Chapter 12
Upgrading Effectiveness in VEs: Decision Framework Based on the Benefits, Opportunities, Costs and Risks (BOCR) Model

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ABSTRACT
Due to the rapid evolution of information technology, supply chain integration is nowadays easier than in the past. Moreover, the need for economic efficiency leads suppliers and customers to closely cooperate in pursuit of what seems to be the holy grail of modern supply chain management, end to end optimization. The core objective of this chapter is the provision of a decision framework for enterprise formations organized as collaborative clusters, which is a sophisticated form of a virtual enterprise network. This framework, based on the ANP-BOCR model, takes into account clusters’ special characteristics the most important of which is that the supply chain entities do have a clear picture of strategies, policies, needs, strengths and weaknesses of one another. The whole approach is illustrated through a parapharmaceutical cluster case study which reveals that “common” knowledge and risks are very important in an environment where entities are sometimes partners and sometimes competitors.

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INTRODUCTION
Recent trends in global production have both increased supply chain complexity and reinforced the notion that logistics strategies and practices are essential elements of business strategy (Perrona & Miragliotta, 2003). Logistics complexity has increased as organizations have moved from centralized, vertically integrated, single-site manufacturing facilities to geographically dispersed networks of resources that collectively create value for their customers (Tatsiopoulos et al., 2004). In such a business environment,
networking is almost an inevitable solution to help companies respond rapidly to market changes (Hallikas et al., 2004). A common framework of enterprise networks appears to be the formation of enterprise clusters. Clusters can be defined as “geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standard agencies, and trade associations) in particular fields that compete but also co-operate” (Porter, 1998).

In other words, companies participating in a cluster are on the one hand competitors as they are selling the same product at the same market, but on the other hand act as partners collectively trying to increase that market by exploiting common strategies so as to offer faster, better and cheaper products.

A typical cluster example, is that of the tourism industry where actors (e.g. hotels, restaurants, public authorities and stores of a specific territory) are co-financing advertisement or the installment of hot-spots that serve the market base of the whole cluster.

Clusters are generally built up spontaneously by the local business players, who want to take advantage of several factors existing in their geographic area, such as the presence in large numbers of suppliers and customers, the access to information and know-how, the availability of resources and low transactions and communication costs due to geographical proximity.

Development of clusters may easily provide the spark for the development of virtual enterprise networks (Rowe, Burn & Walker, 2005). A virtual enterprise network is formed by a group of suppliers, service providers and other specialized players who are interacting while trying to optimize the delivery of a product to satisfy customer needs. When the interaction among the actors of a virtual enterprise network, takes the form of integration of processes (e.g. supply chain processes) with the use of information technology, then the virtual enterprise network leads to collaborative commerce (c-commerce).

Collaborative commerce is a term that has emerged to describe a fundamental shift in the way companies interact. It is a set of techniques allowing companies to better manage their virtual enterprise networks. A fundamental parameter for achieving improvements in such complex systems is appropriate decision making. This chapter focuses on decision making within the context of clusters and c-commerce.

Within this new, highly demanding and complex system (virtual enterprise networks using c-commerce within a cluster), the decision making process is a complicated issue and as organizations become more and more dependent on their suppliers, the direct and indirect consequences of poor decision making become more critical (Chan & Kumar, 2007). Decision making in such systems is complex as the decision makers have to take into account numerous of contradicting criteria and circumstances. A short example of these criteria and circumstances would be the fact that the decision maker is more or less obliged to maintain good relationship among its suppliers and that all the actors of the chain share common knowledge of the strengths and weaknesses of one another. In a nutshell, taking decisions within such environments is quite complex and requires that both qualitative and quantitative criteria must be taken into consideration.

In this context, the present chapter proposes a multicriteria method, able to handle the aforementioned complexity and further supports it with an illustrative paradigm residing in the supply chain of the Greek parapharmaceutical industry. The parapharmaceutical supply chain comprises a cluster whose members engage in c-commerce activities (referred as collaborative cluster from this point forward), as defined above. The proposed method utilizes the Analytic Network Process