

Innovation Strategies and Their Impact on the Market Value of a Firm

Jens Schmidt-Ehmcke, Petra Zloczynski

Several strategic options exist in the knowledge creation process of firms. The whole set of choices can be summarized as the innovation strategy options, which will form the firm behavior in the future. A main building block of the strategy chosen is the distinction between diversification and specialization in technologies. Specialization leads to economies of scale which can enhance cost reduction and enlarge market niches. Diversification contrariwise generates economies of scope and induces a higher spread of risk among the fields served by the firm. The important question arising with respect to the aim of maximizing the market value of the firm concerns the allocation of R&D expenditures into technological fields.

This paper deals with the influence of the alignment of R&D departments, in particular the innovation strategy chosen with respect to the amount of diversification being present in the technology portfolio of a firm. It presents evidence for the hypothesis that this basic strategic choice and its development can be linked to the market value.

In order to analyze the innovation strategies of a firm we identify the different technological areas in which the firm is engaged in research. We utilize the patent classification of the patent office into technology-based patent classes as a proxy for the technological area a firm is concentrating on in its innovation strategy.

The data used in this paper stem from three main sources. The first is the NBER Patent Citation Data File as provided by Hall, Jaffe and Trajtenberg (2001) which covers all patents granted by the USPTO between 1965-1995 including their forward and backward citations and additional constructed indices. The second is the US Patent Office Patent Classification Database, providing the detailed classification of every granted patent in the period 1790-2000. The third dataset used for analysis is the Compustat data on publicly traded firms for information on the market value of firms, their assets and their research and development expenditure. The dataset allows for constructing a detailed classification measure of every single patent using all classes and subclasses a patent is classified in.

The amount of diversification being present in the technology portfolio of a firm which is approximated by the diversity in the patent stock can be measured using a number of indices available in the literature on diversification. In this paper, the Entropy and the Herfindahl-Index are applied to measures diversification among patents to determine the strategic alignment of R&D departments.

These indices are tested in an expanded Tobin's q model as part of the knowledge assets to examine their influence on the market value of firms.