

Improving Logistics Management Using Foldable/Collapsible Containers: A Case Study



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Abstract

Foldable containers have the potential to enhance the cost efficiency of the logistics industry and improve the problem of space allocation at seaports. Using primary and secondary data sources the pros and cons of using foldable containers as compared to standard containers are identified, and it is shown that a port can gain cost efficiencies by using foldable containers. A simulation for the Port of Melbourne (Australia) demonstrates that using foldable containers would reduce the projected total number of containers handled by the port in 2035 from 7.057 million to 5.817 million, with an 80% decrease in the number of empty containers. Foldable containers can therefore have a significant impact on the reformation of the transport and logistics systems.

Key Words : Containerization, Foldable Container, Standard Container, Loading Centres, Space Constraints, Logistics

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I. Introduction

Contemporary logistics operate in a newly framed and globalized environment where combined transport, information flows and innovation, and the concentration and integration of firms lead the market and each business within the market. The containerization of cargo within this context has been a primary feature in maritime transportation because of the advantages it offers in the rationalization of shipments, security and facility of handling, and the facilitation of multimodal transportation (Li et al., 2007). With the advent of the containerization of cargo, the total logistics chain has embarked on an unprecedented evolution. The Twenty Foot Equivalent Unit (TEU), the general commodity in logistic operations for all stakeholders, has contributed to the enhancement of international and local trade. In this context seaports, as the primary receiver of containers, have also undergone extensive restructuring of their operation, infrastructure and superstructure mainly to accommodate container vessels and their cargo. The extent to which containerization has impacted on seaports is seen by the growth of the market for container handling business in seaports, predominantly the emergence of the number of multinational private stevedoring companies in the major and regional hubs, and the main city ports. Within this context the container as a commodity has also embarked on a technological evolution since its invention by Malcolm Mclean as a solution to the inefficiencies created by break bulk (Johnson, 2010).

With the expansion of international trade in the world container volumes have increased tremendously (Notteboom and Rodrigue, 2008b). Global container traffic (including full and empty containers) reached 560 million TEUs in 2010 (ISL, 2011). The imbalance in international trade activities, mainly between east and west as well as north and south, has resulted in a large volume of empty containers (Theofanis and Boile, 2009). The movement of empty containers in 2002 constituted approximately 20% of the world's total international container throughput (UNESCAP, 2007), which clearly suggests that ships are partially loaded with empty containers. As the world container throughput increases, it is forecasted that the amount of empty container handling will also increase. This will have an impact on operating margins and space constraints in

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