Container inventory management: introducing the 3F model

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Abstract: Container inventory imbalances (CII) can primarily be attributed to global trade imbalances that cause a substantial indirect cost in shipping. Therefore, it is imperative that carriers adopt highly efficient and effective container inventory management (CIM) systems to overcome the CII issues. This research intends to develop realistic guidelines for CIM that minimise CII costs. The components of the 3F model are chosen based on the rating scores given by the experts for 22 common CIM strategies followed by a standard filtration process. It ultimately comprises six strategies, namely: reduce import freight; reduce export freight; service agreements; synchronised budget; agile inventory; and export priority. These variables are rooted in three dimensions namely: freight, forecasting and flexibility. To identify the relative contribution by each component, this paper proposes a double weight allocation procedure for each strategy. The 3F model helps managers to think beyond traditional container reposition and increased profits.

Biographical notes: Lalith Edirisinghe is a Doctor in Transport Planning and Logistics Management. He has 35 years of experience in international supply chain including shipping, customs and border management, IMDG, marketing and teaching. He has published more than 20 articles in international journals and conferences. He is a member of scientific committee of Sri Lanka Society for Transport and Logistic, editorial board member of R4TLI, *Journal of Shipping and Ocean Engineering*, New York; and reviewer of *International Journal of Shipping and Transport Logistics*, *International Journal of Supply Chain and Operations Resilience*; *Journal of Business and Economics*; *Indian Journal of Science and Technology*; *Case Studies in Business and Management* – Macrothink Institute. He is a chartered member of Institute of Logistics and Transport; Chartered Marketer. He represents Sri Lanka in Indian Ocean Rim Association–(IORA) Project for Development of Transnational Skills Standards of Department of Education and Training, Australia.

Zhihong Jin is a member of Teaching Guiding Committee of Ministry of Education, China, editorial board member of *International Journal of Shipping and Transport Logistics*, Associate Editor-in-Chief of *Journal of Dalian Maritime University*. His research interests are logistics system planning and management, transportation planning and management technology, and supply chain design and management. He has published four books and more than 160 papers, and obtained five projects from National Natural Science Foundation of China (NSFC), seven projects granted by Ministry of Education of China, Ministry of Transport of China, and Liaoning Province, and two international cooperation projects.

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1   Introduction

Containerised cargo is widely recognised as the most dynamically developing sector of global seaborne trade (Miler, 2015). The sheer volume of international maritime container traffic is approximately 420 million containers shipped yearly (United Nations Office on Drugs and Crime, 2009). A major problem revolves around repositioning empty reusable containers within a global network of ports after the product arrives at its destination (Ross et al., 2010). Containers have made greater impact on emerging