Chapter 32

Successful Integration of Knowledge for Innovation:
A Case Study of Opportunities for Product Development Partnerships in Brazil

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ABSTRACT

The challenges of the new century have put emerging countries center stage in the global economy. Public health is a priority for governments the world over and Brazil is one of them. Policies prioritizing essential medications like Ministry of Health Directive 1284 indicate existing trends and potential opportunities for investments in the Brazilian pharmaceuticals production chain. This chapter gives an overview of Product Development Partnerships in Brazil as part of a government incentive policy for the Brazilian pharmaceutical sector. The authors propose a methodology to prioritize the best choice among the 87 products listed as strategic by the Brazilian MoH. The proposed methodology indicates 11 products with high potential for production in Brazil and opportunities for the country's private sector.

INTRODUCTION

The twenty-first century is taking shape as the era of the information revolution and the expansion of knowledge, with intellectual capital playing a key role in the economies and business activities of nations. One crucial ingredient for competitiveness, and thence economic development, is technology. In technology-intensive areas like the pharmaceutical, aerospace and telecommunication industries, as well as others with equal weight and impact, knowledge has become the most important asset (Lastres & Sarita, 1999).

However, the issues and problems affecting public health are considerable and need to be tackled using a multidisciplinary approach. They should be addressed and analyzed from the perspective of the real conditions in each culture, developed using research, development and innovation (RD&I), and should harness cooperation networks in order to spread the knowledge generated to foster local development and effectively attain innovation. Any application of information science invariably involves highly structured networks. In view of the fact that the processes involved in the research, development and innovation of drugs are increasingly complex, the first step is to set up interdisciplinary teams to obtain a systemic view of the issues at stake (Quoniam & Lucien, 2010). This is knowledge-intensive work, and requires combining information science with competitive intelligence, the specific area of knowledge, and knowledge management.

By integrating knowledge in an interdisciplinary approach, the power of science, technology and innovation can be harnessed to leverage economic progress. However, the need to obtain full integration between the players in the national innovation system (NIS), namely academia, the private sector and governments, may represent a hurdle for developing countries. The involvement of these three players is crucial for the success of any effort to foster knowledge integration for innovation (Lundvall, 2010; Nelson, 1993).

The success of public policies designed to strengthen the NIS can better be understood as enhancing integration between academia, the private sector and government, because cooperation between universities, government research centers and funding agencies is so crucial. Meanwhile, it is in the interests of businesses to speed up the introduction of innovations to their production processes. Synergies of this kind can boost growth by developing national capabilities (Etzkowitz, 2002; Gadelha, Machado, Lima, & Baptista, 2011; Magalhães, Boechat, & Antunes, 2012).

Brazil is a country where research is pursued but whose NIS is still immature and where the coordination between some institutions is still very limited. In a technology economy, one critical success factor is the incorporation of science into business in a way that respects the features of each industry, as they each have different technology trajectories (Lundvall, 2010; Mytelka, 2000).

According to the International Monetary Fund's *World Economic Outlook Database* and Instituto Brasileiro de Geografia e Estatística (IBGE), Brazil is one of the emerging countries set to make the biggest impact internationally in its development and economic growth (Fundação Getúlio Vargas, 2011; IBGE, 2011). Its gross domestic product (GDP) grew 2.5-fold between 2006 and 2012, reaching around US$ 1.3 trillion. Despite the promise of this scenario, closer observation of its domestic consumption and development indicators reveals that the "family" of health-related items stands out in the Brazilian balance of trade for the deficit it recorded in 2013 of over US$ 6 billion. This sector includes drugs, medications, equipment and diagnostic materials for public health (Gadelha & Costa, 2007; Gadelha, Costa, & Maldonado, 2012a).

The quality of life of the Brazilian people is on the government's agenda. Its public health programs are designed to foster the healthy ageing of the population, with economic development being linked to improved health conditions fostering a sustainable lifestyle. Brazil is seeking to reduce its health sector deficit and to boost its technology RD&I, including a variety of initiatives and investments targeting academia, the private sector and government. These include a government effort to build technological competency in the production of drugs and medications back to the relative levels seen in the mid-1980s (Magalhaes, JL, Antunes, AMS, & Boechat, N, 2012a).

One of the key policies in this area is the Production Development Policy launched by the government in mid May 2008, which replaces the Industry, Technology and Foreign Trade Policy (PITCE, acronym

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