TECHNOLOGY LEAPS: DEFINITION AND FRAMEWORK FOR ASSESSING THE POTENTIAL OF TECHNOLOGY LEAPS

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ABSTRACT

Technologies, i.e. product, production and material technologies represent a crucial competitive factor for technology oriented companies. The decision, which technologies should be used for the manufacturing of which products is one central task of a company´s technology management. In times of gathering pace of change, shortened technology and innovation cycles, more complex technology chains and new, advanced information technology, it is a main task for many companies to detect trends in time, to asses them regarding its relevance and to derive meaningful measures for the company. Those measures can be concrete steps, which refer to the substitution of an established technology by an innovative, new technology with considerably improved technological performance parameters. Companies however can initialize trends actively by developing innovations respectively technology leaps to position themselves in the market as a pioneer. A holistic and applicable method for assessing the potential of new, innovative technologies, i.e. technology leaps against company-specific backgrounds, is required especially considering the relatively high uncertainties but also possible high return on technology leaps. The potential of a technology is determined by its expected individual performance in the future. Therefore, a consistent understanding of technology leaps and their main characteristics are necessary. Further a method for the assessment of a technology leap´s potential is required.
This paper introduces a new approach for characterizing and classifying technology leaps. First, a literature review of existing works regarding technology leaps and assessment is given and deficits as well as demand are derived. In a next step a characterization and classification of technology leaps will be introduced, highlighting the main characteristics of technology leaps. In a final step a rough framework is presented for a quantitative assessment of technology leaps' potential.

Keywords: Technology leaps, constituent characteristics, technology and potential assessment.