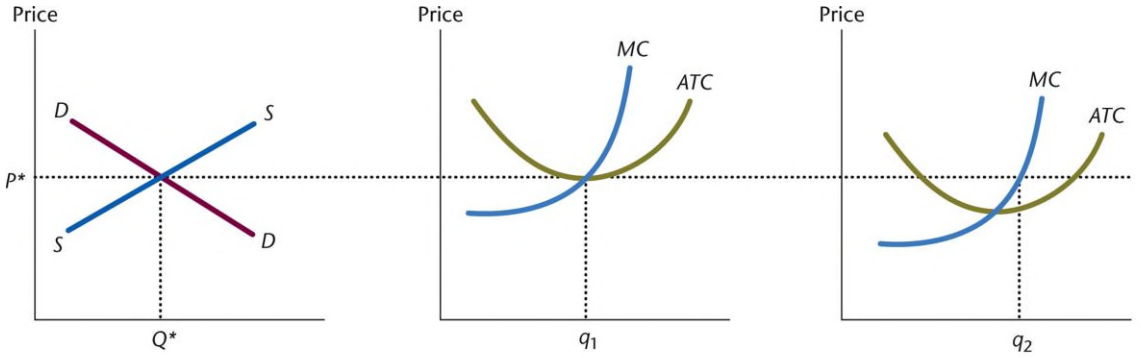

A. Market supply and demand, market quantity (Q^*) and market-determined price (P^*)

B. Performance of firm with less fertile land (higher average total cost – *ATC*)

C. Performance of firm with more fertile land (lower average total cost – *ATC*)

MC = marginal costs, *ATC* = average total costs, *Q* = aggregate quantity produced in the industry, *q* = quantity produced by each firm in the industry

Figure 3.1 The Economics of Land with Different Levels of Fertility

Of course, at least two events can threaten this sustained competitive advantage. First, market demand may shift down and to the left. This would force farmers with less fertile land to cease production and would also reduce the profit of those with more fertile land. If demand shifted far enough, this profit might disappear altogether.

Second, farmers with less fertile land may discover low-cost ways of increasing their land's fertility, thereby reducing the competitive advantage of farmers with more fertile land. For example, farmers with less fertile land may be able to use inexpensive fertilizers to increase their land's fertility. The existence of such low-cost fertilizers suggests that, although *land* may be in fixed supply, *fertility* may not be. If enough farmers can increase the fertility of their land, then the profits originally earned by the farmers with the more fertile land will disappear.

Of course, what the RBV does is recognize that land is not the only productive input that is inelastic in supply and that farmers are not the only firms that benefit from having such resources at their disposal.

Source: D. Ricardo (1817). *Principles of political economy and taxation.* London: J. Murray

The VRIO Framework

Armed with the RBV, it is possible to develop a set of tools for analyzing all the different resources and capabilities a firm might possess and the potential of each of these to generate competitive advantages. In this way, it will be possible to identify a firm's internal strengths and its internal weaknesses. The primary tool for accomplishing this internal analysis is called the VRIO framework.[5] The acronym, *VRIO*, in **VRIO framework** stands for four questions one must ask about a resource or capability to determine its competitive

potential: the question of **V**alue, the question of **R**arity, the question of **I**mitability, and the question of **O**rganization. These four questions are summarized in **Table 3.1**.

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The Question of Value

The **question of value** is: “Do resources and capabilities enable a firm to exploit an external opportunity or neutralize an external threat?” If a firm answers this question with a “yes,” then its resources and capabilities are valuable and can be considered *strengths*. If a firm answers this question with a “no,” its resources and capabilities are *weaknesses*. There is nothing inherently valuable about a firm’s resources and capabilities. Rather, they are only valuable to the extent that they enable a firm to enhance its competitive position. Sometimes, the same resources and capabilities can be strengths in one market and weaknesses in another.

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TABLE 3.1 Questions Needed to Conduct a Resource-Based Analysis of a Firm's Internal Strengths and Weaknesses

1. *The Question of Value*. Does a resource enable a firm to exploit an environmental opportunity and/or neutralize an environmental threat?
2. *The Question of Rarity*. Is a resource currently controlled by only a small number of competing firms?
3. *The Question of Imitability*. Do firms without a resource face a cost disadvantage in obtaining or developing it?
4. *The Question of Organization*. Are a firm's other policies and procedures organized to support the exploitation of its valuable, rare, and costly-to-imitate resources?

Valuable Resources and Firm Performance

Sometimes it is difficult to know for sure whether a firm's resources and capabilities really enable it to exploit its external opportunities or neutralize its external threats. Sometimes this requires detailed operational information that may not be readily available. Other times, the full impact of a firm's resources and capabilities on its external opportunities and threats may not be known for some time.

One way to track the impact of a firm's resources and capabilities on its opportunities and threats is to examine the impact of using these resources and capabilities on a firm's revenues and costs. In general, firms that use their resources and capabilities to exploit opportunities or neutralize threats will see an increase in their net revenues, or a decrease in their net costs, or both, compared to the situation in which they were not using these resources and capabilities to exploit opportunities or neutralize threats. That is, the value of these resources and capabilities will generally manifest itself in either higher revenues or lower costs or both, once a firm starts using them to exploit opportunities or neutralize threats.

Applying the Question of Value

For many firms, the answer to the question of value has been "yes." That is, many firms have resources and capabilities that are used to exploit opportunities and neutralize threats, and the use of these resources and capabilities enables these firms to increase their net revenues or decrease their net costs. For example, historically Sony had a great deal of

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experience in designing, manufacturing, and selling miniaturized electronic technology. Sony used these resources and capabilities to exploit opportunities, including video games, digital cameras, computers and peripherals, handheld computers, home video and audio, portable audio, and car audio. 3M has used its resources and capabilities in substrates, coatings, and adhesives, along with an organizational culture that rewards risk-taking and creativity, to exploit opportunities in office products, including invisible tape and Post-It notes. Sony's and 3M's resources and capabilities—including their specific technological skills and their creative organizational cultures—have made it possible for these firms to respond to, and even create, new opportunities.[6]

Unfortunately, for other firms the answer to the question of value appears to be "no." The merger of AOL and Time Warner was supposed to create a new kind of entertainment and media company; it is now widely recognized that Time Warner has been unable to marshal the resources necessary to create economic value. Time Warner wrote off $90 billion in value in 2002; its stock price has been at record lows, and there have been rumors that it will be broken up. Ironically, many of the segments of this diverse media conglomerate continue to create value. However, the company as a whole has not realized the synergies that it was expected to generate when it was created. Put differently, these synergies—as resources and capabilities—are apparently not valuable.[7]

Two schools of thought exist as to the value of entrepreneurs writing business plans. On the one hand, some authors argue that writing a business plan is likely to be helpful for entrepreneurs because it forces them to be explicit about their assumptions, exposes those assumptions to others for critique and analysis, and helps entrepreneurs focus their efforts on building a new organization and exploiting an opportunity. On the other hand, other authors argue that writing a business plan may actually hurt an entrepreneur's performance because writing such a plan may divert an entrepreneur's attention from more important activities, may give entrepreneurs the illusion that they have more control of their business than they actually do, and may lead to decision-making errors.

Research supports both points of view. Scott Shane and Frederic Delmar have shown that writing a business plan significantly enhances the probability that an entrepreneurial firm will survive. In contrast, Amar Bhide shows that most entrepreneurs go through many different business plans before they land on one that describes a business opportunity that they actually support. For Bhide, writing the business plan is, at best, a means of helping to create a new opportunity. Because most business plans are abandoned soon after they are written, writing business plans has limited value.

One way to resolve the conflicts among these scholars is to accept that writing a business plan may be very useful in some settings and not so useful in others. In particular, when it is possible for entrepreneurs to collect sufficient information about a potential market opportunity so as to be able to describe the probability of different outcomes associated with exploiting that opportunity—a setting described as *risky* in the entrepreneur-ship literature—business planning can be very helpful. However, when such information cannot be collected—a setting described as *uncertain* in the entre-preneurship literature—then writing a business plan would be of only limited value, and its disadvantages might outweigh any advantages it might create.

Sources: S. Shane and F. Delmar (2004). "Planning for the market: Business planning before marketing and the continuation of organizing efforts." *Journal of Business Venturing*, 19, pp. 767–785; A. Bhide (2000). *The origin and evolution of new businesses*. New York: Oxford; F. H. Knight (1921). *Risk, uncertainty, and profit*. Chicago: University of Chicago Press; S. Alvarez and J. Barney (2006). "Discovery and creation: Alternative theories in the field of entrepreneurship." *Strategic Entrepreneurship Journal*, 1(1), pp. 11–26.

Using Value Chain Analysis to Identify Potentially Valuable Resources and Capabilities

One way to identify potentially valuable resources and capabilities controlled by a firm is to study that firm's value chain. A firm's **value chain** is the set of business activities in which it engages to develop, produce, and market its products or

services. Each step in a firm's value chain requires the application and integration of different resources and capabilities. Because different firms may make different choices about which value chain activities they will engage in, they can end up developing different sets of resources and capabilities. This can be the case even if these firms are all operating in the same industry. These choices can have implications for a firm's strategies, and, as described in the **Ethics and Strategy** feature, they can also have implications for society more generally.

Consider, for example, the oil industry. **Figure 3.2** provides a simplified list of all the business activities that must be completed if crude oil is to be turned into consumer products, such as gasoline. These activities include exploring for crude oil, drilling for crude oil, pumping crude oil, shipping crude oil, buying crude oil, refining crude oil, selling refined products to distributors, shipping refined products, and selling refined products to final customers.

Different firms may make different choices about which of these stages in the oil industry they want to operate. Thus, the firms in the oil industry may have very different resources and capabilities. For example, exploring for crude oil is very expensive and requires substantial financial resources. It also requires access to land (a physical resource), the application of substantial scientific and technical knowledge (individual resources), and an organizational commitment to risk-taking and exploration (organizational resources). Firms that operate in this stage of the oil business are likely to have very different resources and capabilities than those that, for example, sell refined oil products to final customers. To be successful in the retail stage of this industry, a firm needs retail outlets (such as stores and gas stations), which are costly to build and require both financial and physical resources. These outlets, in turn, need to be staffed by salespeople—individual resources—and marketing these products to customers through advertisements and other means can require a commitment to creativity—an organizational resource.

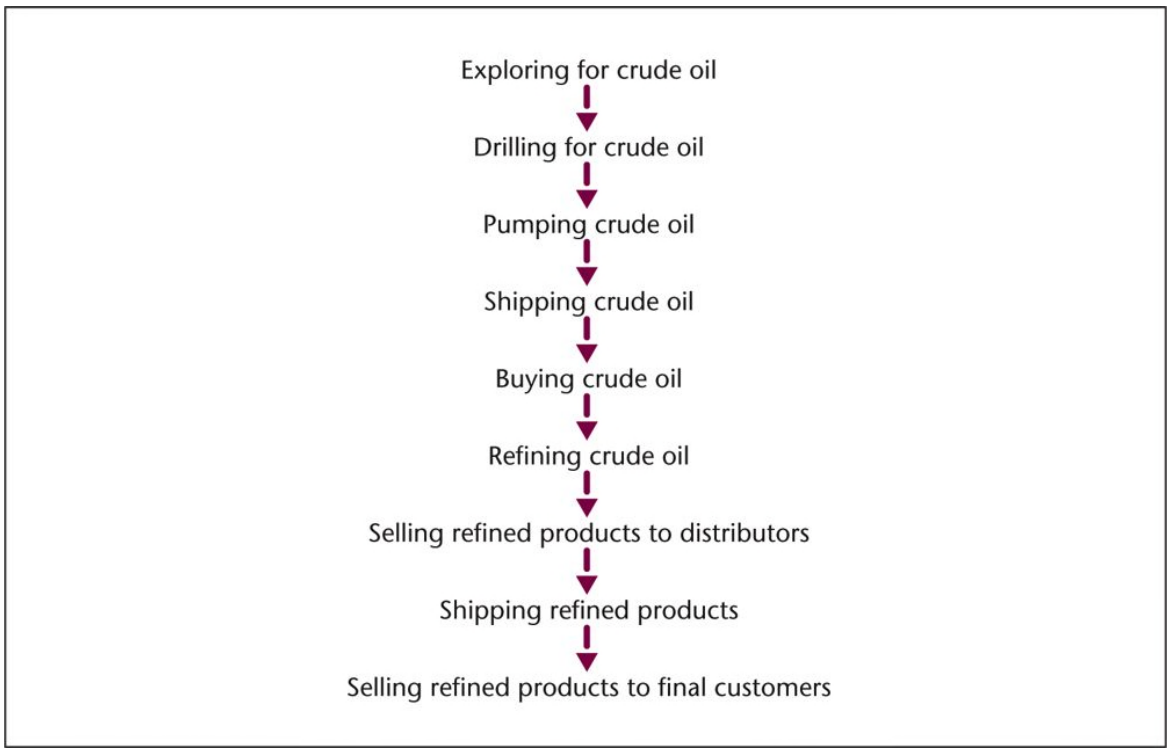

Figure 3.2 A Simplified Value Chain of Activities of Oil-Based Refined Products such as Gasoline and Motor Oil

However, even firms that operate in the same set of value chain activities in an industry may approach these activities very differently and therefore may develop very different resources and capabilities associated with these activities. For example, two firms may sell refined oil products to final customers. However, one of these firms may sell only through retail outlets it owns, whereas the second may sell only through retail outlets it does not own. The first firm's financial and physical resources are likely to be very different from the second firm's, although these two firms may have similar individual and organizational resources.

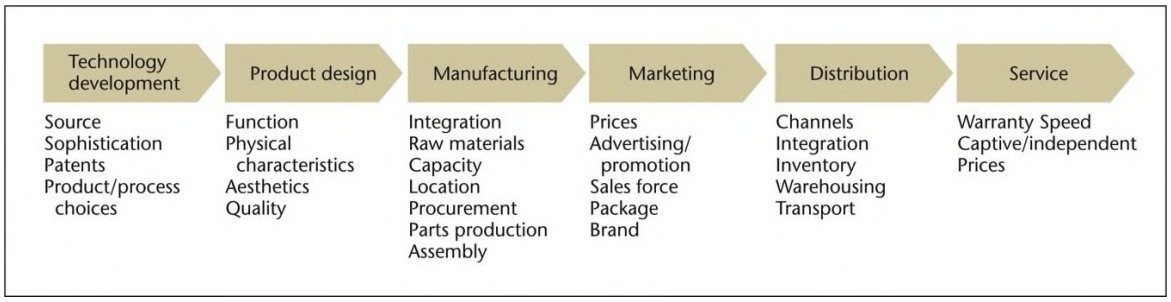

Figure 3.3 The Generic Value Chain Developed by McKinsey and Company

Studying a firm's value chain forces us to think about firm resources and capabilities in a disaggregated way. Although it is possible to characterize a firm's resources and capabilities more broadly, it is usually more helpful to think about how each of the activities a firm engages in affects its financial, physical, individual, and organizational resources. With this understanding, it is possible to begin to recognize potential sources of competitive advantage for a firm in a much more detailed way.

Because this type of analysis can be so helpful in identifying the financial, physical, individual, and organizational resources and capabilities controlled by a firm, several generic value chains for identifying them have been developed. One of these, proposed by the management-consulting firm McKinsey and Company, is presented in **Figure 3.3**.[8] This relatively simple model suggests that the creation of value almost always involves six distinct activities: technology development, product design, manufacturing, marketing, distribution, and service. Firms can develop distinctive capabilities in any one or any combination of these activities.

The Question of Rarity

Understanding the value of a firm's resources and capabilities is an important first consideration in understanding a firm's internal strengths and weaknesses. However, if a particular resource or capability is controlled by numerous competing firms, then that resource is unlikely to be a source of competitive advantage for any one of them. Instead, valuable but common (i.e., not rare) resources and capabilities are sources of competitive parity. Only when a resource is not controlled by numerous other firms is it likely to be a source of competitive advantage. These observations lead to the **question of rarity**: "How many competing firms already possess particular valuable resources and capabilities?"

Consider, for example, competition among television sports channels. All the major networks broadcast sports. In addition, several sports-only cable

channels are available, including the best-known all-sports channel, ESPN. Several years ago, ESPN began televising what were then called alternative sports—skateboarding, snowboarding, mountain biking, and so forth. The surprising popularity of these programs led ESPN to package them into an annual competition called the "X-Games." "X" stands for "extreme," and ESPN has definitely gone to the extreme in including sports in the X-Games. The X-Games have included sports such as sky-surfing, competitive high diving, competitive bungee cord jumping, and so forth. ESPN broadcasts both a summer X-Games and a winter X-Games. No other sports outlet has yet made such a commitment to so-called extreme sports, and it has paid handsome dividends for ESPN—extreme sports have very low-cost broadcast rights and draw a fairly large audience. This commitment to extreme sports—as an example of a valuable and rare capability—has been a source of at least a temporary competitive advantage for ESPN.

Of course, not all of a firm's resources and capabilities have to be valuable and rare. Indeed, most firms have a resource base that is composed primarily of valuable but common resources and capabilities. These resources cannot be sources of even temporary competitive advantage, but are essential if a firm is to gain competitive parity. Under conditions of competitive parity, although no one firm gains a competitive advantage, firms do increase their probability of survival.

Consider, for example, a telephone system as a resource or capability. Because telephone systems are widely available and because virtually all organizations have access to telephone systems, these systems are not rare and thus are not a source of competitive advantage. However, firms that do not possess a telephone system are likely to give their competitors an important advantage and place themselves at a competitive disadvantage.

How rare a valuable resource or capability must be in order to have the potential for generating a competitive advantage varies from situation to situation. It is not difficult to see that, if a firm's valuable resources and capabilities are absolutely unique among a set of current and potential competitors, they can generate a competitive advantage. However, it may be possible for a small number of firms in an industry to possess a particular valuable resource or capability and still obtain a competitive advantage. In general, as long as the number of firms that possess a particular valuable resource or capability is less than the number of firms needed to generate perfect competition dynamics in an industry, that resource or capability can be considered rare and a potential source of competitive advantage.

The Question of Imitability

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Firms with valuable and rare resources are often strategic innovators because they are able to conceive and engage in strategies that other firms cannot because they lack the relevant resources and capabilities. These firms may gain the first-mover advantages discussed in **Chapter 2**.

Valuable and rare organizational resources, however, can be sources of sustained competitive advantage only if firms that do not possess them face a cost disadvantage in obtaining or developing them, compared to firms that already possess them. These kinds of resources are **imperfectly imitable**.[9] These observations lead to the **question of imitability**: "Do firms without a resource or capability face a cost disadvantage in obtaining or developing it compared to firms that already possess it?"

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Imagine an industry with five essentially identical firms. Each of these firms manufactures the same products, uses the same raw materials, and sells the products to the same customers through the same distribution channels. It is not hard to see that firms in this kind of industry will have normal economic performance. Now, suppose that one of these firms, for whatever reason, discovers or develops a heretofore unrecognized valuable resource and uses that resource either to exploit an external opportunity or to neutralize an external threat. Obviously, this firm will gain a competitive advantage over the others.

This firm's competitors can respond to this competitive advantage in at least two ways. First, they can ignore the success of this one firm and continue as before. This action, of course, will put them at a competitive disadvantage. Second, these firms can attempt to understand why this one firm is able to be successful and then duplicate its resources to implement a similar strategy. If competitors have no cost disadvantages in acquiring or developing the needed resources, then this imitative approach will generate competitive parity in the industry.

Sometimes, however, for reasons that will be discussed later, competing firms may face an important cost disadvantage in duplicating a successful firm's valuable resources. If this is the case, this one innovative firm may gain a sustained competitive advantage—an advantage that is not competed away through strategic imitation. Firms that possess and exploit costly-to-imitate, rare, and valuable resources in choosing and implementing their strategies may enjoy a period of sustained competitive advantage.[10]

For example, other sports networks have observed the success of ESPN's X-Games and are beginning to broadcast similar competitions. NBC, for example, developed its own version of the X-Games, called the "Gravity Games," and even the Olympics now include sports that were previously perceived as being "too extreme" for this mainline sports competition. Several Fox sports channels broadcast programs that feature extreme sports, and at least one new cable channel (Fuel) broadcasts only extreme sports. Fuel was recently acquired by Fox to provide another outlet for extreme sports on a Fox channel. Whether these efforts will be able to attract the competitors that the X-Games attract, whether winners at these other competitions will gain as much status in their sports as do winners of the X-Games, and whether these other competitions and programs will gain the reputation among viewers enjoyed by ESPN will go a long way to determining whether ESPN's competitive advantage in extreme sports is temporary or sustained.[11]

Forms of Imitation: Direct Duplication and Substitution

In general, imitation occurs in one of two ways: **direct duplication** or **substitution**. Imitating firms can attempt to directly duplicate the resources possessed by the firm with a competitive advantage. Thus, NBC sponsoring an alternative extreme games competition can be thought of as an effort to directly duplicate the resources that enabled ESPN's X-Games to be successful. If the cost of this direct duplication is too high, then a firm with these resources and capabilities may obtain a sustained competitive advantage. If this cost is not too high, then any competitive advantages in this setting will be temporary.

Imitating firms can also attempt to substitute other resources for a costly-to-imitate resource possessed by a firm with a competitive advantage. Extreme sports shows and an extreme sports cable channel are potential substitutes for ESPN's X-Games strategy. These shows appeal to much the same audience as the X-Games, but they do not require the same resources as an X-Games strategy

requires (i.e., because they are not competitions, they do not require the network to bring together a large number of athletes all at once). If substitute resources exist and if imitating firms do not face a cost disadvantage in obtaining them, then the competitive advantage of other firms will be temporary. However, if these resources have no substitutes or if the cost of acquiring these substitutes is greater than the cost of obtaining the original resources, then competitive advantages can be sustained.

Why Might It Be Costly to Imitate Another Firm's Resources or Capabilities?

A number of authors have studied why it might be costly for one firm to imitate the resources and capabilities of another. Four sources of costly imitation have been noted.[12] They are summarized in Table 3.2 and discussed in the following text.

Unique Historical Conditions.

It may be the case that a firm was able to acquire or develop its resources and capabilities in a low-cost manner because of its unique historical conditions. The ability of firms to acquire, develop, and use resources often depends on their place in time and space. Once time and history pass, firms that do not have space-and-time-dependent resources face a significant cost disadvantage in obtaining and developing them because doing so would require them to re-create history.[13]

ESPN's early commitment to extreme sports is an example of these unique historical conditions. The status and reputation of the X-Games were created because ESPN happened to be the first major sports outlet that took these competitions seriously. The X-Games became the most important competition in many of these extreme sports. Indeed, for snowboarders, winning a gold medal in the X-Games is almost as important as—if not more important than—winning a gold medal in the Winter Olympics. Other sports outlets that hope to be able to compete with the X-Games will have to overcome both the status of ESPN as "the worldwide leader in sports" and its historical advantage in extreme sports. Overcoming these advantages is likely to be costly, making competitive threats from direct duplication, at least, less significant.

TABLE 3.2 Sources of Costly Imitation

Unique Historical Conditions. When a firm gains low-cost access to resources because of its place in time and space, other firms may find these resources to be costly to imitate. Both first-mover advantages and path dependence can create unique historical conditions.

Causal Ambiguity. When competitors cannot tell, for sure, what enables a firm to gain an advantage, that advantage may be costly to imitate. Sources of causal ambiguity include when competitive advantages are based on "taken-for-granted" resources and capabilities, when multiple non-testable hypotheses exist about why a firm has a competitive advantage, and when a firm's advantages are based on complex sets of interrelated capabilities.

Social Complexity. When the resources and capabilities a firm uses to gain a competitive advantage involve interpersonal relationships, trust, culture, and other social resources that are costly to imitate in the short term.

Patents. Only a source of sustained competitive advantage in a few industries, including pharmaceuticals and specialty chemicals.

Of course, firms can also act to increase the costliness of imitating the resources and capabilities they control. ESPN is doing this by expanding its

coverage of extreme sports and by engaging in a "grassroots" marketing campaign that engages young "extreme athletes" in local competitions. The purpose of these efforts is clear: to keep ESPN's status as the most important source of extreme sports competitions intact.[14]

Unique historical circumstances can give a firm a sustained competitive advantage in at least two ways. First, it may be that a particular firm was the first in an industry to recognize and exploit an opportunity, and being first gave the firm one or more of the first-mover advantages discussed in **Chapter 2**. Thus, although in principle other firms in an industry could have exploited an opportunity, that only one firm did so makes it more costly for other firms to imitate the original firm.

A second way that history can have an impact on a firm builds on the concept of **path dependence**.[15] A process is said to be path dependent when events early in the evolution of a process have significant effects on subsequent events. In the evolution of competitive advantage, path dependence suggests that a firm may gain a competitive advantage in the current period based on the acquisition and development of resources in earlier periods. In these earlier periods, it is often not clear what the full future value of particular resources will be. Because of this uncertainty, firms are able to acquire or develop these resources for less than what will turn out to be their full value. However, once the full value of these resources is revealed, other firms seeking to acquire or develop these resources will need to pay their full known value, which (in general) will be greater than the costs incurred by the firm that acquired or developed these resources in some earlier period. The cost of acquiring both duplicate and substitute resources would rise once their full value became known.

Consider, for example, a firm that purchased land for ranching some time ago and discovered a rich supply of oil on this land in the current period. The difference between the value of this land as a supplier of oil (high) and the value of this land for ranching (low) is a source of competitive advantage for this firm. Moreover, other firms attempting to acquire this or adjacent land will now have to pay for the full value of the land in its use as a supply of oil (high) and thus will be at a cost disadvantage compared to the firm that acquired it some time ago for ranching.

Causal Ambiguity.

A second reason why a firm's resources and capabilities may be costly to imitate is that imitating firms may not understand the relationship between the resources and capabilities

controlled by a firm and that firm's competitive advantage. In other words, the relationship between firm resources and capabilities and competitive advantage may be **causally ambiguous**.

At first, it seems unlikely that causal ambiguity about the sources of competitive advantage for a firm would ever exist. Managers in a firm seem likely to understand the sources of their own competitive advantage. If managers in one firm understand the relationship between resources and competitive advantage, then it seems likely that managers in other firms would also be able to discover these relationships and thus would have a clear understanding of which resources and capabilities they should duplicate or seek substitutes for. If there are no other sources of cost disadvantage for imitating firms, imitation should lead to competitive parity and normal economic performance.[16]

However, it is not always the case that managers in a particular firm will fully understand the relationship between the resources and capabilities they control and competitive advantage. This lack of understanding could occur for at least three reasons. First, it may be that the resources and capabilities that

generate competitive advantage are so taken for granted, so much a part of the day-to-day experience of managers in a firm, that these managers are unaware of them.[17] Organizational resources and capabilities such as teamwork among top managers, organizational culture, relationships among other employees, and relationships with customers and suppliers may be almost "invisible" to managers in a firm.[18] If managers in firms that have such capabilities do not understand their relationship to competitive advantage, managers in other firms face significant challenges in understanding which resources they should imitate.

Second, managers may have multiple hypotheses about which resources and capabilities enable their firm to gain a competitive advantage, but they may be unable to evaluate which of these resources and capabilities, alone or in combination, actually create the competitive advantage. For example, if one asks successful entrepreneurs what enabled them to be successful, they are likely to reply with several hypotheses, such as "hard work, willingness to take risks, and a high-quality top management team." However, if one asks what happened to unsuccessful entrepreneurs, they, too, are likely to suggest that their firms were characterized by "hard work, willingness to take risks, and a high-quality top management team." It may be the case that "hard work, willingness to take risks, and a high-quality top management team" are important resources and capabilities for entrepreneurial firm success, but other factors may also play a role. Without rigorous experiments, it is difficult to establish which of these resources have a causal relationship with competitive advantage and which do not.

Finally, it may be that not just a few resources and capabilities enable a firm to gain a competitive advantage, but that literally thousands of these organizational attributes, bundled together, generate these advantages. When the resources and capabilities that generate competitive advantage are complex networks of relationships between individuals, groups, and technology, imitation can be costly.

Whenever the sources of competitive advantage are widely diffused across people, locations, and processes in a firm, those sources will be costly to imitate. Perhaps the best example of such a resource is knowledge itself. To the extent that valuable knowledge about a firm's products, processes, customers, and so on is widely diffused throughout an organization, competitors will have difficulty imitating that knowledge, and it can be a source of sustained competitive advantage.[19]

Social Complexity.

A third reason that a firm's resources and capabilities may be costly to imitate is that they may be socially complex phenomena, beyond the ability of firms to systematically manage and influence. When competitive advantages are based on such complex social phenomena, the ability of other firms to imitate these resources and capabilities, either through direct duplication or substitution, is significantly constrained. Efforts to influence these kinds of phenomena are likely to be much more costly than they would be if these phenomena developed in a natural way over time in a firm.[20]

A wide variety of firm resources and capabilities may be **socially complex**. Examples include the interpersonal relations among managers in a firm, a firm's culture, and a firm's reputation among suppliers and customers.[21] Notice that in most of these cases it is possible to specify how these socially complex resources add value to a firm. Thus, there is little or no causal ambiguity surrounding the link between these firm resources and capabilities and competitive advantage. However, understanding that an organizational culture with certain attributes or

quality relations among managers can improve a firm's efficiency and effectiveness does not necessarily imply that firms lacking these attributes can engage in systematic efforts to create them or that low-cost substitutes for them exist. For the time being, such social engineering may be beyond the abilities of most firms. At the very least, such social engineering is likely to be much more costly than it would be if socially complex resources evolved naturally within a firm.[22]

It is interesting to note that firms seeking to imitate complex physical technology often do not face the cost disadvantages of imitating complex social phenomena. A great deal of physical technology (machine tools, robots, and so forth) can be purchased in supply markets. Even when a firm develops its own unique physical technology, reverse engineering tends to diffuse this technology among competing firms in a low-cost manner. Indeed, the costs of imitating a successful physical technology are often lower than the costs of developing a new technology.[23]

Although physical technology is usually not costly to imitate, the application of this technology in a firm is likely to call for a wide variety of socially complex organizational resources and capabilities. These organizational resources may be costly to imitate, and if they are valuable and rare, the combination of physical and socially complex resources may be a source of sustained competitive advantage. The importance of socially complex resources and capabilities for firm performance has been studied in detail in the field of strategic human resource management, as described in the **Research Made Relevant** feature.

Patents.

At first glance, it might appear that a firm's patents would make it very costly for competitors to imitate its products.[24] Patents do have this effect in some industries. For example, patents in the pharmaceutical and specialty chemical industry effectively foreclose other firms from marketing the same products until a firm's patents expire. As suggested in **Chapter 2**, patents can raise the cost of imitation in a variety of other industries as well.

However, from another point of view a firm's patents may decrease, rather than increase, the costs of imitation. When a firm files for patent protection, it is forced to reveal a significant amount of information about its product. Governments require this information to ensure that the technology in question is patentable. By obtaining a patent, a firm may provide important information to competitors about how to imitate its technology.

Moreover, most technological developments in an industry are diffused throughout firms in that industry in a relatively brief period of time, even if the technology in question is patented, because patented technology is not immune from low-cost imitation. Patents may restrict direct duplication for a time, but they may actually increase the chances of substitution by functionally equivalent technologies.[25]

The Question of Organization

A firm's potential for competitive advantage depends on the value, rarity, and imitability of its resources and capabilities. However, to fully realize this potential, a firm must be organized to exploit its resources and capabilities. These observations lead to the **question of organization:** "Is a firm organized to exploit the full competitive potential of its resources and capabilities?"

Numerous components of a firm's organization are relevant to the question of organization, including its formal reporting structure, its formal and informal management control systems, and its compensation policies. A firm's **formal reporting structure**

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is a description of whom in the organization reports to whom; it is often embodied in a firm's **organizational chart**. **Management control systems** include a range of formal and informal mechanisms to ensure that managers are behaving in ways consistent with a firm's strategies. **Formal management controls** include a firm's budgeting and reporting activities that keep people higher up in a firm's organizational chart informed about the actions taken by people lower down in a firm's organizational chart. **Informal management controls** might include a firm's culture and the willingness of employees to monitor each other's behavior. **Compensation policies** are the ways that firms pay employees. Such policies create incentives for employees to behave in certain ways.

Research Made Relevant: Strategic Human Resource Management Research

Most empirical tests of the RBV have focused on the extent to which history, causal ambiguity, and social complexity have an impact on the ability of firms to gain and sustain competitive advantages. Among the most important of these tests has been research that examines the extent to which human resource practices that are likely to generate socially complex resources and capabilities are related to firm performance. This area of research is known as *strategic human resources management*.

The first of these tests was conducted as part of a larger study of efficient low-cost manufacturing in the worldwide automobile industry. A group of researchers from Massachusetts Institute of Technology developed rigorous measures of the cost and quality of more than 70 manufacturing plants that assembled mid-size sedans around the world. They discovered that at the time of their study only six of these plants had simultaneous low costs and high-quality manufacturing—a position that obviously would give these plants a competitive advantage in the marketplace.

[redacted]

In trying to understand what distinguished these six plants from the others in the sample, the researchers found that, not surprisingly, these six plants had the most modern and up-to-date manufacturing technology. However, so did many of the less effective plants. What distinguished these effective plants was not their manufacturing technology, per se, but their human resource (HR) practices. These six plants all implemented a bundle of such practices that included participative decision making, quality circles, and an emphasis on team production. One of the results of these efforts—and another distinguishing feature of these six plants—was a high level of employee loyalty and commitment to a plant, as well as the belief that plant managers would treat employees fairly. These socially complex resources and capabilities are the types of resources that the RBV suggests should be sources of sustained competitive advantage.

Later work has followed up on this approach and has examined the impact of HR practices on firm performance outside the manufacturing arena. Using a variety of measures of firm performance and several different measures of HR practices, the results of this research continue to be very consistent with RBV logic. That is, firms that are able to use HR practices to develop socially complex human and organizational resources are able to gain competitive advantages over firms that do not engage in such practices.

Sources: J. P. Womack, D. I. Jones, and D. Roos (1990). *The machine that changed the world.* New York: Rawson; M. Huselid (1995). "The impact of human resource management practices on turnover, productivity, and corporate

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financial performance." *Academy of Management Journal*, 38, pp. 635–672; J. B. Barney and P. Wright (1998). "On becoming a strategic partner." *Human Resource Management*, 37, pp. 31–46.

These components of a firm's organization are often called **complementary resources and capabilities** because they have limited ability to generate competitive

[redacted]

advantage in isolation. However, in combination with other resources and capabilities they can enable a firm to realize its full potential for competitive advantage.[26]

For example, it has already been suggested that ESPN may have a sustained competitive advantage in the extreme sports segment of the sports broadcasting industry. However, if ESPN's management had not taken advantage of its opportunities in extreme sports by expanding coverage, ensuring that the best competitors come to ESPN competitions, adding additional competitions, and changing up older competitions, then its potential for competitive advantage would not have been fully realized. Of course, the reason that ESPN has done all these things is because it has an appropriate organizational structure, management controls, and employee compensation policies. By themselves, these attributes of ESPN's organization could not be a source of competitive advantage; however, they were essential for ESPN to realize its full competitive advantage potential.

Having an appropriate organization in place has enabled ESPN to realize the full competitive advantage potential of its other resources and capabilities. Having an inappropriate organization in place prevented Sony from exploiting its valuable, rare, and costly-to-imitate resources and capabilities.

Earlier in this chapter, it was suggested that Sony had unusual experience in designing and building a wide variety of consumer electronics products. In the process of building this giant consumer electronics company, managers at Sony developed and acquired two substantial businesses: Sony Consumer Electronics and Sony Records.

Among the many products developed by the Consumer Electronics business was an early MP3 player (i.e., a portable device that played music and other digital media from a hard drive). The key to MP3 technology was compression—taking analog signals and storing them in a way that they did not take up disproportionate space on the hard drive. Without compression, you could only store a few songs on an MP3 player; with compression, you can store thousands. Sony was a leader in compression technology.

Of course, to be effective, MP3 players must have content to play. Here, the Sony Records Division should have been very helpful to the Consumer Electronics Division: Records had recording contracts with many famous artists, and Consumer Products had the MP3 player (along with compression technology) to play that music.

So, why does Apple—with iPods, iTunes, iPhones, and iPads—dominate the portable music listening market? Apple had no advantages. It was late to the MP3 market (although it did

introduce an MP3 player with a particularly elegant interface), it did not own any content, and it had a limited online presence.

One explanation of Apple's success is Sony's failure—despite having the potential to dominate this market, despite its history of dominating similar markets in the past (e.g., the Sony Walkman portable tape player), Sony could not find a way for its two divisions—Consumer Electronics and Music—to cooperate. Put differently, Sony's failure was a failure in organization. The engineers in the Consumer Electronics business could never find a way to work with the artists in the music business.

Of course, Apple had to do a great deal more to take advantage of the opportunity that Sony's organization failure had created for them. Nevertheless, despite its potential, Sony failed to gain or sustain any significant competitive advantages in this lucrative MP3 market.[27]

Applying the VRIO Framework

The questions of value, rarity, imitability, and organization can be brought together into a single framework to understand the return potential associated with exploiting any of a firm's resources or capabilities. This is done in **Table 3.3**. The relationship of the VRIO framework to strengths and weaknesses is presented in **Table 3.4**.

If a resource or capability controlled by a firm is not valuable, it will not enable a firm to choose or implement strategies that exploit environmental opportunities or neutralize environmental threats. Organizing to exploit this resource will increase a firm's costs or decrease its revenues. These types of resources are weaknesses. Firms will either have to fix these weaknesses or avoid using them when choosing and implementing strategies. If firms do exploit these kinds of resources and capabilities, they can expect to put themselves at a competitive disadvantage compared to those that either do not possess these nonvaluable resources or do not use them in conceiving and implementing strategies.

If a resource or capability is valuable but not rare, exploitation of this resource in conceiving and implementing strategies will generate competitive parity. Exploiting these types of resources will generally not create competitive advantages, but failure to exploit them can put a firm at a competitive disadvantage. In this sense, valuable-but-not-rare resources can be thought of as organizational strengths.

If a resource or capability is valuable and rare but not costly to imitate, exploiting this resource will generate a temporary competitive advantage for a firm. A firm that exploits this kind of resource is, in an important sense, gaining a first-mover advantage because it is the first firm that is able to exploit a particular resource. However, once competing firms observe this competitive advantage, they will be able to acquire or develop the resources needed to implement this strategy through direct duplication or substitution at no cost disadvantage, compared to the first-moving firm. Over time, any competitive advantage that the first mover obtained would be competed away as other firms imitate the resources needed to compete. Consequently, this type of resource or capability can be thought of as an organizational strength and as a **distinctive competence**.

TABLE 3.3 The VRIO Framework

Is a resource or capability:

Valuable?	Rare?	Costly to imitate?	Exploited by organization?	Competitive implications
No	—	—	No	Competitive disadvantage
Yes	No	—	↕	Competitive parity
Yes	Yes	No	↕	Temporary competitive advantage
Yes	Yes	Yes	Yes	Sustained competitive advantage

If a resource or capability is valuable, rare, and costly to imitate, exploiting it will generate a sustained competitive advantage. In this case, competing firms

face a significant cost disadvantage in imitating a successful firm's resources and capabilities. As suggested earlier, this competitive advantage may reflect the unique history of the successful firm, causal ambiguity about which resources to imitate, the socially complex nature of these resources and capabilities, or any patent advantages a firm might possess. In any case, attempts to compete away the advantages of firms that exploit these resources will not generate competitive advantage, or even competitive parity, for imitating firms. Even if these firms are able to acquire or develop the resources or capabilities in question, the very high costs of doing so would put them at a competitive disadvantage. These kinds of resources and capabilities are organizational strengths and **sustainable distinctive competencies**.

TABLE 3.4 The Relationship Between the VRIO Framework and Organizational Strengths and Weaknesses

Is a resource or capability:

Valuable?	Rare?	Costly to imitate?	Exploited by organization?	Strength or weakness
No	—	—	No	Weakness
Yes	No	—	↕	Strength
Yes	Yes	No	↕	Strength and distinctive competence
Yes	Yes	Yes	Yes	Strength and sustainable distinctive competence

The question of organization operates as an adjustment factor in the VRIO framework. For example, if a firm has a valuable, rare, and costly-to-imitate resource and capability but fails to organize itself to take full advantage of this resource, some of its potential competitive advantage could be lost (this is the Sony example). Extremely poor organization, in this case, could actually lead a firm that has the potential for competitive advantage to gain only competitive parity or competitive disadvantages.

Applying the VRIO Framework to Southwest Airlines

To examine how the VRIO framework can be applied in analyzing real strategic situations, consider the competitive position of Southwest Airlines. Southwest Airlines has been the