which effectively consider the service outcome component when measuring the quality of a service. Technical quality describes how the customer obtains the service and functional quality describes the service achieved in the end. Meanwhile, corporate image influences the perception of quality in a positive, neutral, or negative manner. Lehtinen and Lehtinen (1991) emphasized the importance of this attribute by proposing a model including the three dimensions of physical quality, interactive quality, and corporate quality.

In the most recent literature, SERVQUAL has been pointed out as not being a universal tool to measure service quality in specific contexts, such as in B2B services (Benazić and Došen (2012), corporate banking (Guo et al., 2008), supply chains (Seth et al., 2006), and others. Further studies on various service industries using the conceptualization and measurement instrument of SERVQUAL also indicated that it is not applicable for all industries or in all socio-cultural and economic environments. Indeed, various authors also found that the dimensions of service quality indicated in SERVQUAL are either too many or too few for the specific context of their research.

Despite numerous studies on service quality measurement in various industries, little research has been conducted in the maritime industry in general and ports in particular. Rather than focusing on detailed service quality measurements, most maritime-related literature researched the issue of carrier and port selection. Among a few relevant studies in this respect, Ugboma et al., (2004) found that all five SERVQUAL dimensions were valid. Meanwhile, efficiency, timeliness, and security were found by Lopez and Poole (1998) to contribute to the quality of port services. Brady and Cronin (2001) identified the aspects of service quality including "rational quality", "result quality", and "physical environmental quality". This study further developed sub-factors of the port service quality, for example, the "relational quality" includes port sales, customer relations and distribution network, while the "exogenous quality" indicates the volume of cargo flows, hinterland, and the size of free trade zones (FTZ) (Cho et al. 2010). Ha (2003) identified a group of port service quality factors, including "ready information availability of port-related activities," "port location," "port turnaround time," "facilities available," "port management," "port costs," and "customer convenience." On another note, separate measurement tools of port service quality comprising "endogenous quality," "exogenous quality," and "relational quality" were also developed (Cho et al., 2010). They explored the effects of port service quality on customer satisfaction, loyalty and referral intentions. A few subsequent studies focusing on the efficiency and service quality of Asian ports (Lee, 2000; Song and Yeo, 2004) have utilized these frameworks and evaluated customers' reaction to various factors of service quality (Cho et al. 2010). However, these studies neglected the critical dimension of social responsibility, which can enhance or damage the image or reputation of organizations and, hence, the perceived quality of their services. This fact is particularly important in the context that many ports around the world are now attempting to implement green port initiatives.

Thai (2008) developed and validated a measurement model (ROPMIS) to explore the concept of service quality in maritime transport. This model consists of the following six dimensions: resources, outcomes, process, management, and image and social responsibility. This model incorporated newly developed elements, such as management-, image-, and social responsibility-related quality dimensions, on the basis of a comprehensive review of various service quality dimensions and factors in previous studies. Compared with the SERVQUAL model, the ROPMIS model is more applicable to the maritime industry because it incorporates the image and social responsibility aspects that are critically important in