Exploring the Reciprocal Relationship between Innovation, Internationalization, and Organizational Learning: A Complex System Model for Small Firms

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Abstract
The purpose of this study is to explore the relationship between innovation, internationalization, and organizational learning in small businesses. Emergent approaches go beyond the linear causality that has traditionally linked these concepts in previous research in favor of holistic, complex approaches that stress mutual or circular causality. Based on this approach, and after analyzing 285 interviews and 54 companies from various industries, the authors find that the three activities are reciprocally linked to each other, forming a complex system. The firms' evolution over a period of nine years also shows that, faced with various change elements, they evolved and adopted four kinds of configurations, characterized by low and high incremental and radical innovation, local and global internationalization, and adaptive and generative learning. The findings are relevant to scholars, managers, and government policymakers.

Innovation activities have been generally considered as a key source of company efficiency, increased market share and, in general, competitive advantage and revenues (Dibrell *et al.* 2008; Madrid *et al.* 2013). However, other studies (e.g. Boermans and Roelfsema 2015) did not find any relationship between innovation and performance. In this study, we emphasize that the concept of innovation is heterogeneous, and embraces different kinds of business initiatives that may involve completely different and sometimes opposite effects. In this study we classify innovation in four types. First, depending on the innovation area, we differentiate between product and process innovation; second, depending on the degree and type of product newness, we distinguish between incremental and radical innovation.

Previous studies have pointed out the risks involved in launching radical product innovations, given the difficulty for the buyers to understand it and evaluate their technology and potential benefits. These risks are higher among small and medium-sized enterprises, which have usually less human and financial resources, weaker financial structure and fewer financing options. These factors also make SMEs generally more vulnerable in times of crisis. This study focuses on a group of 61 Spanish SMEs from different industries. We conducted a series of interviews using a semi-structured questionnaire to the firms' managers in the period between 2005 and 2009, so before the financial crisis had fully hit the Spanish economy. Then we have analyzed the results of these companies throughout the downturn period, and until the moment of the present country's macroeconomic recovery.

Spain provides a particularly interesting case to examine the effects and business reactions to a recession, as it is one of the countries where it has been felt both more strongly and persistently. The global financial crisis which started in the US in 2008 came together in Spain with the burst of the real state bubble, the 2010 banking crisis, and soaring unemployment rates. GDP decreased 3.9% in 2009, and continued declining in 2011 (1%), 2012 (2.6%), and 2013 (1.7%). In 2014 and 2015 it grew by 1.4% and 3.2% respectively, but it still did not reach the 2008 level. The country also recorded one of the biggest increases of corporate insolvency filings, with more than 182% raise between 2008 and 2014. Insolvencies in this period amounted to 42.771, from which 91% were from companies with less than 100 employees, representing a 2% of companies in this category in 2008[1].

This study is exploratory and framed within an interpretative research paradigm with a mixed qualitative-quantitative method (Molloy *et al.*, 2011). The combination of qualitative and quantitative techniques may be especially powerful for accuracy and generalizability (Shah & Corley, 2006). The qualitative approach is used to obtain an in-depth holistic on the complex topic of innovation and its relationship with performance; that is to say, a more complete view of managers' opinions and experiences related to the investigation (Denscombe, 2007).

We employed the quantitative approach to measure the firm's innovation degree. In this sense, subjective measurements of innovation have been found to be superior to objective measures (Hughes, 2001). Thus, and in line with the definition by the Oslo Manual (OECD, 1997),[i] managers were asked to evaluate the extent to which they had launched new products, or improved significantly existing products (on a 0 to 10 Linkert scale), and the innovation was classified as incremental or radical. An equivalent question was used to evaluate the degree of process innovation.

Then, we obtained information on multidimensional performance measures of the companies since the moment of the interview and until the present time, both regarding economic and internationalization performance (exports). We relate the level and type of innovation to firm performance. Our results show that the success of radical product innovations is associated to two key factors: the firm's level of resources, and the degree of market orientation shown by the company during the development of its innovation.

Conclusions are offered regarding both companies' management and public policy.

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[1] (Instituto Nacional de Estadística, http:// www.ine.es/. Statistics represent corporate insolvency filings that include both liquidations and reorganizations).

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