

A natural-resource-based view of the firm

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There has been an active debate among management scholars concerning the relative importance of internal firm capabilities (e. g., Galbraith & Kazanjian, 1986; Peters & Waterman, 1982; Prahalad & Hamel, 1990) versus environmental factors (e. g., Hannan & Freeman, 1977; Pfeffer & Salancik, 1978; Porter, 1980, 1990) to sustained competitive advantage. Evidence suggests, however, that both internal and external factors are crucial to competitive success (Fiegenbaum, Hart, & Schendel, In press; Hansen & Wernerfelt, 1989).

In fact, many recent contributions attempt an integration of the internal and external perspectives under the banner of the " resource-based" view of the firm (e. g., Barney, 1991; Wernerfelt, 1984). Resource-based theory takes the perspective that valuable, costly-to-copy firm resources and capabilities provide the key sources of sustainable competitive advantage.

Without question, the resource-based view has generated a productive dialogue among previously isolated perspectives (Conner, 1991). However, this theory (like its more limited internal and external predecessors) still contains one serious omission: It systematically ignores the constraints imposed by the biophysical (natural)environment(e. g., Brown, Kane, & Roodman, 1994; Meadows, Meadows, & Randers, 1992).

Historically, management theory has used a narrow and parochial concept of environment that emphasizes political, economic, social, and technological aspects to the virtual exclusion of the natural environment (Shrivastava, 1994; Shrivastava. & Hart, 1992; Stead & Stead, 1992).

Given the growing magnitude of ecological problems, however, this omission has rendered existing theory inadequate as a basis for identifying important emerging sources of competitive advantage. The goal of this article is, therefore, to insert the natural environment into the resource-based view--to develop a natural-resource-based view of the firm.

Accordingly, the first section of the paper reviews resource-based theory, highlighting the relationships among firm resources, capabilities, and sources of competitive advantage. Next, I discuss the driving forces behind the natural-resource-based view--the growing scale and scope of human activity and its potential for irreversible environmental damage on a global scale.

The natural-resource-based view is then developed with the connection between the environmental challenge and firm resources operationalized through three interconnected strategic capabilities: pollution prevention, product-stewardship, and sustainable development. Propositions are then developed connecting these strategies to key resource requirements and sustained competitive advantage. The article closes with suggestions for a future research agenda.

THE RESOURCE-BASED VIEW

Researchers in the field of strategic management have long understood that competitive advantage depends upon the match between distinctive internal (organizational) capabilities and changing external (environmental) circumstances (Andrews, 1971; Chandler, 1962; Hofer & Schendel, 1978; Penrose, 1959).

However, it has only been during the past decade that a bona: fide theory, known as the resource-based view of the firm, has emerged, articulating the relationships among firm resources, capabilities, and competitive advantage. Figure 1 provides a graphical summary of these relationships and some of the key authors associated with the core ideas.

The concept of competitive advantage has been treated extensively in the management literature. Porter (1980, 1985) thoroughly developed the concepts of costleadership and differentiation relative to competitors as two important sources of competitive advantage: a low-cost position enables a firm to use aggressive pricing and high sales volume, whereas a differentiated product creates brand loyalty and positive reputation, facilitating premium pricing.

Decisions concerning timing (e. g., moving early versus late) and commitment level (e. g., entering on a large scale versus more incrementally) also are crucial in securing competitive advantage (Ghemawat, 1986; Lieberman & Montgomery, 1988).

If a firm makes an early move or a large-scale move, it is sometimes possible to preempt competitors by setting new standards or gaining preferred access to critical raw materials, locations, production capacity, or customers.

Preemptive commitments thus enable firms to gain a strong focus and dominate a particular niche, either through lower costs, differentiated products, or both (Ghemawat, 1986; Porter, 1980). Finally, Hamel and Prahalad (1989, 1994) have emphasized the importance of "competing for the future" as a neglected dimension of competitive advantage.

According to this view, the firm must be concerned not only with profitability in the present and growth in the medium term, but also with its future position and source of competitive advantage. This view requires explicit strategizing about how the firm will compete when its current strategy configuration is either copied or made obsolete.

The connection between firms' capabilities and competitive advantage also has been well established in literature. Andrews (1971) and, later, Hofer and Schendel (1978) and Snow and Hrebiniak (1980) noted the centrality of "distinctive competencies" to competitive success.

More recently, Prahalad and Hamel (1990) and Ulrich and Lake (1991) reemphasized the strategic importance of identifying, managing, and leveraging "core competencies" rather than focusing only on products and markets in business planning.

The resource-based view takes this thinking one step further: It posits that competitive advantage can be sustained only if the capabilities creating the advantage are supported by resources that are not easily duplicated by competitors. In other words, firms' resources must raise "barriers to imitation" (Rumelt, 1984).

Thus, resources are the basic units of analysis and include physical and financial assets as well as employees' skills and organizational (social) processes. A firm's capabilities result from bundles of resources being brought to bear on particular value-added tasks (e. g., design for manufacturing, just-in-time production).

Although the terminology has varied (Peteraf, 1993), there appears to be general agreement in the management literature about the resource characteristics that contribute to a firm's sustained competitive advantage.

At the most basic level, such resources must be valuable (i. e., rent producing) and nonsubstitutable (Barney, 1991; Dierickx & Cool, 1989). In other words, for a resource to have enduring value, it must contribute to a firm capability that has competitive significance and is not easily accomplished through alternative means. Next, strategically important resources must be rare and/or specific to a given firm (Barney, 1991; Reed & DeFillippi, 1990).

That is, they must not be widely distributed within an industry and/or must be closely identified with a given organization, making them difficult to transfer or trade (e. g., a brand image or an exclusive supply arrangement). Although physical and financial resources may produce a temporary advantage for a firm, they often can be readily acquired on factor markets by competitors or new entrants. Conversely, a unique path through history may enable a firm to obtain unusual and valuable resources that cannot be easily acquired by competitors (Barney, 1991).

Finally, and perhaps most important, such resources must be difficult to replicate because they are either tacit (causally ambiguous) or socially complex (Teece, 1987; Winter, 1987).

Tacit resources are skill based and people intensive. Such resources are "invisible" assets based upon learning-by-doing that are accumulated through experience and refined by practice (Itami, 1987; Polanyi, 1962). Socially

complex resources depend upon large numbers of people or teams engaged in coordinated action such that few individuals, if any, have sufficient breadth of knowledge to grasp the overall phenomenon (Barney, 1991; Reed & DeFillippi, 1990).

The strategic significance of firms' resources and capabilities has been heightened by recent observations that companies that are better able to understand, nurture, and leverage core competencies outperform those that are preoccupied with more conventional approaches to strategic business planning (Prahalad & Hamel, 1990).

However, a firm's commitment to the existing competency base also may make it difficult to acquire new resources or capabilities. Put another way, the resource-based view may lead to an organization that is like the proverbial "child with a hammer"- everything starts looking like a nail. Technological discontinuities or shifts in external circumstances may render existing competencies obsolete or, at a minimum, invite the rapid development of new resources (Tushman & Anderson, 1986).

Under such circumstances, core competencies might become "core rigidities" (Leonard-Barton, 1992). In this article, I argue that one of the most important drivers of new resource and capability development for firms will be the constraints and challenges posed by the natural (biophysical) environment.