ON THE COMMERCIALIZATION OF RADICAL TECHNOLOGIES THROUGH ACADEMIC SPIN-OFFS – THE ROLE OF PATENT PROTECTION AND TECHNOLOGY DYNAMICS (SUMMARY)

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SUMMARY

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Principal Topic

Previous empirical research has focused on the suitability of technological inventions for exploitation through firm formation (Henderson, 1993; Shane, 2001a). These studies point out that technological radicalness brings favorable conditions for firm formations. But bringing radical technologies into successful commercial application is a complex and risky process not yet fully understood (Jensen & Thursby, 2001; Prebble, de Waal & de Groot, 2008). It is therefore unclear if radical technologies provide performance advantages for firm formation.

Entrepreneurship literature states that start-ups need appropriate environmental conditions to successfully exploit technological inventions (Agarwal & Bayus, 2002; Bstieler, 2005; Gans & Stern, 2003; Wiklund & Shepherd, 2003). Dynamic phases of the technology field are expected to be favorable since technological standards are not yet established and niche markets provide opportunities for firm formation (Shane, 2001b; Tushman & Anderson, 1986). Moreover, start-ups face the threat of uncontrolled leakage of technological know-how which holds especially true for radical technologies since finding suitable applications is then a highly uncertain and time-consuming process (Bond & Houston, 2003; Jensen & Thursby, 2001).

We therefore posit that performance of technology-based start-ups is a function of its technological radicalness, and that this relationship is moderated by the pace of development in the start-up’s technological field and by the scope of its patent protection.

Method

We draw on a dataset of 84 German technology-based start-ups from public research institutions combined with assigned patent data and data from a survey of patent attorneys. We conducted personal face-to-face interviews with start-ups’ founders and linked patent applications from the PATSTAT database to the start-ups. Additionally, we conducted a mail survey with German patent attorneys, asking them to rate the effectiveness of patent in different technology fields (Schankerman, 1998). We used multivariate regression analysis to test our arguments.

Results and Implications

Our analysis reveals no direct effect of technological radicalness on performance, but interaction effect of technological radicalness with patent scope and pace of technological development were found. Our results contribute to the understanding of how environmental conditions and legal protection mechanisms influence commercialization success for radical technologies.

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