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"IMPROVING COMPETITIVENESS WITH INNOVATION AND PRODUCT DEVELOPMENT"

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IN OR OUT? EXPLORATION PATTERNS AND INNOVATION PERFORMANCE IN FAMILY FIRMS FROM AN ITALIAN LIFE SCIENCE CLUSTER

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The aim of the paper:
While extant research has emphasized the importance of exploration activities in obtaining superior innovation performance, there is an unsolved debate about whether internal exploration is more effective than external one. We address this issue by searching for the direct effects of the two types of exploration on innovation output on a sample of firms in the Life Sciences sector. Besides, building on the assumption that governance forms play a role in the innovation process, this paper focuses on how family involvement – the source of most ubiquitous form of firms' governance – affects firm's resources and capabilities and hence innovation performance. In addition, our post-hoc analyses also investigate the complementary rather than substitutive role of the two types of exploration, for both family and non-family firms.

The contribution to the literature:
It is generally accepted that the innovation capacity of firms depends on the ability to integrate internal and external sources of knowledge. Innovation literature has also recently emphasized the role of family involvement in firms, since many theoretical and practical arguments suggest that family firms behave distinctively with respect to innovation. This perspective, however, has never been adopted to clarify the relationship between the nature of firm's exploration and innovation performance. First, we provide evidence on the effects of internal and external exploration on innovation performance within the context of high-tech clusters. Second, we confirm the theoretical and empirical power of characterizing firms' innovative behavior upon the nature of firms principal, particularly family principals. Third, we extend previous research on innovation in family firms by bridging innovation input and output, and showing how family involvement provides useful configuration to understand the deployment of innovation processes.

The methodology:
We use a count data model to evaluate the direct impact of internal and external exploration, and the moderating role of family involvement on innovation performance (the number of patents filed between 2008 and 2013). Data have been collected in 151 firms from an Italian Life Science Cluster. The level of internal exploration is measured by the number of specialized (Master or PhD) employees in the firm and by the logarithm of the expenditures in R&D allocated on average by the firm in the 2006-2011 period, if available. The level of external exploration is measured by the number of innovation-oriented relationships and by the number of external innovation's sources types. Family firms are those firms in which the family is involved in both ownership (owning at least 40% of the shares) and management (a family member is the CEO of the firm). During the tests conducted to verify the relationships hypothesized, some control variables were introduced which could have an influence on the innovative capacity of the firms. The age of the firm was measured by the number of years passed since the firm was founded. The segment a firm belonged to was controlled by introducing two dummy variables for the pharmaceutical/biotech and medical devices segments.

The results and implications:

If many scholars have shown decreasing returns to scale in R&D expenditures our results show that internal exploration negatively affects firm's innovation performance in absolute terms; on the contrary, external exploration positively affects innovation performance as the majority of scholars argues. The interaction between the two behaviors is still positive, suggesting the existence of a joint effect between the two behaviors where a low level of internal absorptive capacity ensures the best effectiveness of external exploration. In both cases, family involvement positively moderates the relationship. In addition, while both family- and non-family firms obtain better innovation performance where external exploration is high and internal is low, the best marginal effect for family involvement is obtained when firms jointly pursue both exploration types.

First, we provide evidence on the effects of internal and external exploration on innovation performance within the context of high-tech clusters. Second, we contribute to the debate on regarding the advantages and disadvantages of simultaneously pursuing different types of explorations. Third, we confirm the theoretical and empirical power of characterizing firms' innovative behavior upon the nature of firms' principal, particularly family principals. Third, we extend previous research on innovation in family firms by bridging innovation input and output, and by showing how family involvement provides useful configuration to investigate the relationship between explorative behaviors - both internal and external - and innovation outputs. Particularly, building on the familiness construct - namely, the unique bundle of resources family firms possess, as well as the unique way in which they manage it - we showed family firms' distinctive innovative behavior and, particularly, their more effective translation of exploration behaviors into innovation outputs, compared to non family counterparts.

Several managerial and industrial policy implications emerge from this research. First of all, the results indicate that in R&D-intensive sectors scientific and technological capabilities are not in themselves sufficient to guarantee the best innovation performance. Public policies on innovation, which limit their support to merely reinforcing the R&D resources of firms, run the risk of having little effect if further complementary actions are not taken. In particular, at first glance it would seem to be equally important to encourage cooperation – among firms and between firms and the world of research – directed at increasing the innovation potential of the regional system.

The results show that the effectiveness of the innovation process depends on allocation of resources which is not only path-dependent, but is also the result of soft skills aimed to overcome the problem of crystallization of expertise. Family firms seem particularly effective in this sense, especially if they are able to combine high internal R&D competence with relational capacities, which are not strictly managerial (intuition and creativity, different time horizons, ability to manage projects with scarce resources).

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