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## **The Effect of Internal and External Knowledge Sources on the Innovation Performance of Italian Manufacturing Firms**

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### **Abstract**

The Effect of Internal and External Knowledge Sources on the Innovation Performance of Italian Manufacturing Firms Name: Fábio de Oliveira Paula Affiliation: Pontifical Catholic University of Rio de Janeiro, Brazil Year of enrolment: 2014 Expected final date: March-2018 Email: fabioop@gmail.com Literature Review and Theoretical Arguments: Several studies relate internal sources of knowledge, mainly coming from internal R&D and human resources, and external sources of knowledge, mainly coming from strategic alliances and external technology acquisition, with innovation performance (Srivastava, Gnyawali & Hatfield, 2015; Wang & Libaers, 2016). Although there is extensive theory attesting that internal sources moderate positively the relationship between external sources and innovation performance, such as the "absorptive capacity" theory (Cohen & Levinthal, 1990), empirical studies in the field diverge, with some indicating that internal and external sources are complimentary (Bellamy, Ghosh, & Hora, 2014; Cassiman & Veugelers, 2006) and others indicating that they are substitutes (Hagedoorn & Wang, 2012). The innovation process is dependent on the environment of the firm, starting by the country. The accumulation of technological capabilities for innovation development occurs differently in each country (Choung, Hwang, & Song, 2014; Kim, 1997). It is also dependent on several other aspects, such as the type of partner the firm has in the development of innovation (Chatterji & Fabrizio, 2014) and the type of knowledge being developed (Pérez-Luño et al., 2011). All this factors may affect differently the relationship among internal and external sources of innovation and innovation performance. Research Gap and Research Question: The 2015's Innovation Union Scoreboard classifies Italy as a moderate innovator country in Europe, which means that its innovation performance is below average (European Commission, 2016). This position may be related to country differences that lead a country's firms to take more or less advantage from the sources of knowledge to generate innovation. This study intends to answer the following question: How do internal and external sources of knowledge influence innovation performance in Italian manufacturing firms? The focus is on manufacturing firms because very diverse types of industries may have strong different results and different studies by industry type are justified. Method: In order to answer the research question, this study proposed a model containing three constructs: External Knowledge, Internal Knowledge and Innovation Performance. Both External and Internal Knowledge are hypostatized to have a positive relationship with Innovation Performance. Another hypothesis is that the construct Internal Knowledge moderates positively the relationship between External Knowledge and Innovation Performance. The constructs were operationalized

through reflexive variables derived from the literature, filled by CIS (Community Innovation Survey) 2010 database, from Eurostat. The model was tested using Bayesian Structural Equation Modeling. Different models were run for high-technology industries (that includes the High-technology and Medium-high technology aggregations of manufacturing industries of NACE Rev. 2) and low-technology industries (that includes the Low-technology and Medium-low technology aggregations of manufacturing industries of NACE Rev. 2). The moderation hypothesis was modeled using the unconstrained approach to interaction modeling with centered indicators (Steinmetz, Davidov, & Schmidt, 2011). Results: The results of this empirical research were different for low-tech and high-tech firms. Low-tech firms presented a positive influence of external knowledge sources on innovation performance and did not for internal knowledge sources. The opposite happened to high-tech firms. The effect of the moderation of internal knowledge sources in the relationship between external knowledge sources and innovation performance is significant and positive for both industries groups, although is of low magnitude. This may evidence that Italian manufacturing firms still have a low absorptive capacity and the government has an important role to help them improve it by introducing effective innovation policies and stimulating the collaboration of the industry with universities.

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