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Absorptive capacity and business model innovation as rapid development strategies for regional growth

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Abstract

Innovation remains a complex phenomenon and the task of managing it at the Regional Innovation Systems (RIS) architecture level is discussed herein, namely involving joint initiatives, close to organizational realities and their competitive advantages, up and beyond the uncertainty that surrounds Governmental R&D Investment (*GRI*) effectiveness, either due to misuse or ineffective, application of resources. Artificial Neural Networks (ANN) modelling was applied to the study of RIS structure, aiming to identify the 'hidden' mediating variables that may influence the overall effect of *GRI* on economic and employment growth. In general, Absorptive Capacity, is the most rapid and balanced development strategy for regions characterised by environments, which are adverse to change and innovation, and characterized by low industrialization and income levels.

Key words: regional innovation systems, R&D management, innovation process management, absorptive capacity.

JEL Classification: O32, O33, O38.

Resumen

La innovación sigue siendo un fenómeno de gran complejidad, particularmente cuando es gestionada a escala regional, inherente a la existencia de Sistemas Regionales de Innovación (SRI). La estructura de los SRI intenta optimizar el porfolio de recursos endógenos que forman parte de un territorio, encaminando la inversión a los activos con mejor relación 'riesgo-retorno'. La adopción de lógicas de cocreación, la innovación abierta y el reparto de riesgos, gestionan una mayor proximidad con el tejido económico local, la cual permite controlar la incertidumbre de la inversión pública en I&D (IPI) que resulta de la inoportuna o ineficaz afectación de los recursos financieros disponibles. La modelación de redes neuronales ha sido administrada al mapeo de la estructura de los SRI, identificando las variables mediadoras 'ocultas' que son susceptibles de influir en el

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impacto de la IPI sobre el crecimiento económico y la creación de empleo. En síntesis, los resultados del modelo empírico indican que la capacidad de absorción es la estrategia de desarrollo más equilibrada para territorios periféricos, adversos a la innovación y al progreso tecnológico, como aquellos que se caracterizan por una reducida industrialización y por un bajo valor acrecentado de los bienes y servicios prestados.
Palabras clave: sistemas regionales de innovación, gestión de I&D, gestión de procesos de innovación, capacidad de absorción.

Introduction

Our research herein was performed in order to contribute to the publications related to the improvement of innovation output, albeit when considering a large scale, namely the scale of regions, and not at the level of individual firms. We thus, with this study, discuss what changes can be made, at the regional level, in Europe, to Regional Innovation Systems (RIS), regarding the management of innovation based on knowledge, technology, and R&D, and with stakeholders that include higher education institutions, government, as well as individual firms, as regions seek to become more competitive. In a scenario of ever scarcer resources, in view of what has to be achieved with them, by both the public and private sectors, capital outlays must be aimed, where possible, at the most effective investments, where natural selection (Dawkins, 1989), left to its own devices, in an industrial setting, might not succeed. In reality, balanced ecosystems suffer when any even seemingly minor element is removed, and so we have developed a new process for research involving such complex systems, in which we combine Factor Analysis with Artificial Neural Networks (ANN) modelling. Policy makers will want to learn from successful ecosystems, in order to replicate them, but also to improve their current output capacities. To do this, the ingredients and subcomponents will have to be understood, in order to not risk spoiling the balance irrevocably.

The aim of this study then is to demonstrate empirically how a RIS is made up by a series of elements, each with different impacts at the macro or aggregate regional level. As an example, consider a luxury hotel resort in the middle of a centuries-old rainforest. Naturally, guests would not be happy to stumble upon snakes on a regular basis. So, senior management decides to eliminate the snakes, to take them out of the habitat entirely. Unfortunately, though the hotel guests are now happy, farmers in the region now complain that their crops are being damaged by an excess of rodents. So, cats are introduced into the habitat, to