Exploration and Exploitation Capabilities

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INTRODUCTION

Strategic decisions imply a choice about how many resources an organization must invest in its activities in terms of efficiency versus flexibility, and adaptation versus risk-taking. In order to be competitive in turbulent environments, firms must innovate and also be efficient in their current operations. March (1991) proposes and defines exploration and exploitation as two concepts that reflect fundamental differences in firm behavior. Exploration is characterized by search and experimentation, whereas exploitation involves activities related to refinement and application. According to March, firms are challenged to achieve a balance between the two types of activity to obtain superior performance and to remain competitive in the long term.

The importance of achieving exploration and exploitation in organizations is clearly stated in the burgeoning literature that analyzes the two terms, their antecedents and their consequences. Nevertheless, the question of what of each of them really represents remains unanswered (Gupta, Smith, & Shalley, 2006; Turner, Swart, & Maylor, 2012). Although both concepts have been widely used in the literature on strategy, they are not always understood to have the same meaning.

One of the main controversies concerns whether the difference between exploration and exploitation lies in the presence or absence of new knowledge. There is a fair degree of consensus that the term exploration refers to the pursuit and acquisition of new knowledge, but this is not the case with exploitation. The main discussion focuses on whether or not new knowledge can be considered to be produced in exploitation, and therefore whether or not exploitation can be seen as a dynamic capability.

Confusion also arises as a result of applying the terms as capabilities or as results of the innovative process, for example as exploitative or incremental innovations or explorative or radical innovations.

The third point of disagreement is on the different levels of analysis used: at the individual, organizational or inter-organizational level.

In light of these controversies, the objective of this article is to revise and analyze these issues in the literature so as to offer a definition and an explanation that allows them to be reconciled. To this end, the article is organized as follows: the next section offers a literature review to provide and incorporate other definitions and points of view. The third section presents the main focus of the article, analyzing the issues, controversies and problems advanced in the introduction, and proposing our framework and explanations of the definitions of exploration and exploitation adopted. The fourth section proposes directions for future research, advancing and relating the terms with the concept of ambidexterity, and finally conclusions are reported.

BACKGROUND

Strategic decisions are closely related to the choice of how much to invest in different activities, and for exploration and exploitation to be achieved, different resources, processes, skills, and even organizational structures are required. In his seminal paper, March

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(1991) suggests that the activity of exploration is related to searching, experimenting with new alternatives, and taking risks, whereas exploitation refers to refining, efficiency, implementation, and selection. The change proposed from the Organizational Learning perspective is the need to strike a balance between the two activities (Bontis, Crossan, & Hulland, 2002), rather than forcing the organization to choose between channeling more resources toward one activity or the other. Since the publication of March's paper, the two concepts have been widely analyzed in strategic management, innovation, organizational learning, and other literatures, from different perspectives and considering different meanings.

Table 1 outlines a number of studies that analyze different aspects of exploration and exploitation. It reveals how the definitions and measurement methods adopted vary widely from one study to another.

DEFINITION OF EXPLORATION AND EXPLOITATION

Controversies

Some of the studies published on the topic of exploration and exploitation revised in the previous section reveal controversies and problems in the definition of the two concepts. The first of these refers to the distinction between exploration and exploitation with regard to the presence or absence of knowledge versus the degree of new learning or knowledge produced. The second controversy arises when some authors treat both concepts as capabilities or as an output of the innovative process. And the third one refers to the level of analysis in which exploration and exploitation are considered.

Presence or Absence of Knowledge vs. Type or Degree of New Learning or Knowledge in the Distinction between Exploration and Exploitation

The first controversy lies in how researchers understand and differentiate the two constructs, with regard to the presence or absence of knowledge and learning (Gupta, Smith, & Shalley, 2006). In their definitions of exploration researchers include the creation of new knowledge through learning, but the same level of agreement is not present in the term exploitation, and this has been one of the main issues requiring resolution ever since March (1991) used the two terms in relation to organizational learning.

Some of the studies reported in Table 1 consider all activities that include learning, creation of new knowledge or innovation as exploration, whereas exploitation is only employed in cases where the organization uses past knowledge. For example, Rosenkopf and Nerkar (2001) explicitly include local and non-local knowledge search in exploration. Their study does not include exploitation, although in a note they explain that it is the refinement of a technology. Vermeulen and Barkema (2001) also define the concepts in this way, limiting exploitation to the use of the firm's knowledge base only. Vassolo, Anand, and Folta (2004) only deal with exploration, including all activities that allow the firm to create new resources to deal with changing markets and with technological discontinuities. In the same way, other articles that analyze the topic of ambidexterity—rather than the concepts of exploration and exploitation—include innovation and efficiency, or define exploitation only as activities related with efficiency, and therefore should be included in this group; the study by Sarkees and Hulland (2009) falls into this category.

Instead of differentiating between the two constructs in terms of the presence or absence of knowledge and new learning, other scholars distinguish between exploration and exploitation by focusing on the type or degree of learning, and therefore they consider that both are associated with learning and innovation (Benner & Tushman, 2003; Gupta et al., 2006; He & Wong, 2004; Raish & Birkinshaw, 2008). For example, Auh and Menguc (2005) and Menguc and Auh (2008) conceive exploration and exploitation as different modes of organizational learning. According to these authors, exploration is concerned with creating innovative concepts, whereas exploitation includes the refinement and extension of the firm's existing capabilities. Crossan et al. (1999), Bontis et al. (2002), and He and Wong (2004) also consider both as two dimensions of organizational learning. Other authors, such as Benner and Tusman (2003) and Jansen et al. (2008), associate both terms explicitly with innovation, linking exploration with radical innovation and exploitation with incremental innovation. Lubatkin et al. (2006) include in exploration those activities

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