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**Supply Chain Factors and Process Success
Model Using Theory-of-Constraints**
**運用約束理論于供應鍊成功模式研究：
因素和過程**

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ABSTRACT

Business partners in a supply chain who respond to customers' needs in an integrated manner, sharing information with customers and with each other often generate greater benefits than they do from working independently. The Theory-Of-Constraints (TOC) based demand-pull is a kind of supply chain information system that makes integration amongst suppliers and customers possible. This demand-pull methodology helps suppliers adapt instantly to any changes in customers' orders. This is because with on-time information sharing amongst the suppliers and customers through their integrated information system they are better able to estimate the time and buffer stock required. There is, however, a general scarcity of models and frameworks for evaluating the success of supply chain integration that uses Theory-Of-Constraints based demand-pull at the upstream end of the supply chain.

Purpose – To adopt the traditional information system success model as the basic framework on which to develop the TOC based demand-pull implementation success model for use in upstream supply chain integration. The updated DeLone & McLean Information Systems Success Model is adopted for studying the success of the TOC based demand-pull implementation in this research.

Design/methodology/approach – After a comprehensive literature review an initial framework is developed with the adopting of DeLone & McLean's Information System Success Model. Using the qualitative interviews that were conducted at the 7 sites with relevant informants, the TOC based demand-pull Implementation Success Model is developed. It is adequate but may not be sufficient in terms of significance. However, the potential benefits of the TOC based demand-pull implementation and supply chain

integration are significant due to the upstream improvement achieved in the supply chain and supply network.

Findings – The findings of this thesis indicate the supply chain integration implementation success model in the TOC based demand-pull strategy amongst suppliers and customers at the upstream supply chain. It is also critical to understand the 6 dimensions and their inter-dependence of the implementation model as proposed. On one hand, the findings provide significant potential benefits in supply chain adaptability. In other words, suppliers are more responsive to changes in customers' demands through integration of their information system with the supply chain. On the other hand, it provides a framework for supply chain integration at the upstream end, which can be used for further evaluation of TOC based demand-pull implementation.

Research limitations/implications - The scope of this research is by design limited to integration at the upstream end of the supply chain. At such, it cannot be an examination of other types of supply chain integration such as internal integration within companies or backward integration at the downstream end of the supply chain.

Practical implications - This research serves to highlight the 6 dimensions of inter-dependence of supply chain integration for TOC based demand-pull implementation in the information system. All these need to underpin each other in order to respond to changes in customers' demands.

Originality/value – In this study a TOC based demand-pull implementation success model at the upstream supply chain is developed to promote integration amongst

business partners at a global level. It provides some clear guidelines for further research opportunities.

Keywords: Supply Chain Management, Integration, Implementation, Management Strategy, Theory-Of-Constraints, Demand-pull