



An analysis of industrial districts and Triple Helix of innovation – a regional development experience in the south of the state of Rio de Janeiro

Q1 Marcelo Amaral*, Raphael Lima, Gustavo da Silva Motta, Mariana Fagundes, Marília Schocair

Universidade Federal Fluminense, Niterói, Rio de Janeiro, Brazil

Received 27 September 2016; accepted 27 July 2017

Scientific Editor: Felipe Borini

Abstract

This work consolidates a research effort to analyze 70 years of economic development in the region of the Paraíba do Sul River, in the south of the state of Rio de Janeiro, Brazil. The paper follows the trajectory of the leader company, steelmaker Companhia Siderúrgica Nacional (CSN), and its relations with other local actors, such as government and universities. The research question investigates if the steel market is still the company's core business and its evolution in the competitive global production network. This work introduces a different exploratory approach, analyzing productive networks using an industrial district typology and the linkages based on the Triple Helix of university–industry–government. The literature review and case study show the first transition, after the privatization process in the nineties, transforming a state-owned company with a focus in the national market into a transnational corporation with business on four continents. The second transition, from the steel market to a globally integrated production chain of mining and steel is underway. The region's configuration migrated from a company town in a state-centered model to a central-radial arrangement. The second migration to a satellite platform is in progress. Regarding technology development, the company's strategy changed from in-house R&D to buying technology. There is a recent effort to recreate interaction space with universities. © 2017 Departamento de Administração, Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo – FEA/USP. Published by Elsevier Editora Ltda. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Keywords: CSN; Privatization; Regional economic development; Innovation management; Triple Helix; Production networks

Introduction

Companhia Siderúrgica Nacional (CSN) was incorporated by the Brazilian government during the Second World War as a symbol of the country's industrialization process in the twentieth century. Founded on April 9, 1941 by a decree of Brazilian dictator Getúlio Vargas, CSN started its operations on October 1, 1946, at a site bordering the Paraíba do Sul River in the current city of Volta Redonda, in the south of the state of Rio de Janeiro. Initially, the company produced coke, cast pig iron, and long products (Bedê, 2004; Lima, 2010).

The decision to build the mill in the region was related to its equidistance from the leading consumer centers in the country (Rio de Janeiro and São Paulo), concentrating half of Brazil's GDP. Volta Redonda was a living laboratory from the Vargas period (1930–1945), where the government experimented with theories about driving the country's economic development.

The company, over the past 70 years, has attracted many suppliers and service providers to the region. Comprehensive services and educational sectors have been developed to provide trained people and expertise. These create a dynamic of regional development (Lima, 2010). The privatization process in the nineties and the new private management redirected the company's strategy and reconfigured the set of relationships along the production chains (Santos, 2010; Lima, 2010; Fagundes, Garcia, Motta, & Armond-de-Melo, 2014; Fagundes, Ferreira, Motta, & Leal Junior, 2016). Some works have identified a loss in the regional development dynamic (Ferreira, 2012; Monteiro & Lima, 2015). Others have indicated the maturing process of

* Corresponding author.

E-mail: mgamaral@gmail.com (M. Amaral).

Peer Review under the responsibility of Departamento de Administração, Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo – FEA/USP.

<http://dx.doi.org/10.1016/j.rai.2017.07.005>

1809-2039/© 2017 Departamento de Administração, Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo – FEA/USP. Published by Elsevier Editora Ltda. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Brazilian capitalism and the transformation of CSN into a global player (Amaral, Motta, Lima, Fagundes, & Schocair, 2016).

Thus, the object of this paper is to analyze the economic development of the Middle Paraíba do Sul Valley Region (MPR-RJ, an abbreviation created by Ferreira, 2012). There are many ways to do that, but it was chosen to discuss the trajectory of the key company. Other works have made a similar effort, looking at the region (Amaral, Ferreira, & Teodoro, 2011; Ferreira, 2012; Lima, 2010) and aspects of CSN's trajectory (Amaral et al., 2016; Bedê, 2004; Fagundes et al., 2014, 2016; Santos, 2010). This work introduces a different approach, analyzing productive networks (Markusen, 1988, 1995) and Triple Helix (3H) linkages (Etzkowitz & Leydesdorff, 2000) and discussing innovation and competitiveness. The analysis of the period helps understand the dynamics of development through the relationship with stakeholders' spheres of academia, industry and government, and their effort to compete in the international arena.

The original research question was to understand if the steel business is still the core business of CSN and what the company's position is in the global production network and steel market. This question is relevant per se and leads to investigation of the company's and region's evolution over time. The second part of the study is related to CSN's efforts in research and development (R&D), as a way to break with technology dependence in an emerging country and be competitive on the global stage.

This work does not have a specific hypothesis or assumption. Instead, it provides a general overview of the company's trajectory, based on exploratory research approach supported by theories such as networks of production and 3H. The paper has seven parts: introduction, literature review, a brief presentation of CSN's trajectory, statements of people from the university and government in the region, discussion, and final comments.

Theoretical basis

This item presents concepts to analyze the company's and region's trajectory.

Production networks, industrial districts, and regional economic development

The international integration in the nineteenth century can be considered superficial, based on transactions by independent companies. In the twentieth century, accelerated integration through transactional production networks, distributed in complex geographic areas (Dickens, 2011). More than that, in the past 35 years, a new techno-economic paradigm has emerged in the industrialized economies due to the enhancement of the knowledge base, particularly the diffusion of information and communication technologies (ICT) (Harvey, 1992).

The relations of production undergo constant change, caused by cultural, environmental, political and social influences. These changes create a climate of uncertainty for producers, governments, and consumers. The impact on the business environment is the search for strategies to sustain business in an increasingly competitive, comprehensive and demanding market (Dicken, 2011).

Global production networks are complex structures with various links that form multidimensional multilayered lattices. Networks benefit from ICTs and advances in logistics systems to strengthen time/space relations on global, national and regional/local scales. It can happen dependently or independently one from another (Dicken, 2011). The organizational challenge is how to remain competitive in a business environment influenced by the internationalization of information, products and services while also improving the workforce and focusing on profitable investments (Lima, 2010).

The developed economies are places where the phenomenon of intensified competitiveness can be better observed because labor is relatively scarce and expensive (low birth rates combined with high skills), generating high productivity (Porter, 1998). Regarding developing economies, recently recognized as world powers, they have different competitive levels. They have a large low-cost workforce with reasonable qualifications that is relatively idle. The contrast in productivity and costs between economies and regions are key factors that attract and maintain companies in emerging countries. It is relatively easy to find places to build industrial plants with government subsidies and lower operating costs. This scenario is part of the trend for mobility of businesses and investments from developed economies to emerging ones (Markusen, 1995).

A particular challenge to the companies created or relocated to emerging regions is how to stay competitive. With improvement of local productivity and income, there is a consequent increase in costs, which creates a risk of capital migration to new emerging regions. As an alternative, national and subnational governments are investing in the concept of improving the "local climate for investment", causing economists, business people, geographers and planners to seek alternatives to increase attractiveness.

These trends attract the attention of researchers to the field of "regional economic development". Researchers from sociology, economics, geography and history have proposed several firm agglomeration concepts, such as Marshallian Districts, or its Italian variant (Becattini, 2002) or American variant (Saxenian, 2006); industrial clusters (Porter, 1998); and local productive arrangements or local productive and innovative arrangements and systems (Lastres & Cassiolato, 2005). One relevant concept is the industrial district (Becattini, Bellandi, & De Propriis, 2011), defined as "...an area spatially delimited, with a new direction of economic activity and export specialization defined, it can be related to the natural resource base or certain types of industry or services" (Markusen, 1995, p. 1). This author also proposed a typology, summarized in Table 1, to analyze the phenomenon.

A company town can be considered a particular case of an industrial district. It is a "mini-city" with a set of community facilities like houses, buildings, schools, hospitals and recreational areas, in short, a closed urban nucleus belonging to a company, which exercises control of people's inflows and outflows. These phenomena first appeared in Europe and the USA starting in the late nineteenth century, following the growth of production scales in modern capitalism, with concentration of capital and labor. These resulted in reconstruction of urban

Download English Version:

<https://daneshyari.com/en/article/7429556>

Download Persian Version:

<https://daneshyari.com/article/7429556>

[Daneshyari.com](https://daneshyari.com)