Chapter 6

New Approach to Detect and Select Technology–Based Firms: Value Creation Factors in a Follower Technology Country

Pablo Garrido-Prada
Universidad Autónoma de Madrid, Spain

María Jesús Delgado-Rodríguez
Universidad Rey Juan Carlos, Spain

Desiderio Romero-Jordán
Universidad Rey Juan Carlos, Spain

ABSTRACT

Technology-based firms are a key driver for the growth potential of a country due to their capacity to introduce radical innovations and value into the economy. In this chapter, the authors propose a definition for technology-based firms based on strategies that makes possible to identify the companies with advanced use of technology (including knowledge) in all the sectors of the economy. This refined definition helps to identify this kind of companies and to orientate special public policies to foster their development. For follower countries in terms of technology and innovation, as it is the case of Spain, technology-based firms may be a significantly different collective compare with advanced technological countries. Thus, the authors propose a method to detect technology-based firms in not only high technology sector using a Technological Innovation Panel (PITEC) in Spain. This chapter confirms that there are technology-based firms in many activities outside the high technology sectors that can be of interest for public institution and investors.

DOI: 10.4018/978-1-5225-7937-3.ch006
INTRODUCTION

Over the last twenty-five years, Technology-based firms (TBFs) have attracted economists’ attention because they seem to combine two key requirements for company survival and growth: innovation through the transfer of scientific knowledge from the academic world to the market environment, and strategic positioning in new market niches (Autio & Yli-Renko, 1998; Coad & Reid, 2012; Coeurderoy & Murray, 2008; Colombo & Grilli, 2010; Granstrand, 1998; J. J. Wu & Atkinson, 2017; L.-Y. Wu & Wang, 2007).

The concept of competitiveness is increasingly related to knowledge (technology) transfer. At both macroeconomic and microeconomic levels, the transformation of knowledge into innovation seems to be the links that ensure economic and corporate growth. At a microeconomic level, competitiveness involves remaining in the market through processes, products, organisations or market practices that ensure a sustainable competitive edge over competitors. At a macroeconomic level, innovation can overcome the stationary periods and enhances international competitiveness.

It is widely accepted that a company cannot remain in a competitive market without being innovative. Thus, the capacity to transform knowledge into innovation is another resource for business to increase productivity and growth (Hall, Lotti, & Mairesse, 2009). Indeed, TBFs try to combine cutting-edge scientific knowledge and transform it into innovation. Similarly, TBFs are able to create and develop new market opportunities, based on new knowledge or technological platform. This kind of companies demand qualified jobs, connect high education centre with the market, and provide additional societal value (Autio, 2017). Hence, TBFs consolidation and study are essential from both, macro and micro-economic perspective (Groen, Cook, & Van der Sijde, 2015; L.-Y. Wu & Wang, 2007).

Nevertheless, it is not easy to define, and scope, TBFs since the term comprises companies of different nature, from a diversity of sectors, difficult to identify and quantify (Autio, 1997; Storey & Tether, 1998). The lack of a clear definition of TBFs is symptomatic that they are a heterogeneous group. This is partly solved by categorizing economic sectors (instead of companies), in relation to technology. The U.S. Bureau of Labor Statistics (BLS) classifies an industry as technology-based if its share of science, technology, engineering, and mathematics (STEM) workers is twice the national average. The Organization for Economic Co-operation and Development (OECD) categorizes the economic sectors in high, medium and low technology-based using the technological intensity concept (R&D expenditure over the sales volume of the enterprise). Then, researchers select TBFs in high technology sectors assuming high technological intensity of those companies (Groen et al., 2015; Li, Qian, & Qian, 2012; Onetti, Zucchella, Jones, & McDougall-Covin, 2012; Tsvetkova, Thill, & Strumsky, 2014).

Thus, even though technological intensity is defined at the enterprise level (the technological effort of the company), it is applied to the sector. In the case of follower countries in the fields of technology and innovation (such as developing countries, service-oriented countries or countries that develop other types of industries), this selection method implies accepting that TBFs are exceptions within the business structure of such countries. For example, a company that is dedicated to adapt new knowledge of artificial intelligence in new or innovative products for autonomous driving, would be classified outside high technology sector (according to NACE classification), and hence not detected as TBF.

However, for follower countries, to find a business collective that can recreate the same economic benefits as TBFs in advanced countries outside high tech sectors, can be a key factor for the country’s economy and development. Many moderate innovators countries allocate huge amounts of resources each year to reduce the technological lag, aimed at encouraging the creation and development of companies in the high-tech industries. Yet, is it possible to find companies that use technology or advanced tech-
Related Content

Stabilization and Liberalization in the Israeli Economy
www.igi-global.com/chapter/stabilization-and-liberalization-in-the-israeli-economy/143610?camid=4v1a

Trends of FDI and Production in Service Sectors: A Dynamic Panel Exercise with Indian Data
www.igi-global.com/chapter/trends-of-fdi-and-production-in-service-sectors/181147?camid=4v1a

The Role of Securitization Market in the Post-Crisis European Economic Recovery
www.igi-global.com/chapter/the-role-of-securitization-market-in-the-post-crisis-european-economic-recovery/143609?camid=4v1a

Unemployment Persistence, Risks of Skill Obsolescence, and Impacts on the Knowledge Economy in Arab Countries
www.igi-global.com/chapter/unemployment-persistence-risks-of-skill-obsolescence-and-impacts-on-the-knowledge-economy-in-arab-countries/97792?camid=4v1a