

TOWARDS A DYNAMIC THEORY OF STRATEGY

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This paper reviews the progress of the strategy field towards developing a truly dynamic theory of strategy. It separates the theory of strategy into the causes of superior performance at a given period in time (termed the cross-sectional problem) and the dynamic process by which competitive positions are created (termed the longitudinal problem). The cross-sectional problem is logically prior to a consideration of dynamics, and better understood. The paper then reviews three promising streams of research that address the longitudinal problem. These still fall short of exposing the true origins of competitive success. One important category of these origins, the local environment in which a firm is based, is described. Many questions remain unanswered, however, and the paper concludes with challenges for future research.

INTRODUCTION

The reason why firms succeed or fail is perhaps the central question in strategy. It has preoccupied the strategy field since its inception four decades ago. The causes of firm success or failure encompass all the other questions that have been raised in this collection of essays. It is inextricably bound up in questions such as why firms differ, how they behave, how they choose strategies, and how they are managed. While much of the work in the field has been implicitly domestic, it has become increasingly apparent that any search for the causes of firm success must confront the reality of international competition, and the striking differences in the performance of firms in a given industry based in different nations.

Yet, the question of why firms succeed or fail raises a still broader question. Any effort to understand success must rest on an underlying

theory of the firm and an associated theory of strategy. While there has been considerable progress in developing frameworks that explain differing competitive success at any given point in time, our understanding of the dynamic processes by which firms perceive and ultimately attain superior market positions is far less developed. Worse yet, some recent research has tended to fragment or dichotomize the important parts of the problem rather than integrate them, as I will discuss later.

My purpose in this essay is to sketch the outlines of a dynamic theory of strategy. Drawing on recent research, some parts of the outline can be filled in. Many unanswered questions remain, however, and I will try to highlight some of the most important of them.

As a starting point for building a dynamic theory of strategy, we must step back from specific hypotheses or models and look broadly at the literature in both strategy and economics. I will begin by describing the traditional rationale for company success that emerged in the early literature on strategy. This reflected an orien-

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tation of the strategy field that has differed in important respects from that which has characterized most research in economics, arguably the discipline with the most obvious connection to strategy. The strategy field's traditional answer to why firms succeed or fail was also based on a set of largely implicit, but crucial assumptions about the nature of firms and the environment in which they operate.

Although these assumptions grew out of a deep understanding of practice, they raise profound challenges for a theory of strategy. I will outline some of the most important challenges and the trade-offs they raise in both theory and empirical testing. Taking these challenges as a starting point, I will then describe my own answers to the causes of superior firm performance at a given point in time, which can be framed as a chain of causality. This problem, which I term the cross-sectional problem, is logically prior to a consideration of dynamics and better understood. A body of theory which links firm characteristics to market outcomes must provide the foundation for any fully dynamic theory of strategy. Otherwise, dynamic processes that result in superior performance cannot be discriminated from those that create market positions or company skills that are worthless.

I will then move to the dynamic process by which positions are created, which I term the longitudinal problem. To understand the dynamics of strategy, we must move further back in the causality chain. I will explore three recent streams of research that begin to address it: game theoretic models, models of commitment under uncertainty, and the so-called resource-based view of the firm. While illuminating important characteristics of the dynamic processes by which advantage is created and sustained, however, this research still falls short of exposing the true origins of advantage, and I will discuss the reasons why. One important category of these origins, that has emerged from my recent work, is the nature of the 'local' environment in which the firm is based. We observe striking concentrations of successful firms in a particular industry in particular locations, which suggests that *something* about these locations is fundamental to creating and sustaining advantage. I will summarize some of my findings about these issues. Many questions remain unanswered in our search for a dynamic theory of strategy,

however, and this essay will conclude with some challenges for future research.

Determinants of firm success: The early answers

Any discussion of the determinants of firm success must begin with a clear definition of what success means. For purposes of this essay, I will assume that firm success is manifested in attaining a competitive position or series of competitive positions that lead to superior and sustainable financial performance. Competitive position is measured, in this context, relative to the world's best rivals. Financial success derived from government intervention or from the closing of markets is excluded. A successful firm may 'spend' some of the fruits of its competitive position on meeting social objectives or enjoying slack. Why a firm might do this, however, is treated as a separate question.

To explain firm success, the early literature on strategy defined three essential conditions.¹ The first is that a company develop and implement an internally consistent set of goals and functional policies that collectively defined its position in the market. Strategy is seen as a way of integrating the activities of the diverse functional departments within a firm, including marketing, production, research and development, procurement, finance, and the like. An explicit and mutually reinforcing set of goals and functional policies is needed to counter the centrifugal forces that lead functional departments in separate directions. Strategy, in modern language, is a solution to the agency problem that arises because senior management cannot participate in or monitor all decisions and directly ensure the consistency of the myriad of individual actions and choices that make up a firm's ongoing activities.² If an overarching strategy is well understood throughout the organization, many actions are obviously ruled out and individuals can devise their own ways to contribute to the strategy that management would be hard pressed to replicate.

The second condition for success is that this internally consistent set of goals and policies aligns the firm's strengths and weaknesses with

¹ See Learned et al. (1965). See also Andrews (1971).

² In the absence of a strategy, the narrow motivations and logistics of each functional area will guide behavior.

the external (industry) opportunities and threats. Strategy is the act of aligning a company and its environment. That environment, as well as the firm's own capabilities, are subject to change. Thus, the task of strategy is to maintain a dynamic, not a static balance.

The third condition for success is that a firm's strategy be centrally concerned with the creation and exploitation of its so-called 'distinctive competences'.³ These are the unique strengths a firm possesses, which are seen as central to competitive success. The recent interest in the notion of firm resources or competences is interesting in light of this heritage.⁴ I will return to this stream of work later.

The early strategy literature contained only broad principles governing firm success. It is instructive to understand why these authors, coming as they did from a heritage that stressed the administrative point of view and the study of *in-depth* cases, chose to approach the question in this way. There were two principal reasons. The first was that their orientation, and that of many in the strategy field, was to inform business practice. A theory that sought to explain part of a phenomena, but which left out important elements that precluded the offering of credible guidance for individual companies, was seen as inadequate to the task.

A second reason for the early formulation was the recognition, indeed the preoccupation, with the fact that competition was complex and highly situation-specific. The early scholars in the strategy field, especially those at Harvard, recognized that firms were composed of numerous functions and subfunctions, and that many diverse aspects of a firm and its environment could be important to success in particular cases. Indeed, it was the act of achieving consistency of action in the many parts of the firm that was seen as crucial to competitive success. Scholars such as Andrews saw each company as unique, with its own history, personality, capabilities, and set of current policies. Every industry was also unique, with its own circumstances and critical success factors. Finally, every period of time was seen as unique, because both companies and their environment were in a state of constant change.

Yet firms were seen as possessing considerable ability to build on their strengths and overcome their weaknesses, latitude in influencing or altering their environment, and the ability to influence change over time, not merely respond to it. Indeed, the recognition that industry structure and other exogenous conditions affect performance and constrain choices had to await further work.

The challenges for a theory of strategy

The view of the world that guided the early efforts to formulate a theory of strategy raises profound challenges for research. The complexity, situation specificity, and changing nature of the firm and its environment strains conventional approaches to theory building and hypothesis testing. Indeed, the early research offered no theory for examining the firm and its competitive environment at all; instead strategy formulation took place through applying the broad principles of consistency and fit to individual case studies.

Four principal issues emerge from the nature of actual economic competition as one contemplates a theory of strategy:

Approach to theory building

First, there is a fundamental question about the approach to theory building that will most advance both knowledge and practice. The broad alternatives are represented in Figure 1.

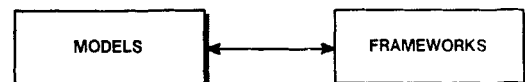


Figure 1. Approaches to theory building

On the one hand, one might approach the task of developing a theory of strategy by creating a wide range of situation-specific but rigorous (read mathematical) models of limited complexity. Each model abstracts the complexity of competition to isolate a few key variables whose interactions are examined in depth. The normative significance of each model depends on the fit between its assumptions and reality. No one model embodies or even approaches embodying

³ This notion is due originally to Selznick (1957).

⁴ See, for example, Wernerfelt (1984) and Prahalad and Hamel (1990).

all the variables of interest, and hence the applicability of any model's findings are almost inevitably restricted to a small subgroup of firms or industries whose characteristics fit the model's assumptions.

This approach to theory building has been characteristic of economics in the last few decades.⁵ It has spawned a wide array of interesting models in both industrial organization and trade theory. These models provide clear conclusions, but it is well known that they are highly sensitive to the assumptions underlying them and to the concept of equilibrium that is employed. Another problem with this approach is that it is hard to integrate the many models into a general framework for approaching any situation, or even to make the findings of the various models consistent. While few economists would assert that this body of research in and of itself provides detailed advice for companies, these models, at their best, provide insights into complex situations that are hard to understand without them, which can inform the analysis of a particular company's situation.

Given the goal of informing practice, the style of research in the strategy field, including my own, has involved a very different approach.⁶ To make progress, it was necessary to go beyond the broad principles in the early work and provide more structured and precise tools for understanding a firm's competitive environment and its relative position. Instead of models, however, the approach was to build frameworks. A framework, such as the competitive forces approach to analyzing industry structure, encompasses many variables and seeks to capture much of the complexity of actual competition. Frameworks identify the relevant variables and the questions which the user must answer in order to develop conclusions tailored to a particular industry and company. In this sense, they can be seen as almost expert systems. The theory embodied in frameworks is contained in the choice of included variables, the way variables are organized, the interactions among the variables, and the way in which alternative patterns of variables and company choices affect outcomes.

In frameworks, the equilibrium concept is imprecise. My own frameworks embody the notion of optimization, but no equilibrium in the normal sense of the word. Instead there is a continually evolving environment in which a perpetual competitive interaction between rivals takes place. In addition, all the interactions among the many variables in the frameworks cannot be rigorously drawn.⁷ The frameworks, however, seek to help the analyst to better think through the problem by understanding the firm and its environment and defining and selecting among the strategic alternatives available, no matter what the industry and starting position.

These two approaches to theory building are not mutually exclusive. Indeed, they should create a constructive tension with each other. Models are particularly valuable in ensuring logical consistency and exploring the subtle interactions involving a limited number of variables. Models should challenge the variables included in frameworks and assertions about their link to outcomes. Frameworks, in turn, should challenge models by highlighting omitted variables, the diversity of competitive situations, the range of actual strategy choices, and the extent to which important parameters are not fixed but continually in flux. The need to inform practice has demanded that strategy researchers such as myself pursue the building of frameworks rather than restrict research only to theories that can be formally modelled. As long as the building of frameworks is based on in-depth empirical research, it has the potential to not only inform practice but to push the development of more rigorous theory.

Chain of causality

A second fundamental issue in creating a theory of strategy is where to focus the chain of causality. A stylized example will illustrate. We might observe a successful firm and find that its profitability is due to a low relative cost position compared to its rivals. But the firm's cost position is an outcome and not a cause. The question

⁵ Interestingly, the earlier work in industrial economics, in the Mason/Bain tradition, was much closer to strategy research in its effort to capture complexity.

⁶ See examples such as Porter (1985) and Ghemawat (1991).

⁷ Frameworks can also be challenged because their complexity makes it difficult to falsify arguments. Yet ascribing this property to models is also problematic if they omit important variables.

becomes: Why was the firm able to attain this cost position? Some typical answers might be that it is reaping economies of scale, or has moved aggressively down the learning curve. But again, the question becomes why? Some possible answers might include entering the industry early, or the firm's ability to organize itself particularly well for cost reduction. Once again, however, the question becomes why? And we could continue moving along such a chain of causality even further.

Another way of framing the same set of issues is as the problem of drawing the boundary between exogenous and endogenous variables. Should the environment be taken as given or not? Is the firm's scale an outcome or a cause? And so on. The literature in both strategy and economics addresses many different points in this chain of causality. Indeed, many differences are less conflicts than theory positioned at different points in the chain, as we will see later.

Any theory of strategy must grapple with how far back in the chain of causality to go. The answer may well be different for different purposes. A theory that aims very early in the chain may be intractable or lack operationality. Also, aspects of the firm that are variable in the long run may be fixed or sticky in the short run. Conversely, a theory oriented later in the chain may be overly limiting and miss important possibilities.

Time horizon

A third challenge for theory is the time period over which to measure and understand competitive success. Should we be building theories for explaining success over two or three years, over decades, or over centuries? Clearly, the likelihood of significant environmental change will differ, as will the exogenous and endogenous variables. A theory that aims at explaining success over 50 years will focus on very different variables, almost inevitably more internal ones, than a theory that addresses success over one or two decades. This is because industry and competitive conditions are likely to be wholly different over a half century, placing greater emphasis on a firm's ability to transform itself. Time period relates closely to position in the chain of causality. Over long periods, theories aimed earlier in the chain would seem more appropriate.

Empirical testing

A final important issue is how to test theories of strategy empirically. Empirical testing is vital both for frameworks and models. Testing of models is difficult given the need to match their assumptions. Given the myriad of relevant variables in frameworks and the complex interactions among them over time, rigorous statistical testing of frameworks is also difficult, to say the least. In my own research, I pursued cross-sectional econometric studies in the 1970s but ultimately gave up as the complexity of the frameworks I was developing ran ahead of the available cross-sectional data. I was forced to turn to large numbers of in-depth case studies to identify significant variables, explore the relationships among them, and cope with industry and firm specificity in strategy choices.

The need for more and better empirical testing will be a chronic issue in dealing with this subject. Academic journals have traditionally not accepted or encouraged the deep examination of case studies, but the nature of strategy requires it. The greater use of case studies in both books and articles will be necessary for real progress at this stage in the field's development.

TOWARDS A THEORY OF STRATEGY

To explain the competitive success of firms, we need a theory of strategy which links environmental circumstances and firm behavior to market outcomes. My own research would suggest a chain of causality for doing so, outlined in Figure 2.

The basic unit of analysis in a theory of strategy must ultimately be a strategically distinct business or industry. While firms can redeploy or share resources, activities, and skills across different businesses, the competitive value of such actions can only be measured in terms of some set of rivals delivering a discrete product or service to some set of buyers. Meaningful approaches to corporate-level strategy for diversified firms must grow out of a deep understanding of how companies prosper in individual businesses, and the role of the corporate office and other sister business units in the process.

At the broadest level, firm success is a function of two areas: the attractiveness of the industry

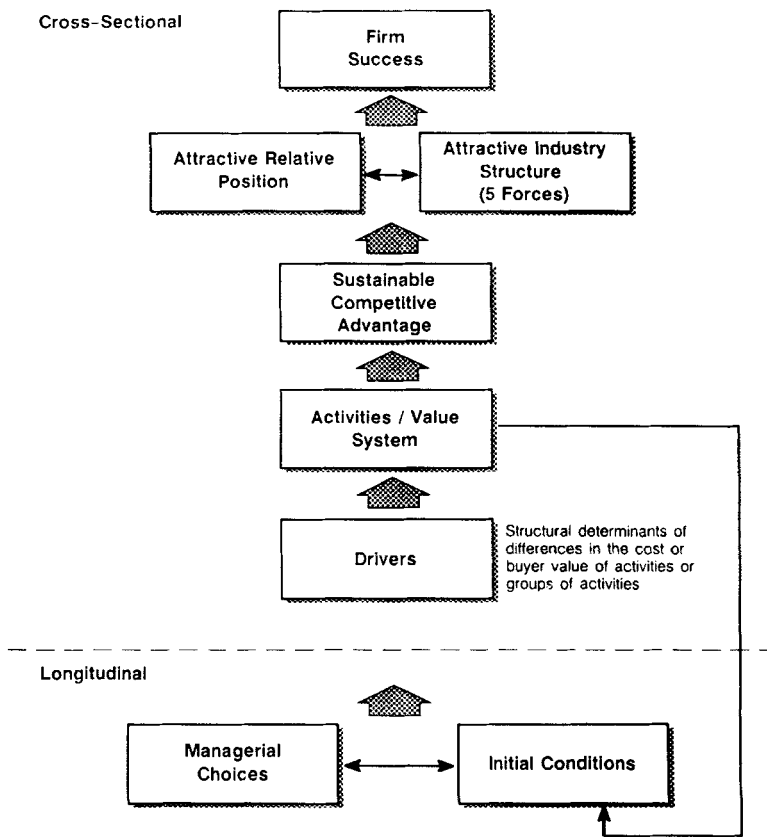


Figure 2. The determinants of success in distinct businesses

in which the firm competes and its relative position in that industry. Firm profitability can be decomposed into an industry effect and a positioning effect. Some firm successes come almost wholly from the industry in which they compete; most of their rivals are successful, too! The distinction between industry structure and relative position is important because, among other things, the firm can choose strategies that will improve one while harming the other. Firms' actions, by triggering imitation, can positively or negatively influence the structure of an industry without leading to competitive advantage. Ideally, however, a firm's actions trigger responses by rivals which improve industry structure but simultaneously allow the firm to gain competitive advantage because rivals' ability to imitate the chosen mode of competition is incomplete.

Industry structure

I have presented a framework for diagnosing industry structure, built around five competitive forces that erode long-term industry average profitability (see Figure 3). This framework has been explored, contributed to, and tested by many others. The industry structure framework can be applied at the level of the industry, the strategic group (or group of firms with similar strategies) or even the individual firm. Its ultimate function is to explain the *sustainability* of profits against bargaining and against direct and indirect competition. Profit differences *vis-à-vis* direct rivals, though, depend on positioning.

Industry structure is partly exogenous, and partly subject to influence by firm actions. Hence structure and firm position ultimately interrelate, which makes separating them a simplification

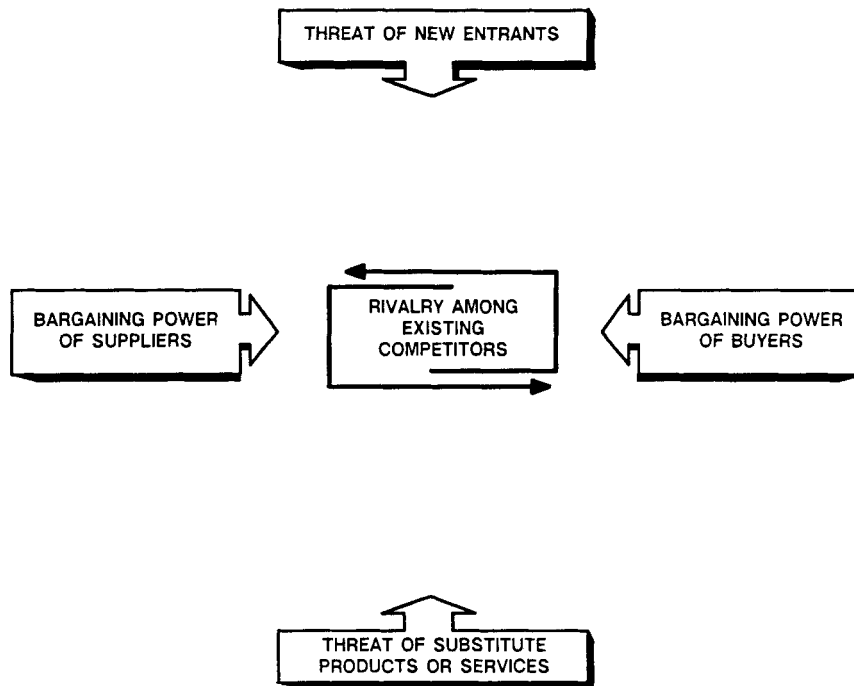


Figure 3. Five forces: Summary of key drivers

'The five forces' (p. 4): From *Competitive strategy: Techniques for Analyzing Industries and Competitors* by Michael E. Porter. Copyright © 1980 by The Free Press, a Division of Macmillan, Inc. Reprinted by permission of the publisher.

though a useful one for analytical purposes. The firm's scope for influencing industry structure, and ways of modeling it, are a fruitful area for research. My focus here, however, is on relative position because this is where many of the most interesting questions for a dynamic theory of strategy lie.

Relative position

Holding industry structure constant, a successful firm is one with an attractive relative position. An attractive position is, of course, an outcome and not a cause. The question becomes why, or how did the attractive position arise? The answer must be that the firm possesses a sustainable competitive advantage *vis-à-vis* its rivals. To understand competitive advantage, however, we must decompose it. Competitive advantages can be divided into two basic types: lower cost than rivals, or the ability to differentiate and command a premium price that exceeds the extra cost of doing so. Any superior performing firm has

achieved one type of advantage, the other, or both. To say it another way, superior profitability can only logically arise from commanding a higher price than rivals or enjoying lower costs (including, at a lower level in the causality chain, asset costs).⁸

Competitive advantage cannot be examined independently of competitive scope. Scope encompasses a number of dimensions including the array of product and buyer segments served, the geographic locations in which the firm competes, its degree of vertical integration, and the extent of related businesses in which the firm has a coordinated strategy. Competitive advantage is attained within some scope, and the choice of scope is a central one in strategy. Scope choices can also influence industry structure.

These principles make it clear that the essence of strategy is choice. There is no one way to

⁸ A firm that can command higher volume at a given price takes its superior profitability in the form of lower cost provided costs are scale sensitive.

position within an industry, but many positions involving different choices of the type of advantage sought and the scope of the advantage. Several positions can be attractive in absolute terms, and a variety of positions may be relatively the most attractive depending on the firm's starting position. Choice is essential, however, because there are logical inconsistencies in pursuing several types of advantage or different scopes simultaneously. Also, the firm must stake out a distinct position from its rivals. Imitation almost ensures a lack of competitive advantage and hence mediocre performance.

Activities

If an attractive relative position results from possessing competitive advantage within some scope, the question once again becomes why does that happen? In order to address it, we must decompose cost, differentiation, and scope. This requires a theory which provides an elemental look at what firms do. My own approach to such a theory, and to the sources of competitive advantage, centers around *activities*. (Porter, 1985). A firm is a collection of discrete, but interrelated economic activities such as products being assembled, salespeople making sales visits, and orders being processed. A firm's strategy defines its configuration of activities and how they interrelate. Competitive advantage results from a firm's ability to perform the required activities at a collectively lower cost than rivals, or perform some activities in unique ways that create buyer value and hence allow the firm to command a premium price. The required mix and configuration of activities, in turn, is altered by competitive scope.

The basic unit of competitive advantage, then, is the discrete activity. The economics of performing discrete activities determines a firm's relative cost, not attributes of the firm as a whole. Similarly, it is discrete activities that create buyer value and hence differentiation.

The activities in a firm can be schematically arrayed in what I term the value chain and the value system (see Figure 4). The term value refers to customer value, from which the potential profit ultimately derives. A firm's strategy is manifested in the way in which it configures and links the many activities in its value chain relative to competitors. The value chain distinguishes

centrally between activities that directly produce, market, and deliver the product and those that create or source inputs or factors (including planning and management) required to do so. Support activities, then, are integral to the process by which assets internal to the firm are acquired and accumulated.

Discrete activities are part of an interdependent system in which the cost or effectiveness of one activity can be affected by the way others are performed. I term these linkages. The cost of after-sale service, for example, is influenced by how product design, inspection, and installation are performed. Such linkages can extend outside the firm to encompass the activities of suppliers, channels, and buyers. The concept of linkages begins to operationalize the notion of internal consistency.

Activities involve human resources, purchased inputs, and a 'technology' for performing them, broadly defined to include organizational routines. Activities also use and create information.⁹ Performing an activity requires tangible and intangible assets that are *internal* to the firm, such as physical and often financial assets (e.g. working capital) as well as intangible assets embodied in human resources and technology. Performing an activity, or a group of linked activities, also creates assets in the form of skills, organizational routines, and knowledge. While the tangible assets normally depreciate, the intangible assets involved in performing activities can cumulate over time (provided the environment remains relatively stable). These become an important part of corporate balance sheets, as many writers have stressed.¹⁰

Performing activities can also create assets *external* to the firm. Some are tangible assets such as contracts. Most, however, are intangible assets such as brand images, relationships, and networks. These external assets then feed back to influence the cost or effectiveness of performing activities on an ongoing basis. A strong brand reputation because of cumulative past advertising, for example, can lower the cost of current advertising or make a given rate of spending more effective. Without reinvestment, however, both the external and internal intangible assets

⁹ See Porter and Millar (1985).

¹⁰ See, for example, Itami (1987) and Baldwin and Clark (1991).

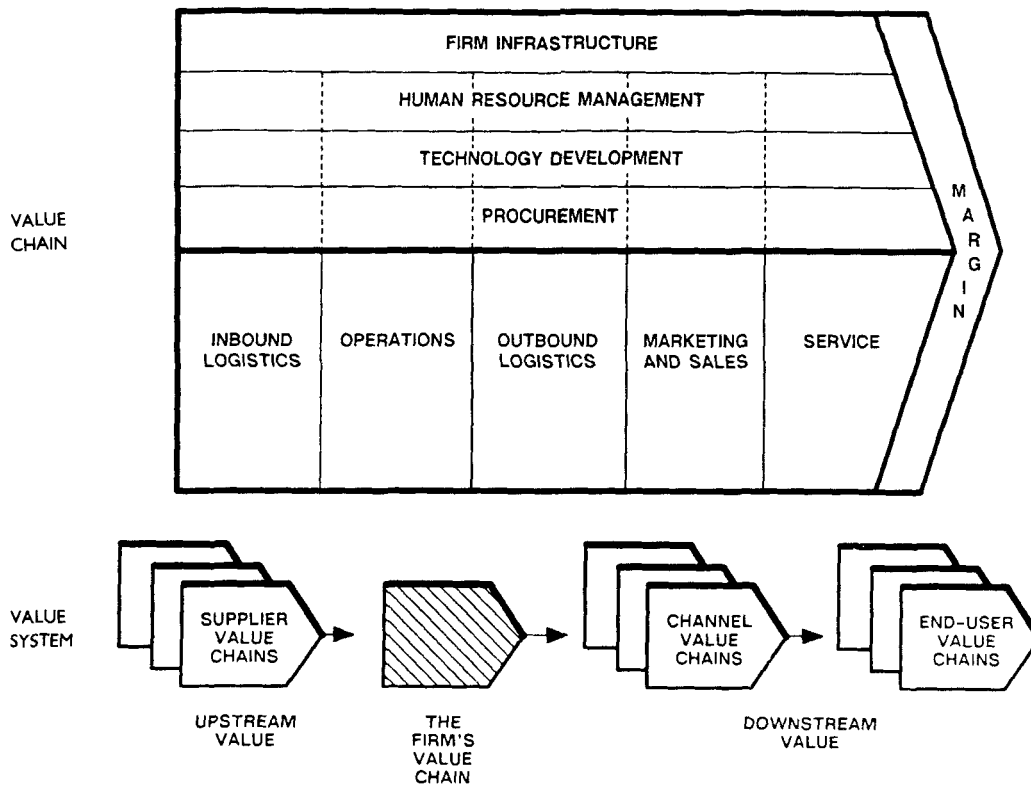


Figure 4. Value chain and value system

'The Value Chain' (p. 37) and 'The Value System' (p. 35); From *Competitive Advantage: Creating and Sustaining Superior Performance* by Michael E. Porter. Copyright © 1985 by Michael E. Porter. Reprinted by permission of The Free Press, a Division of Macmillan, Inc.

attached to activities or groups of activities depreciate. Maintaining or enhancing these assets demands reinvestment through performing activities. Both the external and internal assets are not valuable in and of themselves, however, but because they fit industry structure and a particular strategy. Activities performed poorly, or inconsistently with buyer needs, can create liabilities not assets. At the same time, technological and other industry changes can nullify assets or turn them into liabilities.

The value chain provides a template for understanding cost position, because activities are the elemental unit of cost behavior.¹¹ The move to activity-based costing is a manifestation of this perspective.¹² The value chain also

provides a means to systematically understand the sources of buyer value and hence differentiation. Buyer value is created when a firm lowers its buyer's cost or enhances its buyer's performance. This, in turn, is the result of the ways a firm's product as well as its other activities affect the value chain of the buyer. Firms must not only create value, but 'signal' that they will do so, through their sales forces and other activities. Households and individual consumers have value chains, just as do industrial or institutional buyers. By understanding how households perform activities related to a product (e.g. procurement, storage, use, disposal, etc.), the sources of differentiation can be better understood. Finally, the value chain provides a tool for analyzing the added costs that differentiating may require. Only differentiation that results in a price premium exceeding the extra costs of delivering it results in superior performance.

¹¹ See Porter (1985, Chapter 3).

¹² See Johnson and Kaplan (1987), Cooper and Kaplan (1988, 1991).

Drivers

If competitive advantage grows out of discrete activities, however, we once again confront the question, 'why?' Why are some firms able to perform particular activities at lower cost or in ways that create superior value than others? My answer to this question is the concept of *drivers*. These are structural determinants of differences among competitors in the cost or buyer of activities or group of activities. The most important drivers of competitive advantage in an activity include its scale, cumulative learning in the activity, linkages between the activity and others, the ability to share the activity with other business units, the pattern of capacity utilization in the activity over the relevant cycle, the activity's location, the timing of investment choices in the activity, the extent of vertical integration in performing the activity, institutional factors affecting how the activity is performed such as government regulation, and the firm's policy choices about how to configure the activity independent of other drivers. The same set of drivers determines both relative cost and differentiation. The mix and significance of individual drivers varies by activity, by firm, and by industry.

Moving to the level of drivers also sheds light on the important question of sustainability. The sustainability of competitive advantage *vis-à-vis* rivals depends on the number of competitive advantages in the value chain and, especially, the particular drivers underlying each one. The durability of an advantage based on learning, for example, depends on the ability to keep the learning proprietary, while the sustainability of advantages due to timing of factor positions depends on factor market imperfections.

Drivers constitute the underlying sources of competitive advantage, and make competitive advantage operational. For example, brand reputation is a typical competitive advantage identified by managers. But brand reputation may be a source of cost advantage (less need for marketing) in some cases and a source of differentiation (and a premium price) in others. The substantive implications are very different depending on which it is. Yet, brand reputation is an outcome, not a cause. The real question is how and why brand reputation is an advantage. To understand this, one must move to the level of drivers. For

example, timing may have allowed the firm to begin advertising early and hence to develop a reputation uncluttered by the competing claims of rivals. The reputation from cumulative advertising then allows the firm to spend less on current advertising or to spend at a comparable rate to rivals but command a premium price. Alternatively, greater current company sales volume may lead to efficiencies in advertising that allow the firm to enjoy a superior reputation while spending at a rate comparable to its rivals. Only by moving to the level of underlying drivers can the true sources of competitive advantage be identified. Tying advantage to specific activities/drivers is necessary to operationalize the notion in practice.

The value chain also provides the basic architecture for analyzing international strategy and diversification, both fundamentally questions of competitive scope. The central issue in international strategy involves the spread of activities to other countries (configuration) and the integration of dispersed activities (coordination) (Porter, 1986). In corporate-level strategy for diversified firms, the central issue is how firms can share activities across businesses, or share proprietary skills in how to perform particular activities though the value chains of business units are distinct (Porter, 1987).

THE ORIGINS OF COMPETITIVE ADVANTAGE

This set of frameworks aims to build a careful link between the underlying choices a firm makes in terms of its industry, positioning, and configuration of activities and market outcomes. The proper choices depend on a firm's existing position, which can be evaluated systematically via its value chain and drivers. The best strategy also depends on the capabilities and likely behavior of rivals, which can also be assessed through their value chains and drivers. Finally, strategy depends on a sophisticated understanding of industry structure.

Firms inherit positions that constrain and shape their choices, but do not determine them. They have considerable latitude in reconfiguring the value chain with which they compete, expanding or contracting their competitive scope, and influencing important dimensions of their industry environment. Strategy is not a race to occupy

one desirable position, but a more textured problem in which many positions can be chosen or created. Success requires the choice of a relatively attractive position given industry structure, the firm's circumstances and the positions of competitors. It also requires bringing all the firm's activities into consistency with the chosen position.

While these frameworks have pushed a considerable distance backward along the chain of causality, the focus thus far has been on what might be termed the *cross-sectional* problem. What makes some industries, and some positions within them, more attractive than others? What makes particular competitors advantaged or disadvantaged? What specific activities and drivers underlie the superior positions?

But in answering these questions, we again confront the question of causality. Why were particular firms able to get into the advantaged positions and sustain/or fail to sustain them? This is what might be termed the longitudinal problem, which requires crossing the dotted line on Figure 2.¹³

The frameworks for addressing the cross-sectional problem are agnostic as to the process by which the superior positions were attained, and largely unaffected by it. Whether the strategy was consciously chosen, happenstance, the result of incremental steps, or driven by one major decision does not itself affect the attractiveness of the position independently of the activities and drivers on which it rests. Similarly, the past process by which firms accumulated their strengths and capabilities is not, in and of itself, decisive. The cross-sectional frameworks address the choice of strategy given whatever array of capabilities the firm and its rivals possess at a point in time and can feasibly develop in the future. The effort by some to dichotomize process and substance is simply incorrect.¹⁴ Both are necessary and important to understand.

The cross-sectional problem is also logically prior. Without a rather specific understanding of what underpins a desirable position, it is virtually impossible to deal analytically with the process

of getting there. Strategy becomes an aimless process in which luck determines the winners.

Assuming an understanding of the cross-sectional problem, however, the longitudinal problem takes on prime importance. Why do some firms achieve favorable positions *vis-à-vis* the drivers in the value chain? Why do some firms gain scale advantages? Why do some firms move early, or late, whichever leads to advantage? Why do some firms conceive of and implement superior configurations of activities or spot entirely new and desirable competitive positions?

Logically, there are two answers. The first is *initial conditions*. Firms may have pre-existing reputations, skills, and in-place activities as a result of their history. These initial conditions may reside within an individual firm or, as I will discuss later, in the environment in which the firm is based. Initial conditions clearly influence feasible choices as well as constrain them.¹⁵

The second reason that firms might achieve favorable positions is through pure *managerial choices*, or choices independent of initial conditions, putting aside for the moment the process by which the choices were made. These managerial choices, which are made under uncertainty about the future, define the firm's concept for competing (positioning), its configuration of activities, and the supporting investments in assets and skills. Pure managerial choices lead to the assembly or creation of the particular skills and resources required to carry out the new strategy.

Numerous case studies illustrate vividly that highly successful firms often arise out of creative acts where there were few initial strengths. Wal-Mart decided to locate in small- and medium-sized towns and configure its logistical system in a particular way because it had a better idea, not because of any compelling pre-existing strengths. If anything, its choices were shaped more by what it did not possess than what it did. The same could be said about Federal Express, Apple Computer, Crown Cork and Seal, and many other companies. American Airlines developed its MIS systems almost by accident. Its frequent flyer program was partly a function of the existence of its MIS system, but other

¹³ I avoid the terms static and dynamic intentionally, because both the cross-sectional and longitudinal problems have both static and dynamic components.

¹⁴ See, for example, Mintzberg (1990).

¹⁵ Initial conditions can also be set at different points in time. See below.

airlines had these as well. American's management was simply more creative.

Many strategies clearly reflect some combination of initial conditions and creative choice. The balance between the influence of initial conditions and acts of pure managerial choice varies by company and industry. Yet there may well be a tendency, for a variety of reasons to be discussed later, to overstate the role of initial conditions.

Lying behind all initial conditions internal to the firm were earlier managerial choices. The skills and market position a firm has built today are the result of past choices about how to configure activities and what skills to create or acquire. Some of these choices, as Ghemawat's (1991) work among others had emphasized, involve hard-to-reverse commitments down certain paths (path dependency). Earlier choices, which have led to the current pool of internal skills and assets, are a reflection of the external environment surrounding the firm at the time. The earlier one pushes back in the chain of causality, the more it seems that successive managerial choices and initial conditions *external* to the firm govern outcomes.

The importance of managerial choice is also highlighted by the cross-sectional problem. Whatever configuration of activities and skills a firm has inherited may or may not be competitively valuable. Simply having pools of skills, knowledge, or other resources is not in and of itself a guarantee of success. They must be the right ones. If managers can understand their competitive environment and the sources of competitive advantages, they can better search creatively for favorable positions that are different from competitors', assemble the needed skills and assets, configure the value chain appropriately, and put in place supportive organizational routines and a culture which reinforces the required internal behavior. The most successful firms are notable in employing imagination to define a *new* position, or find *new* value in whatever starting position they have.

Towards a dynamic theory

How, then, do we make progress towards a truly dynamic theory of strategy? Scholars, in both strategy, organizational behavior, and economics, sensing this as the frontier question, have made

some headway. There are three promising lines of enquiry that have been explored in recent years. Each addresses important questions, though focusing on a somewhat different aspect of the problem.

Game theoretical models

The first line of inquiry is the proliferation of game theoretic models of competitive interaction, referred to earlier, which seek to understand the equilibrium consequences of patterns of choices by competitors over a variety of strategic variables such as capacity and R&D. Since this literature is reviewed elsewhere in this volume,¹⁶ the treatment here can be brief. The central concern of these models is to understand the conditions that lead to mutually consistent equilibria and the nature of these equilibria. Each model is restricted to one or a few variables, and the environment (technology, products, preferences, etc.) is assumed fixed except for the variables examined. Given this structure, timing plays a central role in determining outcomes. With a frame of reference in which these assumptions are plausible, Shapiro (1989) terms this literature a theory of business strategy.

These models have helped us understand better the logical consequences of choices over some important strategy variables. In particular, these models highlight the importance of information and beliefs about competitive reaction and the conditions required for a set of internally consistent choices among rivals.

Yet, this line of work stops short of a dynamic theory of strategy. By concentrating sequentially on small numbers of variables, the models fail to capture the simultaneous choices over many variables that characterize most industries. The models force a homogeneity of strategies. Yet it is the trade-offs and interactions involved in configuring the entire set of activities in the value chain that define distinct competitive positions. Finally, the models hold fixed many variables that we know are changing. Ironically, these models explore the dynamics of a largely static world. (The papers by Saloner, Camerer and Postrel in this volume raise additional useful questions.)

¹⁶ Editor's Note: See the articles by Garth Saloner, Colin Camerer, and Steven Postrel.

Commitment and uncertainty

Another body of work is beginning to emerge on the problem of making irreversible commitments under uncertainty. Ghemawat's recent book (1991) is a notable example. The notion here is that strategy is manifested in a relatively few investment decisions that are hard to reverse, and which tend to define choices in other areas of the firm. These commitments must be made under uncertainty. Ghemawat highlights the importance of such choices, and argues that they should consume much of the attention in strategy analyses. He posits that analysis of such decisions must begin with cross-sectional frameworks. In choosing among feasible positions, however, Ghemawat stresses the need to carefully examine their sustainability and the influence of uncertainty in choosing among them. He brings a broader perspective to bear on sustainability than is present in the game theory models.

Related to Ghemawat's research is work that seeks to define ways of understanding the uncertainties a firm faces, and the alternative ways it can be addressed in strategy choices. The scenario technique for organizing and bounding uncertainty has received much attention.¹⁷ More recently, taxonomies have begun to emerge which attempt to categorize the ways in which firms can respond to uncertainty.¹⁸ In addition, Teisberg (1991b) begins to explore the biases and heuristics in decisionmaking in complex and uncertain circumstances that distort strategy choices, drawing on work in behavioral decision analysis and cognitive psychology.

This emerging stream of work emphasizes the lumpiness of strategy choices and the importance of uncertainty in making them. It sheds important light on how to approach discrete investment decisions from a rich strategic perspective. This comes at the price, however, of a focus on large, discrete, sequential investments rather than the simultaneous set of choices throughout the value chain that define a firm's competitive position. Like the game theoretic models, the environment is taken as relatively stable (though uncertain) so that commitments have long-lived consequences and the possibilities for reconfiguring

the value chain are limited. This approach tends to stress the value of flexibility in dealing with change rather than the capacity to rapidly improve and innovate to nullify or overcome it. By focusing on discrete choices, the discretion a firm has to shape its environment, respond to environmental changes, or define entirely new positions is implicitly limited or not operationalized by most treatments.¹⁹

The resource-based view

A third body of research in search of the origins of competitive advantage is the so-called resource-based view of the firm.²⁰ Closely related to the resource-based view is the notion of 'core competences' and treatments that stress intangible assets. Since this literature is more prominent and more extensive than that on commitment/uncertainty, it deserves a more detailed treatment.

Of the three literatures, the resource-based view is the most introspective and centered on the firm itself. The argument is that the origins of competitive advantage are valuable resources (or competences) that firms possess, which are often intangible assets such as skills, reputation, and the like. These resources are seen as relatively immobile, and as strengths to be nurtured and which should guide the choice of strategy. The implicit focus of much of this literature is on the underpinnings of successful diversification. It is, of course, essential when diversifying to understand a firm's distinctive strengths (remember Andrews).

The resource-based view has been proposed as an alternative theory of strategy.²¹ What is

¹⁹ Teisberg's (1991a) essay, by making the influencing of industry structure a way of dealing with uncertainty, is an exception.

²⁰ Conversations with Cynthia Montgomery have stimulated and informed my interest in this literature. Perhaps the pioneer of this school is Penrose (1963). An early paper was Wernerfelt (1984). For other references, see the bibliographies in Peteraf (1990) and Collis (1991b). Recent papers include Barney (1991) and Grant (1991).

²¹ Some writers in the resource school draw stylized comparisons with industrial organization (IO)-based theories that confuse rather than clarify. For example, Peteraf's survey (1990) asserts that IO-based models focus only on the heterogeneity of markets while denying the heterogeneity of firms and the existence of differential competitive positions, to be based only on monopoly rents, to lead only to strategies of collusion, and to be restricted to *formulating strategy* at the business unit level. This view is puzzling unless one is talking about the IO-based models of the 1970s, before research aimed at bridging IO and firm strategy began.

¹⁷ See Wack (1985a,b) and Schwartz (1991).

¹⁸ See Wernerfelt and Karnani (1987), Porter (1985, Chapter 13), Teisberg (1991a), and Collis (1991a).

really unique about a firm, so the argument goes, is its bundle of resources. It is factor market impediments, then, rather than product market circumstances that define success. The role of internal resources is an important insight for economic modelers, though less novel a notion for strategy researchers.

The promise of the resource view for the strategy field is the effort to address the longitudinal problem, or the conditions that allow firms to achieve and sustain favorable competitive positions over time. As with the other literatures, however, more work remains to be done. At its worst, the resource-based view is circular. Successful firms are successful because they have unique resources. They should nurture these resources to be successful.²² But what is a unique resource? What makes it valuable? Why was a firm able to create or acquire it? Why does the original owner or current holder of the resource not bid the value away? What allows a resource to retain its value in the future? There is once again a chain of causality, that this literature is just beginning to unravel.

Some authors have begun to deal with these questions by seeking to specify the conditions under which resources are valuable. Valuable resources are those that are superior in use, hard to imitate, difficult to substitute for, and more valuable within the firm than outside. Yet valuable resources, in order to yield profits to the firm, have been acquired for less than their intrinsic value due to imperfections in input markets, which Barney (1986) argues are usually due to informational asymmetries (read better managerial choices) or luck.

Yet, the resource-based view cannot be an alternative theory of strategy. It cannot be separated from the cross-sectional determinants of competitive advantage or, for that matter, from the conception of a firm as a collection of activities. Stress on resources must complement, not substitute for, stress on market positions.²³

Resources are not valuable in and of themselves, but because they allow firms to perform activities that create advantages in particular markets. Resources are only meaningful in the

context of performing certain activities to achieve certain competitive advantages. The competitive value of resources can be enhanced or eliminated by changes in technology, competitor behavior, or buyer needs which an inward focus on resources will overlook. More reliable Japanese products, for example, degraded the value of Xerox's copier service organization. The immobility of resources, then, is as likely to be a risk as a source of strength. For every firm with resources that convey advantage, there will be another (and perhaps many others) whose bundle resources impeded change or proved to be a liability in light of environmental changes.

Competitive advantage derives from more than just resources. Scale, sharing across activities, an optimal degree of integration, and other drivers have independent influences unless 'resources' are defined so broadly as to strain credibility. It is the collective advantage gained from all sources that determines relative performance.

The conditions which make a resource valuable bear a strong resemblance to industry structure. Bargaining power of suppliers refers to input markets, substitutability to the threat of substitution, and imitability to barriers to entry/mobility. The bargaining power of buyers, and the dissipation of resource rents through rivalry via price cutting or competition from alternative resource bundles, represent additional threats to the profitability of firms.

The connection between resources and activities is even more fundamental, however, because resources represent an inherently intermediate position in the chain of causality. Resources arise either from performing activities over time, acquiring them from outside, or some combination of the two. Both reflect prior managerial choices. Performing an activity or group of linked activities over time creates internal skills and routines which accumulate. It also can create external assets. A firm's reputation, for example, is a function of the history of its marketing and customer service activities among other things. Both internal and external assets depreciate, however, unless they are reinvigorated through continuing to perform activities. The rate of depreciation appears to vary widely across different types of assets, and can be rapid. Firms, then, have accumulated differing resources because of differing strategies and configuration of activities.

²² In this respect, the paper by Prahalad and Hamel (1990) is perhaps the most inward looking and the most troubling.

²³ Collis's (1991b) recent paper concludes on this point, which emerges from his detailed case study of ball bearings.

Resources and activities are, in a sense, duals of each other.²⁴

Resources, then, are intermediate between activities and advantage. An explicit link between resources and activities, along with the clear distinction between internal and external resources that was drawn earlier, is necessary to carefully define a resource in the first place. Some firm attributes termed resources are activities—such as sales forces or R&D organizations. A second and more appropriate category of resources is skills, organizational routines, or other assets attached to particular activities or groups of interrelated activities.

The concept of activity drivers allows more precision in defining how resources were created. Some skills and routines emerge because of learning over time. This learning is a reflection of past strategy choices which have defined how activities are configured. Other resources were obtained through well-timed factor purchases (timing). Still others are the result of the ability to share across units. In turn, the resource view adds an important dimension to the concepts of activities and drivers. Underlying the ability to link activities or share them across business units, for example, are organizational skills and routines that represent important assets.

A final category of resources is external assets such as reputation and relationships.²⁵ These are normally created through performing activities over time. Recognizing these assets, and their link to the ongoing cost or differentiation of activities, is another valuable contribution of the resource view. The existence of such assets is implicit in the concept of drivers but not well developed.

All this still leaves unanswered the question, however, of the origins of competitive advantage. Why can valuable resources be created and sustained? Interestingly, the requirement of imperfect factor markets points strongly in the direction of managerial choice, and goes against

the primacy of prior resources (initial conditions) in determining competitive advantage.

Resources whose value is obvious are bid up in value. Hence the presence of resources/activities within the firm that are rent-yielding is likely to reflect past managerial choices to assemble resources in unique ways, combine particular resources in a consistent way with many others, pursue new undiscovered market positions, or create resources internally. This allows resources to be acquired cheaply and avoids the bargaining away of their value to employees. Few resources begin as inherently scarce. Their scarcity is created through choice. Current managerial choices, in turn, allow the innovative assembly of new resources and the rendering obsolete of prior ones.

The resource-based view will have the greatest significance in environments where change is incremental, the number of strategic variables and combinations is limited, so that a few scarce resources can govern outcomes, and the time period is short to intermediate term so that managerial choices can replicate or offset resource stocks. The greatest value of the resource view will be in assessing opportunities for diversification, provided the resource and activity views are integrated.²⁶ A resource-based view of diversification that defines resources broadly, however, runs the risk of justifying the sort of unrelated diversification that was so disastrous in the 1970s and 1980s.

THE ORIGINS OF THE ORIGINS

We are left still short of a dynamic theory of strategy, though we are beginning to learn about the subprocesses involved. In order to understand why firms choose and successfully implement the right strategies, and why their internal activities and assets are what they are, at least four important issues must be addressed.

First, a theory must deal simultaneously with both the firm itself as well as the industry and broader environment in which it operates. The environment both constrains and influences outcomes, which the more introspective resource view neglects. Second, a theory must allow

²⁴ Since the great preponderance of resources are created either by past activities or managerial choices to assemble outside resources in new activity configurations, my own view is that activities are logically prior. Yet it is clear that causality becomes blurred as accumulated resources affect the cost or uniqueness of activities.

²⁵ Defining a market position as a resource is inappropriate, because it confuses the longitudinal problem with the cross-sectional problem and obscures the mechanism by which advantage is created.

²⁶ See Montgomery and Wernerfelt (1988) and Montgomery and Hariharan (1991).

centrally for exogenous change, in areas such as buyer needs, technology, and input markets. If there is little exogenous change, the choice of strategy can be viewed as a once-and-for-all game and the initial stock of (properly defined) resources can be crucial. In a world where exogenous change is rapid or relatively continuous, however, the analytical problem becomes far more complicated. The value of past resources is continually depreciated or even rendered negative. The choice of strategy is a series of ever-changing games in which the position in one game can influence, but does not determine, the position in the next one. Case after case illustrates that the leaders in one generation of products often fail to lead in the next.

Third, a theory must provide latitude to the firm not only to choose among well-defined options but to create new ones. The firm cannot be seen only as optimizing within tight constraints, but as having the ability to shift the constraints through creative strategy choices, other innovative activity, and the assembly of skills and other needed capabilities. There are alternative strategies open. The extent to which the environment shapes initial conditions and choice, in contrast to idiosyncratic, creative decision-making process within the firm, is a fundamental question.

A final issue that cuts across the others is the role of historical accident or chance. There is a growing belief that historical accidents influence competitive outcomes. Some of what economists term historical accidents may simply be good strategy choices, or reflect so far unmeasured aspects of the environment. There are often reasons why firms are 'lucky', as I will stress below. Be that as it may, the extent of randomness in competition, and the role of true luck, has an important influence on how one develops a theory of strategy.

Origins within the firm

How then, do we explain good strategic choices and the ability to carry them out? One view is that since the number of variables is substantial and environmental change is continuous and unpredictable, the problem is not selecting good strategies but creating a flexible organization that learns and is able to continually redefine its strategy. The resource view, taken to an unhealthy extreme, is sometimes argued as encompassing

this position. The critical resources are the capacity for learning and adaptation.

The problem with this notion is its collision with empirical reality. Most successful organizations improve but do not change strategy very often.²⁷ They gain advantage from new insights into competition and from consistent refinement of their ability to implement a stable overall strategy (e.g. differentiation) though its details are continually evolving and improving.

Another view of the origins of advantage is that it lies in the ability to make good strategy choices and implement them. While this can happen by chance, the odds are elevated by better information and careful analysis. Once a choice is made, the successful organization is one that can bring all its activities into consistency with the strategy and rapidly accumulate the necessary activities and resources. New choices are made as the environment changes or as accumulating activities and resources open up new options. But, it must be said, a prominent role for choice and capacity for implementation still begs the question of why some firms are better at it than others.

The environment as the origin of advantage

Instead of solely within the firm, the true origin of competitive advantage may be the proximate or local environment in which a firm is based. The proximate environment will define many of the input (factor) markets the firm has to draw on, the information that guides strategic choices, and the incentives and pressures on firms to both innovate and accumulate skills or resources over time. Competitive advantage, then, may reside as much in the environment as in an individual firm. The environment shapes how activities are configured, which resources can be assembled uniquely, and what commitments can be made successfully.

This richer view of the role of the environment has emerged from my study of the causes of international competitive success in a large sample of industries in 10 leading trading nations. This line of work emerged from a puzzle. After having written about global strategy, and the ability of

²⁷ See Porter (1990) and Ghemawat (1991).

firms to transcend national markets, I observed that competitive advantage in particular industries was often strongly concentrated in one or two countries, often with several if not many successful home-based competitors. These local rivals pursue different strategies and push each other to innovate and improve much more rapidly than foreign rivals, which allows them to penetrate and prosper in foreign markets. The concentration of successful competitors was particularly pronounced if one examined strategically distinct industry segments rather than broad aggregates, and if one excludes cases where firms were not truly successful but merely surviving or sheltered by government intervention. While the focus of the research was on the role of the national environment, it was also clear that successful firms were also geographically concentrated *within* nations. The same theoretical framework can be used to help explain the concentration of success in nations, regions within nations, or even cities. It also seems possible to extend it to help explain why one particular firm outperforms others.

The starting point for the theory is that environmental change is relentless and firms, through innovation, have considerable latitude in both influencing their environment and responding to it. Firms create and sustain competitive advantage because of the capacity to continuously improve, innovate, and upgrade their competitive advantages over time. Upgrading is the process of shifting advantages throughout the value chain to more sophisticated types, and employing higher levels of skill and technology. Successful firms are those that improve and innovate in ways that are valued not only at home but elsewhere. Competitive success is enhanced by moving early in each product or process generation, provided that movement is along a path that reflects evolving technology and buyer needs, and that early movers subsequently upgrade their positions rather than rest on them. In this view, firms have considerable discretion in relaxing external and internal constraints.

These imperatives of competitive advantage, however, collide with the organizational tendencies of firms. Firms value stability, and change is *difficult and unsettling*. Strong external or environmental influences are often essential in overcoming these tendencies.

Environmental determinants of innovation and upgrading

Four broad attributes of the proximate environment of a firm have the greatest influence on its ability to innovate and upgrade, illustrated in Figure 5. These attributes, which I collectively term the diamond, shape the information firms have available to perceive opportunities, the pool of inputs, skills and knowledge they can draw on, the goals that condition investment, and the pressures on firms to act. The environment is important in providing the initial insight that underpins competitive advantage, the inputs needed to act on it, and to accumulate knowledge and skills over time, and the forces needed to keep progressing.

The most important factors of production are highly specialized factors tailored to the needs of particular industries. Generalized factor pools are either readily available or easy to source through global networks. Specialized local factor pools support the most rapid accumulation of skill and the greatest rate of innovation. Generic technology is readily sourced from distant suppliers, but transfer of know-how benefits from proximity. Specialized factors are almost always created through private and social investments.

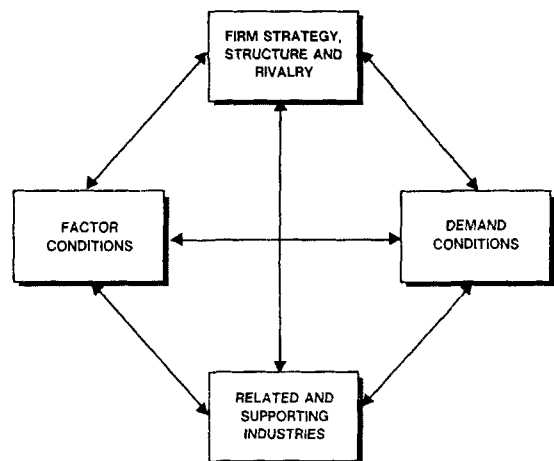


Figure 5. Determinants of national competitive advantage.

'Determinants of national competitive advantage' (p. 72): From *The Competitive Advantage of Nations* by Michael E. Porter. Copyright © 1990 by Michael E. Porter. Reprinted by permission of The Free Press, a Division of Macmillan, Inc.

The presence of unique institutional mechanisms for creating them in particular industries is an important determinant of competitive success. Selective disadvantages in the more basic factors (e.g. unskilled labor, natural resources) are, paradoxically, often a source of advantage. They break dependence on factor costs and trigger innovation and upgrading.

Home demand is important more for its character than its size. Home demand plays a disproportionate role in influencing the perception of buyer needs and the capacity of firms to improve products and services over time. Sophisticated and/or especially demanding home customers often stimulate competitive success, as do home market needs that anticipate those elsewhere.

Competitive advantage is also strongly influenced by the presence of home-based suppliers and related industries in those products, components, machines, or services that are specialized and/or integral to the process of innovation in the industry. Inputs themselves are mobile, but there are local externalities for the process of innovation in interactions between the firm and local input suppliers. Home-based suppliers and related industries provide advantages in terms of information, signalling, access to new technologies, and market pressures. In many industries, the scarce technology is know-how, which can be difficult to transfer without cultural and physical proximity. Companies with home-based suppliers have the opportunity to influence their suppliers' technical efforts, help establish specifications to fit particular needs, serve for test sites for R&D work, and maintain senior management contact. All of these accelerate the pace of innovation.

The final determinant of advantage is firm strategy, structure, and rivalry, or the context for competition in a region or nation. The national and local environments have a strong influence on management practices, forms of organization, and the goals set by individuals and companies. The presence of local rivalry also has a profound influence on the rate of improvement, innovation, and ultimate success in an industry. Local rivals provide a greater stimulus to upgrading than foreign rivals. Proximity speeds information flow and improves incentives to compete. The presence of domestic competitors negates basic factor advantages and forces firms to

develop higher order and more sustainable advantages. Actual rivalry provides a greater stimulus than potential rivalry. Intense local rivalry may hold down profits in the home market but spurs advantages that allow attractive profits (contingent on overall industry structure) in global markets.

Local rivalry also feeds back to improve other parts of the diamond. It overcomes monopsony-based impediments to the development of specialized suppliers, stimulates greater investments in specialized factors such as university programs and specialized infrastructure, helps to upgrade local demand, and so on.

There is a role for true chance events and historical accidents in the process by which competitive advantage is created, an issue which I raised earlier. However, historical accidents are less common than upon first impression. What appear to be accidents are really events driven by conditions in the diamond. Also, the role of accidents cannot be seen independently of more stable aspects of the local or national environment. True accidents rarely result in competitive industries unless other favorable conditions in the diamond are present. Similarly, accidents that simultaneously occur in different locations result in a competitive firm in that location with the most favorable diamond.

There are many cases where a company founded in one location, through an act of pure entrepreneurship, relocated its operations to another location or even to another country because that new location offered a better setting in which to nurture or reap the rewards of that innovation. The pilgrimage of aspiring actors and actresses to Hollywood is simply one example of how ideas and talent flow to the environment in which they can command the highest returns. The ability to command the highest returns depends on the simultaneous presence of unusual local demand, related industries, active rivals bidding, and other aspects of the diamond.

A final influence on the environment for competitive advantage is government. The role of government policy is best understood by looking at how it influences the diamond. Government at all levels can improve or impede national advantage through its investments in factor creation, through its influence on the goals of individuals and firms, through its role as a buyer or influencer of buyer needs, through its

competition policies, and through its role in related and supporting industries, among other ways. Government plays an important part in shaping the pressures, incentives, and capabilities of the nation's firms.

Government's proper role is as a catalyst and challenger. It is to encourage, or even push, companies to raise their aspirations and move to higher levels of competitive performance, even though this process may be unpleasant and difficult. Government plays a role that is inherently partial, and that succeeds only when working in tandem with favorable underlying conditions in the diamond. Government policies that succeed are those that create an environment in which companies can gain competitive advantage rather than those that involve government directly in the process. (It is an indirect, rather than direct, role).

The diamond as a dynamic system

These aspects of the local environment constitute a dynamic system. This character of the environment bears centrally on the firm processes that give rise to advantage. The effect of one determinant depends on the state of others. The presence of sophisticated and demanding buyers, for example, will not result in advanced products or production processes unless the quality of human resources enables firms to respond to buyer needs. There must also be a climate that supports sustained investment to fund the development of these products and processes. Similarly, having selective disadvantages in basic factors (e.g. higher labor, energy, or raw material costs) will not spur innovation and upgrading unless there is an environment of vigorous competition among firms to trigger innovation in people, products, and processes. It is this contingent relationship that explains why, for example, a selective factor disadvantage stimulates innovation in one country while hastening decline in another.

The parts of the diamond are also mutually reinforcing. The development of specialized supporting industries, for example, tends to increase the supply of specialized factors. Vigorous domestic rivalry stimulates the development of unique pools of specialized factors. This is particularly likely if the rivals are all located in one city or region. The University of California

at Davis, for example, has become the world's leading center for wine-making research, working closely with the California wine industry. Active local rivalry also upgrades home demand through educating buyers and providing choice, and promotes the formation of related and supported industries. Japan's world-leading group of semiconductor producers, for example, has spawned world-leading Japanese semiconductor equipment manufacturers.²⁸

The effects can work in all directions, and causality can become blurred over time. Sometimes world-class suppliers become new entrants in the industry they have been supplying. Or highly sophisticated buyers may enter a supplier industry, particularly when they have relevant skills and view the upstream industry as strategic. In the case of the Japanese robotics industry, for example, Matsushita and Kawasaki originally designed robots for internal use before selling them to others.

The diamond also bears centrally on a nation's ability to *attract* factors of production, rather than merely serve as a location for them. This represents a final form of mutual reinforcement. Mobile factors, particularly ideas and highly skilled individuals, are becoming increasingly important to international competitiveness. Mobile factors tend to be drawn to the location where they can achieve the greatest productivity, because that is where they can obtain the highest returns. The theory outlined above, because it focuses on the determinants of productivity, also explains the attraction of mobile factors. The same features that make a nation an attractive home base also help it attract mobile factors.

The national and local environment for competing in a particular industry itself evolves in a dynamic process. The environment is created over time through the mutual reinforcement of

²⁸ The mutual reinforcement of the determinants suggests a particularly important role for local rivalry, healthy new business formation, and the responsiveness of local institutions to signals from industry. Local rivalry stimulates improvements in all the other determinants. New business formation, whether through start-up or internal development, is a *sine qua non* of developing related and supporting industries as well as healthy rivalry. Competitive advantage also depends on the capacity of the local education system, infrastructure providers, and government institutions to respond to the specialized needs of particular industries. Institutional responsiveness allows the proper types of skills, resources, and infrastructure to be created.

the determinants. It begins with an inheritance drawn from other industries and history, and exists amid a set of local institutions, values, and attitudes. The mutual reinforcement of the determinants, which reflect in part the actions of firms themselves, build up the environment over time. As this process proceeds, causality becomes blurred.

In industries with modest levels of skill and technology, firms can gain advantage solely on the basis of factor advantages such as cheap labor or abundant raw materials. Such advantages are notoriously unstable, however, in a world of globalization, technological change, and rapid substitution. Competitive advantage in more sophisticated industries and industry segments, on the other hand, rarely results from strength in a single determinant. Sustained success in these industries and segments usually requires the interaction of favorable conditions in several of the determinants and at least parity in the others. This is because advantages in various parts of the diamond are self-reinforcing.

It is thus the juxtaposition of advantages throughout the diamond in one location that leads to competitive success, far more than the presence of any single advantage no matter how compelling. The firm's home base, which consists of that group of activities most centrally involved in the process of innovation and learning, must be located in the same place to allow the internal coordination and contact with the local environment that is necessary for rapid progress. The ability of a firm to progress rapidly and appropriately by integrating research and production spread widely among several locations, combining machines sourced from many disparate distant suppliers, and so on is limited. The firm that concentrates its core activities at a favorable home base, while competing nationally and globally, will normally progress more rapidly. Activities outside the home base are focused on sourcing low-cost basic factors and securing market access.

These same arguments explain why we observe *clusters* of competitive industries in one location. Clusters involve supplier industries, customer industries, and related industries that are all competitive. Such clusters are characteristic of every advanced economy—American entertainment, German chemicals, Japanese electronics, Danish foods. Clusters grow and transform

themselves through spinoffs and diversification of firms into upstream, downstream, and related industries and activities. The fields where several clusters overlap are often fertile grounds for new business formation. In Japan, for example, the interstices between electronics and new materials are spawning new competitive strengths in fields as diverse as robotics and displays.

Another implication of this theory is the importance of geographic concentration of successful firms and clusters within particular cities or regions. National clusters are often themselves geographically concentrated. Geographic concentration elevates and magnifies the interaction of the four determinants, improves information flow and signaling, makes innovation-enhancing interactions with customers and specialized suppliers less costly, and provides a check on opportunistic behavior, among other benefits.²⁹

Firms lose competitive advantage either because of emerging weaknesses in their local environment or due to rigidities or other internal problems that external circumstances cannot overcome.³⁰ For example, a major shift in technology may require an entirely new set of specialized suppliers that are not present, or local demand characteristics may evolve in ways that distract from instead of forebadow international needs. However, firms sometimes fail not because their environment is unfavorable but because of organizational or managerial rigidities that block improvement and change. The environment can provide important pressures to advance, but firms differ in their responsiveness to them.

Environmental influences on the dynamics of strategy

The environment, via the diamond, affects both a firm's initial conditions and its managerial choices. The diamond, through its influence on information and incentives, shapes the content of strategies. It influences the ability of firms to carry out particular types of strategies, hence limiting choice. Choices that may look accidental

²⁹ For a detailed treatment and empirical tests, see Enright (1990). See, also, Krugman (1991).

³⁰ I discuss these issues more fully elsewhere. See Porter (1990).

or internally driven are often partly or wholly derived from the local diamond. Over time, through its stress on markets for difficult-to-trade inputs, the state of the diamond conditions the rate of accumulation of resources. It also sets the pressures on firms to improve and upgrade. The diamond, then, begins to address a dynamic theory of strategy early in the chain of causality.

Yet firms retain a central role. Firms must understand and exploit their local environment in order to achieve competitive advantage. There are often sharp differences in the performance of firms based in the same region or nation. These differences are partly a function of managerial choices, differential rates of resource accumulation, or chance. The differences also appear, however, to be partly a function of the subenvironment of each particular firm—its particular early customers, supplier relationships, factor market access, etc.

An important role for the local environment in competitive success does not eliminate the role of strategy nor the need for competitive analysis. Industry structure, positioning, activities, resources, and commitments remain important. Rather, the diamond highlights new issues for strategy that are normally ignored, such as the importance of developing and nurturing home-based suppliers, the importance of local specialized factor markets, and the balance between home-based activities and those dispersed to other locations as part of a national or global strategy.

The local environment creates potential for competitive success, but firms must sense and respond to it. Firms also have a considerable ability to influence their environment in ways that reinforce or detract from their capacity to accumulate skills and resources and to innovate—there is a feedback loop between firm actions and the local diamond. Many if not most firms, even in favorable environments, do *not* achieve competitive advantage. Firms based in an unattractive environment, however, face profound challenges in achieving competitive success. More and more firms are relocating their home bases accordingly.

Issues for further research

Recent research has begun to shed some light on the chain of causality that constitutes a

dynamic theory of strategy, but many unanswered questions remain. I would highlight four that deserve special attention. First, we need to better understand the balance between environmental determinism and company/leader choice in shaping competitive outcomes. What is emerging is the beginnings of a more sophisticated way of understanding how the environment surrounding a firm influences both firm choices and outcomes, and of the internal processes of choice and of skill and asset (resource) accumulation that underpin competitive advantage. It is clear that company actions still matter, and that firms in a given environment achieve widely different levels of success. Can we, by looking across different firms in a given nation or city, isolate unique subenvironments that explain these differing levels of performance? Or, can we identify patterns of commitments to activities and resource accumulation that characterize superior performers?

Second, we need to better understand the degree of stickiness or inertia in competitive positions once a firm stops progressing, or, to put it another way, the durability of early mover advantages? How important is a burst of innovation vs. the capacity to improve and innovate continuously? How important are pure rents from scarce factors vs. advantage resulting from innovation or which raise the value of factors? My research suggests that the latter is characteristic of successful firms who have sustained their competitive positions, but much more investigation is necessary.

Third, we need to know how necessary or helpful it is to push even further back in the chain of causality. I have argued that resources are an intermediate step in the chain, from which we can learn. Yet an important theoretical issue is where in the chain of causality to best cut into the problem. An example will illustrate that even a focus on the local environment of the firm does not go to the ultimate origin of advantage. The presence of a specialized skill in a region or nation is often the result of skill pools inherited from other industries as well as human resources trained at pre-existing institutions. These institutions, however, often draw to some extent on the general education system which itself is affected by social values and history. Just how far back to the ultimate source does one need to go to best examine these questions? I chose

in my own research to model the phenomena at the level of the diamond, while highlighting that each of its components is the result of history and other local conditions. The appropriateness of this choice is a subject for research. It should be said that understanding the ultimate origins of advantage may not always be necessary for thinking about how to improve future advantage.

Finally, there is the important challenge of crafting empirical research to make further progress in understanding these questions. Some argue that models that exceed a certain level of complexity can never be tested. Yet it is clear that there are many aspects of both firms and their environment which determine competitive success. How can we collect and analyze data to help us discriminate among explanations and weigh the various factors? I concluded in my most recent research that detailed longitudinal case studies, covering long periods of time, were necessary to study these phenomena. Moreover, these case studies had to encompass a large number and wide range of industries and national contexts in order to develop confidence about the appropriate variables and their influence on outcomes. This style of research nudges strategy research, and indeed industrial economics, into the world of the historian. It also involves enormous fixed costs. I am convinced that more research of this type will be needed to address the dynamics of strategy. It also raises the question of whether there are other approaches to empirical testing to address these issues, or whether we must wait until theories have been much better developed before we can highlight the relatively few variables which can be measured and rigorously examined statistically.

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