

Chapter 13

Science Parks and Their Role in the Innovation Process: A Literature Review for the Analysis of Science Parks as Catalysts of Organizational Networks

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ABSTRACT

This chapter investigates the contributions of Science Parks (SPs) to innovation. In particular, we discuss whether the literature on innovation and SPs consider the fact that SPs can be catalysts of Organizational Networks (ONs). We consider that ONs are elements of knowledge production and can contribute to the development of core competencies to pursue dynamic innovation and sustainable competitive advantage. This chapter is based on a literature review of scientific papers and theses which are included in indexed databases related to SPs and their contributions to innovation. Preliminary analysis of the literature shows that SPs have been mostly studied as part of innovation systems, and that less attention has been given to the role of ONs and SPs in the processes of technological learning and innovation.

INTRODUCTION

In accordance with the International Association of Science Parks (2002), a Science Park is an organisation managed by specialised professionals, whose main aim is to increase the wealth of its community by promoting a culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions. To enable these goals to be met, a Science Park stimulates and manages the flow of knowledge and technology amongst universities, R&D institutions, companies and markets; it facilitates the creation and growth of innovation-based companies through incubation and spin-off processes; and provides other value-added services together with high quality space and facilities.

The SPs literature considers those institutions as ways of organizing enterprises in a territory that foster innovative activities (Squicciarini, 2008). Innovation in SPs is related to positive externalities that result from geographical proximity. Nevertheless, the fact that firms are close to other firms and universities in a Science Park does not necessarily mean that interactions among them will occur. Furthermore, the fact that the Science Park promotes the development of organizational networks among its firms does not mean that firms located in the Park will develop relations only with other firms in the Park. Rather, SPs should be viewed as spaces that not only allow for the creation of organizational networks but also strengthen organizational networks that existed before firms moved to the Park. As organizational networks have a role in promoting and organizing interactions between firms and institutions, they should be considered in studies of SPs, especially because organizational proximity may be as, or even more, important than geographical proximity in the development of innovations.

Networks can be formed by clusters of firms in the same territory or in different territories. Despite the variety of concepts and low level of accuracy of studies about clusters of firms (Hasenclever &

Zissimos, 2006), all the authors who have analyzed these agglomerations have pointed to the benefits that companies may obtain. Proximity provides economies of scale, possibilities for development of production chains, accumulation of knowledge and innovative activities, reduces transport costs and, in the case of urban areas, provides access to sophisticated clients. We define proximity not only as geographical proximity but also as relational proximity. Therefore, the research question addressed in this chapter is the extent to which SPs, as spaces that can combine benefits related to geographical and relational proximity, contribute to the generation and strengthening of organizational networks for innovation and how these networks deal with the processes of creation, dissemination and appropriation of knowledge in order to develop sustainable competitive advantage.

This subject is directly related to the theme of innovation, since in the current techno-economic paradigm the ability to create and sustain competitive advantages in a particular territory is related to learning ability, the quality of products and processes, productivity, and companies' capacity for technological development. In this paradigm, companies seek to meet requirements for flexibility and speed by involving themselves in networks. Studies of local development highlight a variety of forms of association and network integration of these networks in global markets. Networks are key elements for the creation and diffusion of knowledge that underlies the generation of innovations.

The processes of creation, dissemination and appropriation of knowledge are enhanced when organizations are linked in a network and develop mechanisms for governance and management aimed at coping with the knowledge assets generated and traded in their context. After a review of the literature on business networks, Britto (2002) identifies three possible types of network: subcontracting networks, where a company outsources part of its activities; Marshallian industrial districts, where the interaction between

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