



Contents lists available at ScienceDirect

## The Asian Journal of Shipping and Logistics

Journal homepage: [www.elsevier.com/locate/ajsl](http://www.elsevier.com/locate/ajsl)



# Assessing the Impacts of Port Supply Chain Integration on Port Performance \*

Chul-hwan HAN<sup>a</sup>

<sup>a</sup> Professor, Dongseo University, Busan, Korea, E-mail: [chhan16@dongseo.ac.kr](mailto:chhan16@dongseo.ac.kr)

### ARTICLE INFO

#### Article history:

Received 30 October 2017

Received in revised form 10 April 2018

Accepted 01 June 2018

#### Keywords:

Port Supply Chain Integration

Port Performance

Factor Analysis

Hierarchical Regression Analysis

### ABSTRACT

The importance of port integration in the supply chain has received a great deal of attention and has widely discussed in the literatures. However, most of previous studies have focused on the conceptualization and measurement of port supply chain integration. The purpose of the study is, therefore, to identify the impact of port supply chain integration on port performance by using factor analysis and regression method in the case of Busan container ports. Unlike the previous studies, this paper considers both supplier and customer of port supply chain explicitly. The empirical results show that customer integration has an important effect on quality performance. Furthermore, cost performance has a positive impact on both ship calls and cargo throughput.

Copyright © 2018 The Korean Association of Shipping and Logistics, Inc. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### 1. Introduction

In the global supply chain era, the role of port has evolved from the traditional functions of cargo handling and storage to becoming an integral part of global supply chain. With the growing demand for integrated logistics services and intensifying port competition, a port should collaborate and cooperate with its supply chain partners for providing value-added services to port users. Many studies mentioned the important role of port in the context of supply chain management (Robinson, 2002; Notteboom and Rodrigue, 2005; Paixao and Marlow, 2003; Pettit and Beresford, 2009; Woo et al., 2013).

The concept of supply chain integration (SCI) in a port sector has

received a great deal of attention and is widely discussed in the literature (Panayides and Song, 2008; Song and Panayides, 2008; Tongzon et al., 2009; Hall et al., 2013). However, the arc of SCI is limited, either to suppliers (labor supplier and equipment leaser etc.) or to customers (shipping lines and inland transport operators). No studies have identified to examine its real impact, while including those important players in a port sector but ignored in the literature. That is to say, most of previous studies on port supply chain integration have only focused on terminal operating company and customers (Panayides and Song, 2008 and 2009; Song and Panayides, 2008; Tongzon et al., 2009; Woo et al., 2013).

\* This work was supported by Dongseo University Research Fund of 2014.

<http://dx.doi.org/10.1016/j.ajsl.2018.06.009>

However, this paper examines the suppliers and customers of port in the supply chain more precisely.

The purpose of this study is therefore to address this gap by using a measurement instruments based on general supply chain studies. As will be defined in the next, this measurement instrument covers not only customers (shipping companies, shippers, inland transportation companies, freight forwarders) but also suppliers (labor union, KL-NET, customs, tug & pilot service providers), which have not been examined in the previous literatures. In addition, for the first time, this study conducted complete enumeration on the port of Busan from the standpoint of port supply chain integration.

This paper is organized as follows. The next section reviews the literature relevant to the ports as part of the overall supply chain. This includes the literature on supply chain integration and the studies that relate to the integration of port and terminal in supply chain. Section 3 outlines the methodology. Section 4 presents the empirical results followed by a discussion and a conclusion with theoretical and practical implications.

## 2. Literature Review

### 2.1. Supply chain integration (SCI)

Schoenherr and Swink (2012) define SCI as the extent to which a firm is strategically interconnected and aligns with its supply chain partners. Integration with suppliers and customers enables firms to manage the smooth and efficient flow of products through the supply chain, and provides access to resources and capabilities at supply chain partner that otherwise may have been costly to develop internally. The literature has emphasized the importance of integration across a supply chain, particularly with respect to performance outcomes (Frohlich and Westbrook, 2001; Johnson, 1999; Narasimhan and Jayaram, 1998).

Schoenherr and Swink (2012) conceptualized SCI as consists of the three dimension of supplier, customer and internal integration. Thus, SCI involved both inter-organizational (supplier and customer integration) and intra-organizational (internal integration) interfaces that facilitate coordination and the effective and efficient flow of information, material, money and decisions, with the ultimate goal of maximizing customer value. Customer integration refers to close collaboration and information sharing activities with key customers that provide the firm with strategic insights into market expectations and opportunities (Wong et al., 2011), ultimately enabling a more efficient and effective response to customer. Supplier integration involves coordination and information sharing activities with key supplier that provide the firm with insight into suppliers' processes, capabilities and constraints, ultimately enable more effective planning and forecasting, product and process design, and transaction management (Ragatz et al., 2002). In contrast, internal integration refers to cross-functional intra-firm collaboration and information sharing activities that occur via interconnected and synchronized processes and systems. Along with benefits, SCI activities also involve costs. Greater levels of integration may require investments in more involved and expensive communication technologies. Sorenson (2003) suggests that integration can lead to decreased innovation potential, as well as greater inflexibility due to greater interdependence. Thus, elaborate integration regimes may not always be appropriate, depending on the nature of a firm's products and its competitive priorities. In general, however, researchers have supposed that the benefits derived from

integration activities outweigh their associated costs, leading to overall greater levels of operational performance.

### 2.2. Port Supply Chain Integration(PSCI)

As a link in a larger logistics chain, container terminals need to achieve a higher degree of integration with the supply chains they serve. Recognizing that ports have an important role to play in the context of integrating their functions and operations with those of their supply chains, many authors attempt to address the logistics and supply chain role of ports (Notteboom and Winkelmann, 2001; Robinson, 2002). Bichou and Gray (2004) note that two concepts, namely intermodalism and organizational integration, have captured widespread attention in the academic community with port supply chain integration (PSCI). Paixao and Marlow (2003) apply the concepts of 'leaness' and 'agility' in a port environment and indicate that adoption of these logistics concepts requires integration of ports in the supply chain. Such integration can be achieved through information technology and communication as well as the introduction of value added activities that would reduce costs. A port that is integrated in the supply chain is characterized by seamless communication, elimination of wastage, and cost reduction in operations (e.g. through JIT), interconnectivity and interoperability of modal infrastructure, and operations and provision of value-added services (VAS) and customer satisfaction. Marlow and Paixao (2003) introduce the logistics concept of 'lean' operations as a key in the measurement of port performance. They identify the new port measurement indicators by viewing port performance in the context of a 'multimodal process'. The indicators include operations systems, infrastructure resources and logistics goals such as meeting customer requirements in terms of reliability, information processing, cost, efficiency, and flexibility and responsiveness. Bichou and Gray (2005) advocate that in the era of globalization, it is important for ports to be considered as integral parts of supply chains by serving and facilitating multimodal transport intersection. Bichou and Gray (2004) indicate that adopting a logistics approach to the measurement of port performance is beneficial to port efficiency. Because it directs port strategy towards relevant value-added logistics activities. Despite the widely recognized importance of conceptualizing ports as integral parts within a SCM framework, empirical work on the port supply chain integration has been limited.

Recently the concept of supply chain integration (SCI) in a port sector has received a great attention and is widely discussed in the literature (Carbone and De Martino, 2003; Notteboom and Rodrigue, 2005; Panayides and Song, 2008; Woo et al., 2013). Panayides and Song (2008) term the integration of seaport/terminals in supply chains as 'terminal supply chain integration (TESCI)' and define it as 'the extent to which the terminal established system and process and undertakes functions relevant to becoming an integral part of the supply chain as opposed to being an isolated node that provides basic ship-shore operation'. Woo et al (2013) use the term 'port supply chain integration (PSCI)' and define the term as 'a strategy undertaken by a seaport terminal to integrate various functions and organizations in a supply chain to become an integral part of the supply chain'. Several authors have presented the components or validated the constructs to conceptualize PSCI. Carbone and De Martino (2003) identify four SCM components by interviews with French port operating companies: mutual relationships, supplied services, information and communication technologies and performance measurement. Based on their discussion, Panayides and Song (2008) conceptualize TESCOI with four components: information and communication systems (ICS); value-

Download English Version:

<https://daneshyari.com/en/article/7395863>

Download Persian Version:

<https://daneshyari.com/article/7395863>

[Daneshyari.com](https://daneshyari.com)