

Chapter 17

Optimal Locational Analysis for the Targeting of Investments in Specific Businesses and Territories in Brazil: An Analysis of the State of Minas Gerais

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ABSTRACT

With the evolving understanding of the role of the supply chain management and its potential to add value, integrated business planning is a key concept in any modern organization. That brings complexity to supply chain management, requiring companies aiming to operate a world-class process to have a strong coordination between internal functions, which is only possible with a highly efficient information management framework. This chapter discusses how companies can extract competitive advantage from the use of available information on the supply side. For that, as based on the supply-side methodology, a new analytical layer is built and applied based on a multivariate statistical approach that makes possible the creation of groups according to characteristics of the capacity to supply goods and services. As analytical locus, the authors selected the Minas Gerais territory, Brazil.

INTRODUCTION

An efficient management of the supply chain can create a sustainable competitive advantage in nowadays global markets. Being a cross-functional discipline, the supply chain management materializes the strategy. For decades, the supply chain management was a synonym for logistics cost control, not including

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planning activities, information sharing or any value adding whatsoever. The integrated planning rise in adoption by companies came with the understanding that a superior integrated planning, overseeing all business processes from raw material to customer delivery, can create value to the company, not only reducing logistics and inventory costs, but also assuring revenue by reducing out of stock events and increasing customer satisfaction. To assure a global optimization, each link in the supply chain must also have accountability for the supply and demand management and be *able to manage risks, respond to changes in the economic, technological, and competitive environment and exploit new opportunities more effectively than their competitors* (Glatzel & Röhren, 2014).

The discipline is growing exponentially in complexity with the accelerating spread of the supply chain, geographically, where all information is connected and the outstanding availability of data and the fast pace at which scenarios are changing, driving new trends (Glatzel & Röhren, 2014; Handfield, Straube, Pfohl, & Wieland, 2013). Among those trends, which the Supply Chain Management will have to have absorb and adapt, according to Handfield et al. (2013), are the increasing customer expectations, managing supplier-customer interface, increasing savings pressure, soaring risks and disruptions. In order to operate a world class supply chain management, companies will have to have strong cross functional coordination and assertive decision making, implying a superior capability for identifying and correctly assessing trade-offs to explore opportunities, emerging or not, depending on the competitive position of each company.

For that to happen, a great management is paramount. *If you can't measure it, you can't manage it.* And to measure it, you need an ever evolving information flow. Nowadays, each and every link of the supply chain almost certainly has one or more information systems that use software. Those systems can be assessed and the all the information is connected and analyzed together. But before that, the information input must be accurate and comprehensive. With a good information collection process in place, it is possible to identify and create more assertive action plans to structuring the production network, supplier selection and refine the capacity planning.

Looking exclusively to the supply side by mapping the existing suppliers and ranking them by capacity, the supply chain manager can create a more effective planning to assure the highest quality and lowest price. He can also propose the identification and developing of new suppliers that can assure quality supply and low cost in an increasing volatile environment. The company can also anticipate competitors in finding new suppliers and commercial partners creating a strategic competitive advantage.

The strategic pillar of this chapter is based on the Supply-Side methodology (discussed in the book *Information Systems Management for Effective Logistics and Supply Chains*, IGI Global, 2016) that uses information as a source of competitive advantage. The methodology classifies suppliers in a given geography according to the measure most relevant to the trade question in question (ie, capacity). Just as in this original methodology, we focus here, exclusively, on the supply side. Applying the Supply-Side methodology, the manager could map which suppliers are able to deliver the products and services in the required quantities and quality required, and in which regions they are.

Starting from the base already established by the broad methodology that involved the construction of the idea discussed in the Supply-Side methodology, in this chapter we will explore other analytical possibilities and possible multiple ways of seeing the same question. In order to fulfill this objective, we first carry out a review of the mentioned methodological approach proposing a new approach, but anchored in the basic precepts of the original methodology.

The new analytical logic will be based on the idea of grouping, where through the clusters analysis technique, within the context of data mining, of the companies with high capacity of supply of goods

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