

Chapter 25

Choosing Locations for Technology and Innovation Support Centers: Methodological Proposal and Brazilian Studies

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ABSTRACT

This chapter discusses the structuring of problems of location of Technology and Innovation Support Centers (TISC) through multicriteria analyses to identify factors of demand and supply of these services. The methodology uses quantitative and qualitative elements, establishing a sequence of steps that include a variety of aspects ranging from criteria preferences to global valuation of the model. Multicriteria analysis was applied to the choice of geographic locations for Brazilian Technology Centers, allowing for the identification of the most suitable regions for the creation of technology centers and revealing particular characteristics of the dynamics of such services in the regions in question.

INTRODUCTION

Many developing countries have made considerable efforts to reduce technological disadvantages that prevent them from implementing innovations to establish high quality standards and internalize core activities of technical progress (World Bank, 2008). These efforts have received government incentives for innovation, and involved numerous companies that have come to recognize the well-nigh inseparable link between innovation and competitiveness. These companies require a series of technological services (assays, calibration, standardization, inspection, new product development, etc.) of a strongly horizontal nature and with multiplying effects on the economy. Moreover, the supply of such services can contribute to consolidate more prosperous and industrially advanced regions, reinforcing the dynamic effects of technological demand (Feller, Ailes & Roessner, 2002; Kakuta & Luz, 2001).

The supply of technology support services plays a dynamizing role in an economy, favoring the innovation process by overcoming technical obstacles than hinder market action. Many Technology and Innovation Support Centers (TISCs) provide a technical basis for specialized knowledge that reinforces innovation generated in companies. The Danish TISCs are a well known example—a set of nine large networking laboratories whose activities are broadly cross-sectional and whose research and development efforts extend far beyond the mere supply of technical services (Andersen et al., 2009). The proximity of a TISC which can provide technological resources to a large number of companies can be considered an element that contributes to cost reductions through transaction economies (Williamson, 1989), and whose main characteristic is that of facilitating the acquisition of services. The presence of a TISC can also compensate for competencies companies lack, enabling them to concentrate on their core business, such as the production process itself.

Above and beyond business interests, a TISC is also important for other economic and government agents (Zucker, Darby & Armstrong, 1998, 2002). Professors and researchers could use TISC laboratory facilities for research, and a TISC could be an important tool for politicians to support and boost regional development. However, it should be noted that politics will not, *per se*, ensure the success of a TISC.

Brazilian experience indicates that purely bureaucratic government initiatives to establish Technology and Innovation Support Centers (TISCs) in regions that lack a preexisting industrial structure have failed. Among the factors that have most contributed to the many faulty choices for TISC locations is the lack of qualified human resources. Thus, when evaluating a location for a TISC, it is necessary to consider regions that have a relatively consolidated education, productive and technological structure, and will therefore benefit more from it.

This chapter starts from the above premises, using elements of demand and supply of technology services to structure problems relating to the location of TISCs. Multicriteria analysis has not been widely used in the literature on innovation management. However, methods of multicriteria analysis can contribute considerably to decision making about technology choices by public institutions. The use of methods such as the one proposed here is aimed at finding solutions for the location of TISCs that are less subject to the inevitable political pressures that such decisions engender.

The starting point for this work is the need to identify cities in the Central West (CW), North (N), and Northeast (NE) regions of Brazil with the best conditions to establish a TISC in the area of materials, limited to one center per region. This project was funded by FINEP (Study and Project Financing Agency), which is linked to the Brazilian Ministry of Science and Technology. Materials Technology Centers (MTC) contribute to the core competencies and innovations of lo-

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