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Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs

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ABSTRACT

The performance implications of innovation in small and medium-sized enterprises (SMEs) have attracted considerable interest among academics and practitioners. However, empirical research on the innovation–performance relationship in SMEs shows controversial results. This meta-analysis synthesizes empirical findings in order to obtain evidence whether and especially under which circumstances smaller, resource-scarce firms benefit from innovation. We find that innovation–performance relationship is context dependent. Factors such as the age of the firm, the type of innovation, and the cultural context affect the impact of innovation on firm performance to a large extent.

1. Executive summary

In search for constitutive elements of entrepreneurship, various prominent scholars argue that innovation is the key distinguishing attribute vis-à-vis business administration and other disciplines (e.g., Schumpeter, 1982; Davidsson, 2004). Moreover, substantial practitioner-oriented literature suggests that in order to survive and thrive in increasingly hyper-competitive markets, innovation is the only solution (e.g., Kim and Maubourgne, 2005). Not surprisingly, the quest for the big idea that promises entrepreneurial success is characterized by the identification of a radically innovative offering, production process, and/or business model. This venturing approach reflects the widespread assumption that in order to be successful, the entrepreneur or small business manager needs to have an innovative edge to compete against bigger, well-established incumbents. Yet, does empirical evidence support this assumption? Is innovation indeed *always* the better approach? What are contextual factors that might impact the innovation–performance relationship?

In this study, we apply meta-analyses techniques to aggregate prior empirical research on the innovation–performance relationship. In so doing, we are able to determine the direction and effect–strength innovation has on the performance of small and medium-sized firms (SMEs). Furthermore, the meta-analysis approach allows us to present evidence whether moderators impact the innovation performance relationship. Our analysis aggregates 42 empirical studies on 21,270 firms.

Our findings show that innovation has a positive effect on the performance of SMEs. Yet, we also identify a number of factors that impact the innovation–performance relationship: first, fostering an innovation orientation has more positive effects on firm performance than creating innovation process outcomes such as patents or innovative products or services. This result highlights that entrepreneurs and SME managers focusing only on creating innovative offerings miss important dimensions which are essential for

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realizing the value that innovation can provide to their firms. Second, when comparing the performance implications of dedicating more resources to innovation process inputs (e.g., R&D spending) with innovation process outcomes, we find that the innovation process outcomes lead to a greater increase in SME performance. This finding underlines the importance for entrepreneurs and SMEs to manage the innovation process diligently. Being aware of the importance of innovation and subsequently dedicated substantial resources to the innovation task might not be sufficient, as the expected performance implication might not substantiate. Third, innovation has a stronger impact in younger firms than in more established SMEs. This finding suggests that the often cited liability of newness of younger firms can also be an asset for new firms. Our finding indicates that new firms possess unique capabilities to create and appropriate value through innovations. Fourth, we find that internal innovation projects increase the performance substantially while innovation projects that involve external collaborations have no significant effect on performance. Hence, empirical evidence provided in this study challenges network and social capital literature which suggests that more collaboration with external partners is better for the new and small firm; especially in the context of innovation this might not be the case. Fifth, our findings illustrate that the cultural context in which the firms operate impacts the innovation–performance relationship. Yet, the identified relationship contradicts popular assumptions. We find that innovation has the strongest positive impact in cultural environments characterized by collectivism such as those found in many Asian countries. In contrast, in more individualistic cultures such as the U.S., the relationship between innovation and performance is weaker. We interpret the different findings and discuss implications for academia and practitioners and also identify gaps that can be addressed in future research.

2. Introduction

When nascent entrepreneurs pitch their business ideas, one argument is predominantly employed: nobody else is doing what we are about to do. This argument reflects a deeply engrained belief that in order to be successful in business, the entrepreneur or small business manager needs to have an innovative edge to compete against bigger incumbents. Prominent entrepreneurship scholars support this notion by arguing that innovation is a constitutive element of entrepreneurship (e.g., Schumpeter, 1982; Davidsson, 2004; Lumpkin and Dess, 1996). In addition, some strategy literature proposes that smaller organizations can profit by adjusting to environmental changes faster than bigger organization due to their nimbleness, missing hierarchies, and quick decision-making (Nooteboom, 1994; Vossen, 1998). Moreover, the general public attributes greater promise to smaller firms investing heavily in innovations than larger organizations (Lee and Chen, 2009). In consequence, an entrepreneur or small business manager is likely to conclude that innovation benefits new and small firm development irrespective of the circumstances. Yet, does theory and empirical evidence support the general assumption that innovation is indeed *always* the better approach?

In contrast to literature proclaiming the positive aspects of innovation which frequently focuses on large firms, substantial theory challenges this view. Van de Ven (1986) cautions that innovation demands substantial resources. For resource-scarce small firms, the resources required by innovation projects can overstrain their possibilities (Acs and Audretsch, 1988; Nooteboom, 1994; Vossen, 1998). Additionally, innovation implies increased uncertainty and risks (Eisenhardt and Martin, 2000; Knight, 1921). While larger organizations have the resource slack to absorb failure, for smaller entities the failure of an innovative product evokes existential risks (Nohria and Gulati, 1996). Furthermore, big organizations are more likely to have experience with innovation projects leading to organizational innovation capabilities (Majchrzak et al., 2004; Danneels, 2002; Galunic and Rodan, 1998). Smaller and especially new firms often lack this organizational capability and, thus, experience running the risk of engaging in managerial undertakings without experience. Reflecting on the perils of innovation, it needs to be noted that innovation is a task fraught with high failure rates (Crawford, 1987; Berggren and Nacher, 2001) or at least temporary unprofitability (Block and MacMillan, 1993). Additionally, empirical studies investigating the innovation–performance relationship frequently present mixed findings. Various empirical studies report that innovation does not influence firm performance (e.g., Birley and Westhead, 1990; Heunks, 1998) or find negative performance implications of innovation (e.g., McGee et al., 1995; Vermeulen et al., 2005). Meanwhile other research reports positive effects (e.g., DeCarolis and Deeds, 1999; Guo et al., 2005; Li and Atuahene-Gima, 2001, 2002). Reviews of the innovation–performance research describe the evidence as ‘mixed’, ‘inconclusive’, ‘contradictory’ (Li and Atuahene-Gima, 2001: 1123). This literature, however, is based on ad-hoc narrative reviews and generally refers to big, established firms. A systematic analysis of the innovation–performance relationship in SMEs to our best knowledge is non-existent. This is surprising, as unstructured narrative reviews can include sampling, measurement, stochastic, and external validity problems and generally do not allow the quantification of the relationships (Hunter and Schmidt, 2004). Furthermore, narrative reviews frequently incorporate various cognitive and normative biases of the researcher (Rauch and Frese, 2006). To overcome these limitations, meta-analysis is an established and powerful method to systematically synthesize findings as part of an evidence-based research approach. Evidence-based research aims to substantiate research findings based on an aggregation of empirical findings. Meta-analysis is a quantitative and systematic method developed to integrate past empirical findings (Hunter and Schmidt, 2004). It provides the opportunity to determine the strengths of direct effects and allows the identification of moderating effects. According to Rousseau et al. (2008: 491), “meta-analysis is intended to establish a way to tell what is true, as best we can tell.” Recently, meta-regressions have been introduced to entrepreneurship literature as a form to estimate multiple moderation effects based on multivariate analysis (Brinckmann et al., 2010).

Following an evidence-based research approach, this study provides the first quantitative aggregation of empirical findings on the innovation–performance relationship. This is important, as the emerging field of entrepreneurship has to critically examine fundamental pillars it is based on. If innovation does not contribute value for the entrepreneur, questions are raised whether or not it can be a foundation of entrepreneurship theory. Moreover, if innovation only attributes value in some unique entrepreneurial circumstances, it can be questioned whether it should be a component of a general theory of entrepreneurship.