

## Chapter 2.2

# A Technology–Focused Framework for Integrating Knowledge Management into Strategic Innovation Management

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### ABSTRACT

Today's business environment is characterized by highly transparent markets and global competition. Technology life cycles are decreasing due to the fast pace at which development of new technologies is progressing. To compete in this environment, it is necessary to identify upcoming innovations and trends as early as possible to decrease uncertainty, implement technology leadership, and create competitive advantage. In a parallel development, the amount of infor-

mation available is already vast and increasing daily. As a result of these developments, strategic innovation management has become increasingly challenging. The goal of our chapter is to investigate to what extent knowledge management technologies support and improve strategic innovation management to face the aforementioned problems successfully. Consequently, we will develop a characterization scheme which works as a framework for the subsequent evaluation of knowledge management technologies and apply this to a real-world case.

## INTRODUCTION

Competition in today's business environment is intense. The influences of the rapid pace of globalization, and of national and international markets' on-going liberalization lead to the emergence of new problem settings and, consequently, increased pressure on companies. Companies therefore face greater risks due to the higher number of players in the market. However, environmental influences created outside the market are not the only factors that have an impact on companies' complexity. The increasing speed at which innovations and new developments occur, the resultant shorter product life cycles, and decreasing production costs also add to the pressure felt by firms and their decision-makers. High technology companies that have high research and development (R&D) expenditures, have to specifically plan their research programs more carefully, because they run a higher risk of losing the competitive advantage when "going the wrong way". Consequently, decision-makers have a greater need to anticipate or forecast future developments and apply these insights in business strategies and strategic innovation management in order to keep risk levels low and the company competitive. According to Bright (1979), all "firms and governments dealing with technology have been and are doing technology forecasting. This is because each decision to explore, support, oppose or ignore a technological prospect incorporates the decision-maker's assumptions about that technology and its viability in the future" (p. 228).

Over the last few years, firms have increasingly realized that knowledge plays a key role in the development of strategies for future success and stronger market positions. The most striking examples of such firms are technology and service-oriented companies, but retailers also engage in activities to use knowledge as factors of competitive advantage. A paradigm shift can be observed in business strategies: from a focus on tangible assets to one that prioritizes intangible

assets (Drucker, 1996, p. 203; Stewart, 1997, p. 23). However, information and information sources' quantity is continuously increasing, and what at first seemed to be the solution to several business problems has itself become a unique problem for today's companies—too much information. In order to gain from information and to facilitate knowledge creation within a company, new ways of filtering and selecting information have to be applied. Furthermore, the nature of knowledge is highly dynamic. The value of knowledge is difficult to measure and can change from one moment to another. Companies try to control this uncertainty to some extent and to obtain as much advantage as possible from their knowledge by integrating knowledge management paradigms into competitive strategies.

The question arises if it is possible to successfully support knowledge and strategic innovation management alignment on an operational level. With technology forecasting being an essential discipline of today's innovation and innovation management processes, it is of specific interest to know whether technology forecasting can be improved by integrating knowledge management—particularly by means of current knowledge management technologies. In the following, we understand the latter as instruments of information and communication technologies that support knowledge management processes.

In order to answer the stated question, this chapter's objective is to develop a characterization scheme that integrates aspects of both fields: knowledge management as well as innovation management process's technology forecasting. Furthermore, selected knowledge management technologies will be evaluated by applying this scheme to derive conclusions regarding the most promising solutions with which to support technology forecasting.

The section following this one introduces and defines technology forecasting and illustrates the associated standard technology forecasting process, which is tailored to comply with strategic

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