RADICALNESS OF TECHNOLOGICAL BASE, PACE OF TECHNOLOGICAL DEVELOPMENT, AND PERFORMANCE OF YOUNG TECHNOLOGY-BASED FIRMS (SUMMARY)

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ENVIRONMENT

SUMMARY

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Principal Topic

The major challenge for young technology-based firms (YTBFs) is to convert the innovative and rare knowledge they possess into a value-creating opportunity. Technological radicalness is one of the key characteristics of their technology base as it indicates the degree to which a technology differs from the state of the art. For YTBFs their technological environment conditions are important as industries develop along evolutionary paths.

Building on opportunity theory we hypothesize that two counteracting effects result from the pace of technological development which paradoxically both favor YTBFs with a radical technological base: (1) A fast technological development will erode the technological base of those firms that cannot discover new opportunities. Rapid technological change is competence destroying for incumbent firms and established industries but offers new opportunities for YTBFs. (2) A radical technology base builds a fertile ground for reconfiguring and redefining prior knowledge that leads to the creation of opportunities. At the same time, in case of rapid technological progress, YTBFs employing a radical technological base may gain easier access to complementary resources necessary for experimenting, learning, and adaptations.

Method

Our study combines survey and patent data of 121 academic spin-off firms (1186 patent families). Patent data are an adequate measure for evaluating both the firm's technological base and the technological environment because the path of technological progress is reflected by patent citations. In order to apply an objective, repeatable and time-varying criterion to determine the pace of technological development, we use the concept of technological cycle time aggregated on technology field level. Survey data serve as control for various founding team and firm level characteristics. We examine our predictions with hierarchical moderated regressions with growth in sales as our performance variable to evaluate commercialization success.

Results and Implications

A radical technological base per se does not guarantee outstanding young venture performance. Instead, our regressions confirm a positive moderating effect of the pace of technological development. Firms focusing on the commercialization of radical technologies perform better when they were founded in a fast developing technological environment than under stable environmental conditions. We offer valuable insights for the entry timing of YTBFs.

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