

Behind the Finnish Innovation System

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Abstract: One of the most successful national innovation systems in the world is that of Finland (European Center ICEG, 2011). Based on an exploratory methodological approach, 11 semi-structured interviews were conducted in the summer of 2014 with the main actors of the national innovation system of Finland. The results of this study allowed identifying the policies, strengths, and weaknesses as well as innovation management mechanisms in the Finnish model. In addition, this study allowed understanding the partnership between Finnish firms and stakeholders (universities, regional support organizations, technology transfer centers and other firms). The results of this study are likely to contribute to the development of a new theoretical framework. This study provides actionable insights to improve policy decisions related to fostering collaboration between the actors of the national innovation system. In short, this research will bring many contributions to the scientific community, business environment, and political environment.

Key words: national innovation system; innovation system; Finland model **JEL codes:** O38, O32

1. Introduction

In order to cope with international competition, firms must focus on an open innovation system. The interactions with external actors increase their innovative capacity. Knowledge exchanges with external actors bring new ideas to firms for the development of new products, new markets, new manufacturing processes, and new marketing techniques (Amara & Landry, 2005; Bell & Zaheer, 2007). For many years, governments have taken many policy decisions to stimulate business innovation (Renaud & Boucher, 2012). They put, at the disposal of firms, incentive programs for innovation, tax credits, funding and support organizations to encourage the development of a national innovation system. Despite these government efforts, the rapprochement with external actors and manufacturing firms remains low in Quebec (Amara & Landry, 2005). Based on the Triple Helix model, some countries succeed, however, in creating a synergy between the business milieu, the academia community, and government institutions. One of the most efficient national innovation systems in the world is that of Finland (European Center ICEG, 2011). According to the World Bank¹ in 2012, the ratio of intramural research and development on the gross domestic product of Finland was 3.55% compared to 1.75% for the world average, putting Finland in second place of the world leaders in research and development, just after Israel. Preceded by Sweden, Finland holds the second position out of 143 countries in 2012 of the Knowledge Economy Index (KEI)

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¹ http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS/countries?order=wbapi_data_value_2010+wbapi_data_value&sort= desc (site consulted on April 17th 2015).

which reflects the economic development of a country towards a knowledge economy, according to the World Bank². Finland offers an exceptional national innovation system stimulating a rapprochement with businesses and stakeholders such as regional support organizations, universities, and technology transfer centers. A better understanding of their national innovation system can not only enable to understand the mechanisms of innovation management of the Finnish model, but also to identify their best practices.

2. Methodology

Based on an exploratory methodological approach, 10 semi-structured interviews were conducted in the summer of 2014 with managers of support organizations that represent one of the major actors in the national Finnish innovation system. Furthermore, an eleventh interview was conducted with a university professor who was involved in the development of the policies of this innovation system. The results of this study have identified the role of the Finnish government in their innovation system. Policies and innovation support strategies and how development priorities are managed to meet business concerns will be discussed. The strengths and weaknesses of the Finnish innovation model will be identified, which will provide food for thought. Many support organizations have been established to ensure fluidity between the business milieu, the academia community, and the government.

3. Theoretical Approach

First, it is important to understand the complex concept of national innovation and where it comes from. One of the first authors who discussed the importance of exchanges between firms in the innovation process is Joseph Schumpeter (1934). He first made the distinction between invention and innovation concepts. Schumpeter defined an invention as an object that is created for the first time, while innovation is defined as a realization of new combinations for the commercial application of an invention. A few years later, Schmookler (1966) emphasized the role of customers in the innovation process because they represent an important source of information for innovation. Customers inform firms of their needs, allowing the development of new products, especially in an innovation process driven by the market "Market Pull". Nelson (1984) has, meanwhile, approached the innovation process driven by technology "Technology Push" which demonstrates the growing importance of technology providers in the innovation process. The concept of national innovation system appeared in the late 1980s (Niosi, 2005). Paul Krugman (1991) and Michael Porter (1998, 2000) studied the interactions between the various players in the innovation system. Derived from the Triple Helix model, national innovation systems have three main actors: firms, universities, and government agencies to support innovation. Support agencies are intended to facilitate the transfer of knowledge from the research community to the business community. The Finnish Government has set up an innovation model that seems efficient (European Center ICEG, 2011), which is worth studying. Let us first consider the context of Finland.

4. Context of Finland

With about 5.4 million inhabitants, Finland is a northern country that was influenced by Sweden and Russia. In fact, Finland was under the influence of the Russian tsar for nearly a century until the early 1900s. According to

² http://siteresources.worldbank.org/INTUNIKAM/Resources/2012.pdf (site consulted on April 17th 2015).

the respondents, their culture was greatly influenced by them. Finns innovate to improve their society; they care about the community. Ironically, they were technologically behind, due to the Russian occupation. It is only since the 1960s that the Finns have focused on innovation, and research and development (R&D) in order to catch up with the world (Lemola, 2003). Inspired by the Brooks reports (1971) of the OECD on the development of science and technology, the Finnish government established in 1983 the National Technology Agency (Tekes). Tekes has become an important actor of the Finnish innovation system for the planning and implementation of the development of innovation and research. The roles of Tekes support the public funding of R&D in corporations and in research institutes. There are other organizations which support commercialization, sales, marketing, and exports of innovations. During the 1980s and 1990s, Finland experienced big changes related to the management of innovation and R&D. Finland participated with the OECD in the development of a new concept: a society orientated towards knowledge. Many of these changes are due to the Nokia company, a leading mobile phone manufacturer in 1998. Nokia maintained its position as world leader until 2011 when Samsung took the lead instead. Nokia had bet on technology to innovate in order to offer products to increasingly demanding customers. The company had inspired many Finnish firms and showed the importance of investing in R&D. According to many respondents, the high percentage of national investments in R&D is mainly due to Nokia's investments. Today, inspired by Apple, Nokia has changed its strategic direction by focusing on a pull process of innovation rather than an innovation push process of technology. The 2008 crisis led Finland to revise its strategies related to innovation management. The government therefore established in 2009 the National Innovation Strategy of Finland and in 2010, the Policy Manual of Research and Innovation 2011-2015. Finland has also reformed SHOKs which are organizations aimed at bringing together research and business communities. The government also amended the law on the legal status of universities. Since January 1st 2010, Finnish universities are autonomous and separate organizations from the state.

5. Role of the Finnish Government

The Finnish government has made political decisions to establish an innovation system that facilitates collaboration between the business and research communities. In addition to its role of promoting collaboration among innovation actors, the Finnish government encourages investment in R&D activities. It also attempts to ensure the well-being of society in accordance with Finnish culture.

The regional dimension appears, however, much less important than the national dimension. Respondents were asked: "How does the Finnish innovation system make room for adaptation in each region or is it a global management?". Respondents noted that the Finnish government supported the innovation system with a global orientation for the country rather than with a regional focus. Contrary to expectations, the Finnish government makes decisions with a "top down" orientation in the country's strategic development axes. Most regional actors understand well that any one region of Finland would be too small to survive on its own. This explains their good collaboration. The Finnish government analyzes the various sectors and supports those with potential for the development of Finland. On the other hand, the government offers a bottom-up approach to firms so they can propose new development axes. Thus, large part of the budget is already determined for five areas of development: Energy and the environment CLEEN, Finnish Bioeconomy Cluster FIBIC, Metal products and mechanical engineering FIMECC, Health and well-being SalWe, and the Information and communication industry and services DIGILE. The other part of the budget is dedicated to the development of axes that will emerge directly

from the business milieu such as environmental innovations in the field of construction with Built environment innovations RYM³.

6. System Actors

To facilitate the reconciliation between the research community and the business community, the Finnish government has established several government agencies with different, but complementary, objectives in the Finnish innovation system: Sitra, VTT, Tekes, Shoks, Finpro, Finnvera, and other organizations. Formally or informally, these actors are mandated to support innovation and to facilitate communication between the research community and the business community, both inside and outside the country. Some actors including Sitra and VTT support more basic research while others are focused on applied research. The Tekes organization is a central actor in the innovation system that coordinates many R&D activities in Finland and which funds much of the budgets of Shoks agencies. These involve firms directly in their innovation process. Finpro encourages the exchange of knowledge to support the globalization of Finnish companies. Finally, the Finnvera agency is a government owned bank which supports innovation, growth, and globalization of Finnish companies by financing their projects.

7. Strengths of the Finnish Innovation Model

Respondents identified many strengths of the Finnish innovation model. The cooperation spirit of the Finnish community is one of the main factors that explain the success of their model. Largely due to their culture, the Finns have the wish to work together to improve their society. Besides, many respondents emphasized that the new political parties that take power rarely cancel decisions of the former government. They argue that to reverse these decisions would be frowned upon by the Finnish people because the former government made them to improve the community, and not in a partisan way. In addition, the strength of the Finnish innovation model relies heavily on communication and trust between the actors. The main actors of the Finnish innovation system know each other and meet regularly. Several respondents noted that the Finns are people of their word and that it is possible to innovate together. Proactivity was also mentioned during the interviews. The actors of the Finnish innovation model aim to develop a market together. They are trying to take a pull innovation approach and not a push technology approach. Their whole innovation model took this new direction in 2010. The following year, the government had already estimated the new model. Some respondents noted that Finland invests in the education system so as to make education free. These investments are the basis of their innovation system, providing knowledge for new ideas. However, one respondent argues that free education brings a problem because students take longer to complete their studies, delaying the availability of their knowledge on the market. Inspired by Nokia, the involvement of the private sector in the financing of research has also emerged as an important factor for the innovation system. This involvement allows researchers to work on current problems and it shortens the time between the creation of new knowledge and applying this new knowledge in firms. The Finnish innovation model has many strengths, but also has certain weaknesses that have been identified.

³ http://www.shok.fi/en/ (site consulted on April 20th 2015)

8. Weaknesses of the Finnish Innovation Model

Although the Finnish innovation model is considered one of the world's best innovation systems, respondents identified some weaknesses. The lack of expertise in marketing within the country emerged from several interviews. According to respondents, the Finns have developed little expertise in marketing. There are some problems with the commercialization stage such as a lack of venture capital to finance innovation. The government supports more start-up businesses than large firms. The limited size of the Finnish market also emerged as a limit to the Finnish innovation system. Several respondents mentioned that 5.4 million inhabitants were too small for a market. They argue that their innovation system should include external stakeholders in Finland, which increases difficulties, particularly in connection with cultural differences. Although Nokia has shown the way forward during many years, the innovation system was largely based on the leading position that Nokia had among Finnish firms. Now that Nokia is undergoing difficulties, the whole innovation system is slowing down. Some respondents mentioned that Finland should diversify these industries and develop new niches of excellence. Finally, the interviews revealed a weakness related to the lack of communication between different ministries. Indeed, the Finnish innovation system is based on several ministries of which two have a more important role in the innovation system: the Ministry of Education, and the Ministry of Employment and Economy.

9. Recommendations

Currently, the main challenge is to move from an economy based on innovation pushed by technology to an economy based on innovation driven by the market. The actors of the Finnish innovation system must be tuned in to the market. Respondents thus made important recommendations to further enhance their system. They argue that the actors of the innovation system must innovate for Finland and not for themselves. It is important to innovate to improve society. The government must have a global vision. His decisions should be consistent with the trends and resources of Finland, using both a "top down" and "bottom up" approach. Several respondents also highlighted the importance of considering multiple perspectives. They suggest involving actors from various disciplines.

10. Conclusion

In summary, this study provides an understanding of how the partnership works between the various actors of the Finnish innovation system. These results provide insights to improve policy decisions linked to the stimulation of collaboration between the different actors of the innovation system. It is important to mention that the results of this research reflect the view of support agencies on their national innovation system. In future research, it would be relevant to study this innovation system from the business perspective and the academia perspective.

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