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A Computing Methodology for Evaluating Supply Chain Competitiveness

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Abstract

The objective of this paper is to discuss a factor based AHP methodology to enrich the evaluation of the supply chain competitiveness in the Indian manufacturing industries. The role and potential of AHP approach are discussed and it is suggested that comparison through the use of AHP can make the evaluation of supply chain competitiveness more effective and rational. At one level it tries to identify the factors of the supply chain competitiveness and at a more important level it evaluates these factors to be utilized for achieving supply chain competitiveness. This paper presents a factor based multi criteria decision making approach using AHP application as a tool to analyze a hierarchical model of supply chain competitiveness. The aim is to encourage more efforts in this regard for wider benefits and applications.

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Introduction

At present, measurement of the supply chain competitiveness is gaining importance in most of the organizations all over the world. Research shows that many enterprises haven't evaluated the

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overall performance of their supply chains and evaluation of the supply chain competitiveness is taken even more inadequately [1].

Supply chain competitiveness takes consideration of competitiveness issues into the supply chain strategies of all the chain elements such as suppliers, manufacturers, distributors and retailers and not only one element so as to improve the performance and emphasizing customized quality products. [2]. suggest growing need for focusing on the competitiveness issues in the evaluation of the supply chain performance. They have given adequate direction to incorporate competitiveness factors like cost, quality, flexibility, efficiency, delivery performance and many more to achieve supply chain competitiveness. The competitiveness evaluation of the supply chain means to decide factors for competitiveness or criteria critical for the achievement of the supply chain competitiveness. As shown in Figure 1 it is useful to develop a framework on supply chain competitiveness.

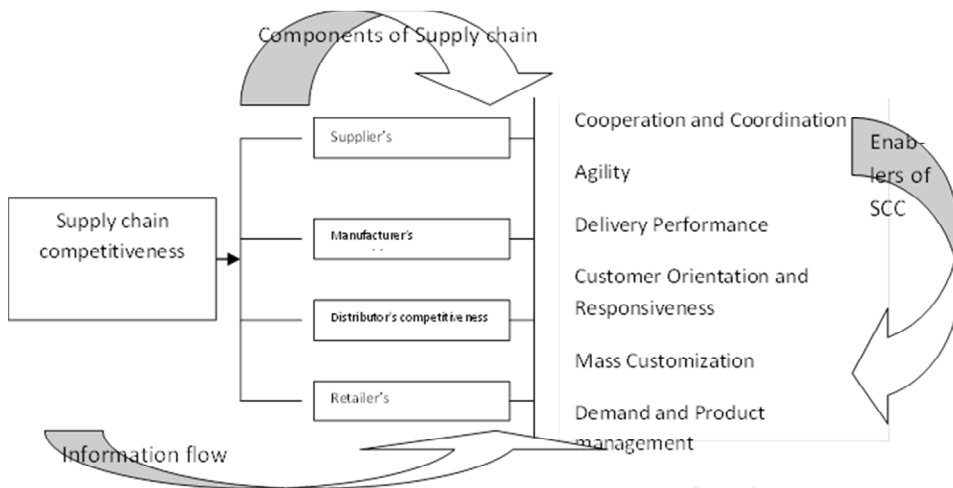


Figure 1 Supply chain competitiveness framework

As shown in the Figure, supply chain competitiveness can be achieved by the integrated efforts of its components i.e. suppliers, manufacturers, distributors and retailers. The basic enablers are also shown on the right hand side. These enablers are the strategies to gain supply chain competitiveness. These enablers are the sole enablers for each component of supply chain. The supply chain competitiveness begins with its component's integration in a flow of information. The integrated efforts also include coordination and cooperation among the components. The enablers include various strategies which are to be focused in order to achieve supply chain competitiveness.

Present evaluation system for any supply chain competitiveness is based on certain criteria and experts evaluate the performance on their individual benchmark and standards which are direct-evaluations based on the allotment of marks. Literature Review and Analytic Hierarchy Process (AHP).is used to generate the useful enablers and hierarchal data and selection of critical components of the objectives. Thereafter, Analytical Hierarchy Process (AHP) is used, which facilitates in the entire critical decision making and has the potential to improve existing system of evaluation and decision making [3]. The central problem is how to evaluate a set of alternatives in terms of a number of criteria.

To overcome this problem we suggested AHP based evaluation of supply chain competitiveness in manufacturing industries. In this application the final decision depends on the evaluation of a set of alternatives in terms of a number of decision criteria developed by literature review. This paper examines four Supply chain evaluation cases in which criteria are critically evaluated the issues

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