

## Chapter 105

# A New Approach to Supply Chain Performance Measurement: An Empirical Study of Manufacturing Organizations

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### ABSTRACT

*Existing research work has established that many of today's manufacturing organizations have failed to develop a comprehensive supply chain performance measures. In this chapter, the authors intend to empirically assess the effects of supplier buyer relations and human metrics on supply chain performance in the context of Indian manufacturing organizations. After rigorous literature review, total 18 variables have been identified which are later on reduced in number by factor analysis. As a pilot study, primary data is collected from 100 manufacturing organizations by means of a questionnaire and a scale is developed. On a sample size of 100, the proposed hypotheses are tested by applying two-tailed tests. t-test and factor analysis resulted in 5 factors, 2 related to supplier-buyer relations and 3 related to human metrics. The overall reliability of the scale comes out to be 0.697. The research work provides a new approach to the manufacturing organizations to understand the factors affecting supply chain performance. The present study is limited to Indian manufacturing organizations.*

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## **1. INTRODUCTION**

Improvement in the supply chain is critical to a company's bottom line in the current era of global sourcing and global competition. Going a step further, the maturity of the supply chain governs a company's performance, affecting the top line as well as the bottom line. Indian industry is facing competition both from multinational companies and imports in the domestic markets. The new competition is in terms of improved quality, products with higher performance, reduced cost, a wider range of products and better service; all delivered simultaneously (Dangayach & Deshmukh, 2003).

The excellent overview of performance measurement provided by Neely et al. (1995) has been widely cited in research into supply chain performance measurement systems (e.g., Beamon, 1999; Beamon & Chen, 2001; Gunasekaran et al., 2001, 2004). These, and other studies, have highlighted how the majority of the limitations cited by Neely et al. are still valid in the case of performance measurement systems for supply chains. Moreover, they have stressed the need for new measurement systems and metrics which address these deficiencies. It is an established fact that many companies have not succeeded in developing the performance measures and metrics needed to fully integrate their supply chain to maximize effectiveness and efficiency (Gunasekaran et al., 2004). Also, it has been argued that measuring supply chain performance can result in understanding of the supply chain and improve overall companies' performance (Chen & Paulraj, 2008).

Measurement has been recognized as a crucial element to improve business performance (Taticchi et al., 2010). Various performance metrics are in place for measuring effectiveness of SC. Different perspectives of Supply Chain Performance Measures (SCPM) are cost and non-cost perspective; strategic, tactical or operational focus (Gunasekaran et al., 2001); business process perspective and financial perspective (Beamon, 1999). The earlier focus of performance measurement was on financial perspective which is gradually changing to non-financial perspectives. Most of the models have gone through some empirical testing and some have only theoretical developments (Taticchi et al., 2010).

The manufacturing sector is growing rapidly in India and China and has shrunk in most advanced economies. The growth will require several changes, which include significant increase in productivity and quality at the plant levels, pursuit of worldwide competitive manufacturing strategies and operations and successful integration into the global supply chains (Deloitte, 2007). The purpose of this chapter is to propose a model of supply chain performance measurement for manufacturing organizations. A new approach is put forward, evaluating the effects of supplier-buyer relations as well as human metrics on supply chain performance.

## **2. BACKGROUND**

In this chapter, the authors propose a conceptual model by establishing the relationships of supplier-buyer relations and human metrics with SC performance in a single study in the context of Indian manufacturing organizations.

### **2.1 Supplier Buyer Relations (SBR)**

In supply chain management (SCM) strategies, supplier relationship activities play an important role (Wisner, 2003). Long-term relationships refer to intention that the arrangement is not going to be tem-

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