Model innovation system for economical development using entrepreneurship education

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Abstract

A model innovative system is designed to build communication networks between the various factors involved in the innovation process. The framework combines two dynamic trajectories that affect innovation models in Europe– model from Finland and the model from Spain – and builds a new model of innovation for Romania, Centrum Region. Commercialization activities are important mechanisms through which universities directly influence national and regional economic development. Entrepreneurship education programmes have tended to develop in parallel to such “entrepreneurial university” initiatives, rather than in intentional alignment with them. Innovation has become a policy priority in many countries supported by national strategies and large budgets. Subsequently, innovation has taken on a more central role and many governments have establishes dedicated ministries, departments and offices to support the study, incorporation and implementation of innovation policy Moica, 2012. This is reflected in the research literature as well, where the analysis of the “entrepreneurial university” and studies of entrepreneurship education have little overlap.

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1. Introduction

According to the "European Innovation Scoreboard, the Central Region of Romania is positioned well below the European average, while in Spain, Bask Country Region is located near the European average, in general terms of innovation, and on the leaders in Europe we find Finland. Given these positions, the paper has defined the objective of determining a model of technological innovation for Romania, which is based on the analysis of different regional innovation systems in Finland and Spain.

In Europe, entrepreneurship education is reinforced as a priority in the European Union’s recent Europe 2020 strategy, which calls on member states to “ensure a supply of science, mats, and engineering graduates and to focus school curricula on creativity, innovation, and entrepreneurship” European Commission 2010, p. 13. Entrepreneurship education seeks to equip learners with “the knowledge, skills and competencies to exploit opportunities” in an increasingly knowledge-intensive economy Hynes and Richardson 2007, p.734.

Given these positions, the paper has defined the objective of determining a model of innovation for economical development using entrepreneurship education, which is based on the analysis of different regional innovation systems in Finland and Spain.

2. The Case

2.1. Entrepreneurship development to support innovation

Entrepreneurship is a crucial engine for innovation, competitiveness, job creation and economic growth. Also promote the transformation of innovative ideas into successful businesses in high-tech sectors and can unlock the personal potential of individuals. Thus, in recent years, researchers have shown that smaller and new companies are the main providers of new jobs and not large ones, because they are more flexible and responsive to market demands. Finally, innovation is adopted by the company through new business initiatives leading to increasing competition and forcing companies to respond by choosing to innovate or to increase their efficiency.

2.2. Stimulating entrepreneurship

Education plays a central role in the development of qualifications and skills required (necessary), aimed at shaping an entrepreneurial society. In order to transform a business idea into a successful company is necessary to combine creativity and innovation with a solid business education. Thus, a measure create to support integration of entrepreneurship education in school curricula at all levels so that all young people to learn what it really means business activity, to acquire entrepreneurial skills and business and decide whether this is an appropriate career for them. The development of such skills must begin in primary school and be supported throughout the period of education. Thus, education for entrepreneurship to foster the development of a variety of useful skills and personality traits: curiosity, openness to the ongoing study, pro-active, confident and creative. Students must learn how to build and develop a company, and how to get used to the idea that a company is a legal instrument for trading ideas and not a personal commitment for life.

2.3. History of National Innovation System

It is common today to look at science and technology as a research or innovation system. This system is said to be composed of four main elements or sectors – universities, governments, industry and non-profit – and
their interrelationships. The concepts of the Triple Helix and National Innovation System have become popular frameworks in the literature for discussing such a system approach.

Where did the frameworks come from? C. Freeman and B.-A. Lundvall, as prolific writers on National Innovation System, have suggested that F. List Das Nationale System des Politischen Okonomie, 1841 was a pioneer of the approach. However, one would have difficulty documenting a tradition of theoretical research on the system approach arising out of List’s work. It is one thing to resuscitate a forgotten author who held “similar” ideas over 150 years ago, and another to document the rise of a research tradition from that author. Positioning List as a spiritual forefather is rather like looking for a symbolic figure as a father figure after the fact. List is really an isolated case. The development of the National Innovation System concept owes to something else Benoît G., 2009.

In a recent paper, Godin has documented what the system approach in science studies owes to national policy and the discussions conducted on this matter in industrialized countries beginning in the early 1960s, above all at the OECD. Over the same period, the system approach found its way into official statistics, which helped solidify the concept Godin, 2009. However, we can go further back in time. And here national science policy is really at the heart of the matter again. The experience of World War I led to mobilization of the totality of scientific resources on a nationwide basis, what the American historian A. H. Dupree called the “great estates” of science in the country Dupree, 1957, and to the demand to link universities (science) with industry (applications).

In Great Britain, this started with efforts by the Board of Education (1915) to strengthen and redirect educational resources toward industry’s needs. The belief in shortages of research scientists, particularly scientists with expertise in both pure and applied science, and specifically industrial scientists, gave rise to the Department of Scientific and Industrial Research.

While the British Department became an active supporter of industrial cooperative organizations, the United States explicitly developed a different approach. In 1916, the US National Academy of Science offered to bring into cooperation government, education, industry and other organizations for the war effort. A National Research Council was to serve as vehicle to this end. It would rely primarily on private sources, among them the great foundations Kevles, 1971.

2.4. The proposed innovation system for economic development using entrepreneurship education

This paper proposes one model of innovation system that will sustain the entrepreneurial education in order to have economical development.

The evolution of entrepreneurship education at “Petru Maior” University (UPM) should be diverged somewhat from the plans and rhetoric expressed by the university partners, when the vision of UPM with a broad remit that extended tangibly into the commercialisation arena was laid out. The model of innovation propose a collaboration that would be an enabling body—promoting the learning and practice of enterprise and the exploitation of our intellectual property and that the aim was to create an nationally renowned centre of excellence in Targu Mures, to study and understand enterprise and to stimulate entrepreneurial activity so that the region will be known throughout the world as a centre for technology transfer at the forefront of knowledge. The centre’s first business plan called for it to establish entrepreneurship education programmes for students and academic entrepreneurs (professors and staff researchers, particularly bench scientists with the greatest potential to generate innovations and technologies with commercial potential), professional training programmer for aspiring entrepreneurs in the area business community, and a scholarly research agenda around enterprise.

The research method chosen was a deductive one based on developing a theory, a hypothesis-shaping their research to testing and validates the theory. The main objective of the paper is summarized as follows: Analyze
the innovation model from Spain, Finland and Romania and create a new model of innovation system for economic development using entrepreneurship education. In order to analyze the tree region, the procedure was performed using ANOVA Analysis of variation, which helps us to identify the significance of the existence of variations between the three regions analyzed, and also to see which of the variables differ from one another. Thus for analysis we considered the three regions as the three variables to be compared with each other. Analyzing the data, we can see that application WinSTAT calculated and defined subsets of variables with groups of data that differ significance of each other. If our analysis subsets are two in number, one of which contains VAR3 representing the Central Region and the second subset is composed of VAR1 and VAR2, namely the Basque regions and Etelä. The results of our analysis relate that the Finnish innovation system, considered the best in the world, is based on networking between government, academia and the private sector. Similar relationship we find in the innovation system from Spain. This results were the starting point for our new model of innovation presented below.

To build the model of innovation we opted for a scheme in which processes are present together with agencies, so that allows a clear view and easy for all elements. The model consists of the following components:

Fig.1. The "Perpetuum symbiotic" model of innovation proposed for Central Region

I. People are central to the model, as the engine of the whole system;
II. Basic processes of innovation are composed of three elements:
   - Assimilation and application of knowledge,
   - Dissemination and knowledge transfer;
   - Generation of knowledge;
III. The support of the innovation process, which facilitates and promotes innovation process, consisting of direct agents and agents such as companies and government support by the Structural Funds;
IV. Universities, companies and government agencies are the main generators of the innovation process, enabling them to generate knowledge chain movement;
V. The interaction between universities, companies and government agencies may be technical, commercial, social, financial and legal;

VI. Economic and social results are the output of the innovation system they eventually leading to economic and social grow;

VII. Regional networks, national and international link with other innovative regions in Romania, and the global innovation system.

The name of the model symbolizes the continuous movement of the innovation system (perpetual) of the elements; they depend and interact with each other in a perfect symbiosis.

It seeks the change of the solid boundaries and organizations are public and private companies, University and government agencies in a semi-permeable membrane, allowing easy movement between the innovation environment and internal processes Developed Research and Innovation.

The new system promotes innovation in order to meet the following characteristics:

- Focused on results in terms of sustainable development.
- Connectivity to ensure effective links between the different actors of the innovation process to achieve the desired results.
- Balance, provided for the proper development of each stage of the innovation process (application, transfer and generation).
- Open outward-oriented international environment, with a similar level of excellence as the other entities in the world.

The innovation should be assimilated in the region by the media as the educational, social, cultural, artistic, where people adopt and promote values such as creativity, risk taking, acceptance of diversity and openness to failure.

2.5. Future lines

Having a model innovation system or just being open to research or even receiving large amounts of funds this way does not guarantee strong economic development. The way these resources are used and industries that are consuming them are far more important. In order to achieve economic development using entrepreneurship education need not only to liberalize their financial and trade systems but also make sure these processes are followed by knowledge transfer. This is what the proposed model innovation system try to promote.

There is clearly a need to reconsider from first principles the role of entrepreneurship in the school, alongside the larger question of where the business school can best contribute to the university’s commercial engagement agenda.

3. Conclusion

This paper aims to provide a new technological innovation model for the Central Region Romania in order to improve the level of regional innovation. Research, development and innovation can be a key point of recovery from the crisis and building a sustainable economy, connected to the real priorities of the country.

This paper presents the model innovation system for economical development such as individuals and society that are the heart model as an engine of the whole system. Basic processes of innovation are formed in three stages: assimilation and application of knowledge, dissemination and knowledge transfer, knowledge generation. We also have a support system of the innovation process, which facilitates and promotes innovation process, consisting of companies such as direct agents and support as government agents and the Structural Funds. Other components are national and international networks perform a role model and liaison between other regions.
The technological innovation for the Central Region is designed to be a real map and dynamic model, open for present and future. The technological innovation of the Centre Region was developed based on a research that involves all relevant actors (local governments, small and medium business organizations' support, academia, research institutes and NGOs).

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