

# Looking beyond resources: Exploring the importance of entrepreneurship to firm-level competitive advantage in technologically intensive industries

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## Abstract

The resource-based view of the firm (RBV) suggests that in order to attain and sustain a competitive advantage firms must possess and exploit valuable, rare, inimitable, and non-substitutable resources. Despite the focus on exploitation, empirical work in this area has focused primarily on resource possession. By infusing this traditional view of the RBV with ideas from the dynamic capabilities approach and the entrepreneurship literature, this paper presents conceptual arguments about the exploitation of resources through the development of specific capabilities. The empirical results suggest that entrepreneurial capacity and entrepreneurial management are important capabilities that help in building competitive advantage for firms in technologically intensive industries.

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## 1. Introduction

The resource-based view of the firm (RBV) assumes that resources and capabilities (hereafter referred to simply as “resources”) are heterogeneously distributed among firms, a condition that allows for the existence of differences in firm resource endowments and imperfectly mobile, a condition that allows for these differences to persist over time (Barney, 1991). Barney (1991) argues that only resources that are simultaneously valuable and rare can generate competitive advantage and that for such a competitive advantage to be sustained, the resources on which it is based must be both inimitable and non-substitutable, since otherwise the advantage could be competed away over time. While much of Barney’s (1991) work relies on the notion of resource possession (that is,

firms that possessed valuable, rare, inimitable, and non-substitutable resources would attain and sustain a competitive advantage), RBV scholars have since moved to the idea of “dynamic capabilities” whereby they argue that firms not only need to possess, but more importantly, exploit such resources (Amit and Schoemaker, 1993; Henderson and Cockburn, 1994). According to this view, past experience that is accumulated by the routines that the firm has developed by “learning by doing” allow the firm to exploit its resources uniquely (Eisenhardt and Martin, 2000; Henderson and Cockburn, 1994; Teece et al., 1997; Argote, 1999).

Over the course of the past decade, a growing stream of empirical research has sought to test the central tenets of RBV in the entrepreneurship field (c.f. Chandler and Hanks, 1994; Deeds et al., 1998; Chrisman, 1999; Chrisman and McMullen, 2000; Litz and Stewart, 2000; Westhead et al., 2001; Dhanaraj and Beamish, 2003; Sirmon and Hitt, 2003; Wang and Bee, 2004; Zahra et al., 2004; Powers and McDougall, 2005) and the strategic management field (c.f. Powell, 1992a,b; Henderson and Cockburn, 1994; Powell, 1995; Robins and Wiersema, 1995; Maijor and

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Van Witteloostuijn, 1996; Miller and Shamsie, 1996; Powell and Dent-Micallef, 1997; Russo and Fouts, 1997; Combs and Ketchen, 1999; Makadok, 1999; Yeoh and Roth, 1999; Knott, 2003). Such studies, which are intended to serve as a representative sample of the RBV-grounded empirical literature, typically correlate the amount of a given resource possessed by a firm with some measure of competitive advantage.

This approach has yielded a substantial amount of empirical evidence suggesting that the competitive positions of firms are at least in part a function of the resources they possess. Yet, because resources do not exploit themselves, these findings may not tell the whole story. We argue that by including the dynamic capabilities approach and by identifying the factors that facilitate the exploitation of resources in the entrepreneurial context, scholars may be better positioned to further specify the competencies that allow the exploitation of resources. This would provide useful advice to practicing managers, in both new and small firms that lack a broad resource portfolio as well as incumbent firms seeking to enter new markets in which they lack the accepted bases of competition.

This paper will provide empirical evidence regarding what firm-level factors allow entrepreneurial firms to create, reconfigure and recombine resources to create new value through innovation (Teece et al., 1997). In support, recent research suggests the value of our approach. Hult et al. (2004) and Montalvo (2006) have found that entrepreneurial orientation coupled with an ability to learn and assimilate new knowledge helps firms innovate and achieve better than average performance in high-technology industries that are volatile. The implied dynamics of their research is similar to dynamic capabilities that consist of specific organizational processes such as product development, alliancing, strategic decision-making, and the like that create value for firms within volatile markets through the manipulation of resources (Eisenhardt and Martin, 2000). In developing and testing our model, we focus on firms competing in technologically intensive industries as they have been found to be among the most significant contributors to the economy in terms of their innovativeness and growth (Kirchhoff, 1994). We examine two new kinds of capabilities: entrepreneurial capacity and entrepreneurial management both of which allow firms to navigate the environmental uncertainties and learn new routines, which in turn enable firms to generate new and synergistic resource combinations (Eisenhardt and Galunic, 2000).

## 2. Resource exploitation

Although the RBV's premise that a firm may attain and sustain a competitive advantage by exploiting valuable, rare, inimitable, and non-substitutable resources is intuitive and theoretically pleasing, it is important to acknowledge that value, rareness, inimitability, and non-substitutability

are not universal constants. In fact, in the face of radical, unpredictable changes in the environment, or "Schumpeterian shocks" (Schumpeter, 1934), value, rareness, inimitability, and non-substitutability vary considerably over time.

Penrose (1959, p. 76) argues that "at any given time the known productive services inherent in a resource do not exhaust the full potential of the resource". Therefore, Schumpeterian shocks in the form of advances in knowledge, for example, may render previously unknown resource services valuable. Thus, what were once considered valueless resources may well become valuable. For example, consider how knowledge gained in amorphous metals has created new, valuable uses for naturally occurring elements such as iron, boron, and yttrium. Exogenous changes also render what were once considered rare resources quite common. Consider for example the George W. Bush administration's stance with regard to stem cell research in the United States. Should the political ideology change with respect to the legality of access to stem cells after the next presidential election, what is today an extremely rare resource might become quite common. According to Dierickx and Cool (1989), inimitability is a function of time and cost. As such, this variable is not absolute, but rather a matter of degree—with enough time and money, competitors can imitate most any resource. Consider for example how pharmaceutical firms routinely either engineer around or wait out the protected life of a patent. Lastly, as Christensen (1997) demonstrates due to technological advancements, resources and products will always have viable substitutes. Consider for example the advances that occurred in disk drive technology that enabled then newly developed small drives with limited functionality and utility to serve as viable substitutes for their larger and technologically superior counterparts (Christensen, 1997).

It seems then that given the incidence of disruptive environmental changes, which are particularly common in technologically intensive industries, what is valuable, rare, inimitable, and non-substitutable today may not be tomorrow and vice versa. As such, firms cannot rely solely on their existing competencies (i.e., resource portfolios) to generate performance advantages. Instead, successful firms will be those that possess not only the resources necessary to exploit known opportunities in the context of the current environmental regime (that is, resources that are known to be valuable, rare, inimitable, and non-substitutable), but also the capacity to envision and implement new ways to use those resources (and perhaps other resources that are not yet valuable, rare, inimitable, and non-substitutable) in the event of disruptive or radical environmental change (Prahalad, 1998; Bitindo and Frohman, 1981).

### 2.1. Resource access

Given the above logic, it seems that at the most basic level, firms must possess valuable resources in order to

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