Chapter 1
Supply Chain Analysis and Typology

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ABSTRACT

In the constantly changing business environment, companies are required to compete against their rivals. In this regard, they should be improved immediately. For that purpose, they need to discover their status in the market and to monitor it over time regarding their competitors. To understand the status of the chain, it is necessary to have a general idea of how it works and how efficient/effective it works, which can be achieved through supply chain analysis. Supply chain analysis is the process of modeling and performance evaluation with a set of tools and methods. This chapter will discuss the most well-known tool for the modeling of supply chain, Supply Chain Operations Reference (SCOR). Furthermore, we will discuss the performance metrics to evaluate how the supply chain is performing. Moreover, a typology of the supply chain is outlined to help the manager in describing the chain with a collection of attributes that can affect decision making. It is also a supportive tool for the second level of the SCOR model or any planning software.

SUPPLY CHAIN ANALYSIS

Supply Chain

A supply chain consists of all parties directly or indirectly involved in the implementation of a customer's request (Chopra and Meindl, 2007). The boundaries of the supply chain cover almost every actor and/or functions that occur within a chain. Participants, including suppliers, manufacturers, warehouses, traders, transporters and even customers are connected by information, material and financial flows. The actions and functions within a supply chain for a manufacturing organization include, but not limited to, new product development, purchasing, storage, marketing, management of the operations, financial problems of the chain, distribution and supply of products,

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customer services and etc. In respect to these functions and activities the main objective of the chain is to receive and fulfill the customer request.

There are various definitions of supply chain available in the literature. Christopher (2005, p. 17) defines the supply chain as a *"...network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate consumer"*.

Each of the participants in the supply chain may consist of several elements. For example, manufacturers may have various warehouses, manufacturing plants and distribution facilities in different areas (or even countries), as shown in Figure 1 (Hübner, 2007).

Supply Chain Performance

In recent years, researchers and practitioners have focused on organizational performance measurement and indicators much more than before. Supply chain performance reflects the organization's competitiveness and ability to provide value to customers, especially in the amount of availability and delivery of products or services in time (responsiveness).

The role of these measures and metrics for organizational success cannot be overstated. They affect strategic, tactical and operational planning and control. Performance measurements and metrics have an important role in setting objectives, performance evaluation, and determine future courses of action (Gunasekaran and McGaughey, 2004).

Supply chain introduces a new concept, a chain of activities and processes to meet the needs of the end customer who has changed the management of the organization in many aspects, including strategic and operational level.

Having changed company strategies, supply chain management has affected the way manufacturing and service companies meet the needs of their customers. As an exclusive strategic discipline, supply chain must be managed and improved to perform effectively and efficiently. One must have a clear understanding of the current chain and how it operates before starting any improvement actions. Therefore, analysis of

Figure 1. Global supply chain network (Hübner, 2007)