Chapter 8
An Intellectual Capital-Based View of Technological Innovation

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ABSTRACT
The growing importance of knowledge as a key productive factor in today’s society requires a change in thinking about innovation in general terms as well as in specific terms, such as technological innovation, product innovation and organizational innovation (Nonaka, 1994). Also, companies are aware that knowledge is the most valuable and strategic resource to face the current environment (Chen et al., 2004). In this sense, intellectual capital is increasingly interesting to companies that get their benefits through innovation and knowledge. For this reason, it is important to study the relationship between intellectual capital and innovation (Edvinsson and Sullivan, 1996). In fact, it is widely accepted that an organization capability to innovate is closely tied to it is intellectual capital, or its ability to utilize its knowledge resources (Subramaniam and Youndt, 2005). So, this research proposes a theoretical model to identify and classify the different elements of intellectual capital (human capital, organizational capital, technological capital, relational capital and social capital) as a source of various types of technological innovation (product, process, radical and incremental innovation), analyzing the relationship between each of those components and the four types of innovation.

INTRODUCTION
The present situation is causing a new competitive dynamic (Johnson et al. 2002; Leitner, 2005), in which firms give increasingly greater importance to the intangible resources and capabilities when they face competitors. Therefore, it is widely recognized that the new knowledge and its implementation as a key factor in achieving and maintaining competitive advantage (Schumpeter, 1942; Itami and Roehl, 1987; Galende, 2006).

In this sense, in the current competitive and dynamic environment, technological innovation is becoming, ever more, in a key aspect of the business
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competition (Alegre et al., 2005). For this reason, studies focused in improving the firm processes are a major concern.

The changing environment, globalization phenomenon and accelerated product cycles are prompting pressures in the business environment, so that it is necessary to accumulate a large volume of knowledge in order to develop subsequently different types of innovations.

In addition, in the professional field, managers need tools to evaluate the management and results of innovation activities. Thus, the reasons for the importance of technological innovation may be summarized in (Alegre et al., 2005):

1. The development of new technologies and major understanding of existing technologies increase the possibility of creating new products and processes.
2. Facing a number of companies capable of competing at international level, they have risen considerably.
3. Satisfying consumers who have become more sophisticated and discerning, so that the range of products has increased significantly.

Owing to the importance of a study that not addresses only to consider the relationship between intellectual capital and innovation in general, but that takes into account each component of intellectual capital and various types of innovation, it seems necessary to conduct an analysis as this to cover the gap. Besides, as it can see in the literature review, many empirical researches examine the innovation and its connection with several issues about intellectual capital, but they are not covered by these works within the intellectual capital. Therefore, since it is a question little discussed in intellectual capital literature, this work tries to study technological innovation in depth, differentiating four types.

Thus, our study proposes a classification of intellectual capital, differentiating five elements (human capital, organizational capital, technological capital, relational capital and social capital) and linking each of them with four types of technological innovation (product, process, radical and incremental), trying to analyze a research issue that has not been well treated from the Intellectual Capital-Based View.

THEORETICAL BACKGROUND

Given the competitive paradigm presented in the introduction section, new theoretical approaches have appeared from the academic literature, trying to explain the nature and sources of business success from internal factors owned by the firms.

Thus, in recent decades, the explanation of sustained competitive advantage has been supported primarily on the possession and/or control of endogenous factors to the company (Wernerfelt, 1984; Rumelt, 1991). This view, so-called Resource-Based View (Amit and Schoemaker, 1993; Barney, 1991), attaches special importance to the intangible factors (Itami and Roehl, 1987; Hall, 1993), which are based on knowledge and information and constitute cornerstones of intellectual capital studies.

Besides, previous empirical analysis carried out in several researches leads to conclude that the factors associated with such resources owned by the company, basically it is intellectual capital, have a more significant influence on innovation, market and financial performance (Bowman and Helfat, 2001; Reed et al., 2006).

However, the Resource-Based View has some weakness due to its static view of the competitive analysis or the difficulty in making operative its principles (Priem and Butler, 2001). Therefore, different approaches have appeared in order to overcome these problems, improving the internal perspective of Business Management.

Thus, Capabilities Dynamics Perspective (Eisenhardt and Martin, 2000; Carpenter et al., 2001) appears as an extension of the Resources-Based View, explaining the firms survival and