

# Strategic capabilities portfolio analysis: Diagnostic methodology

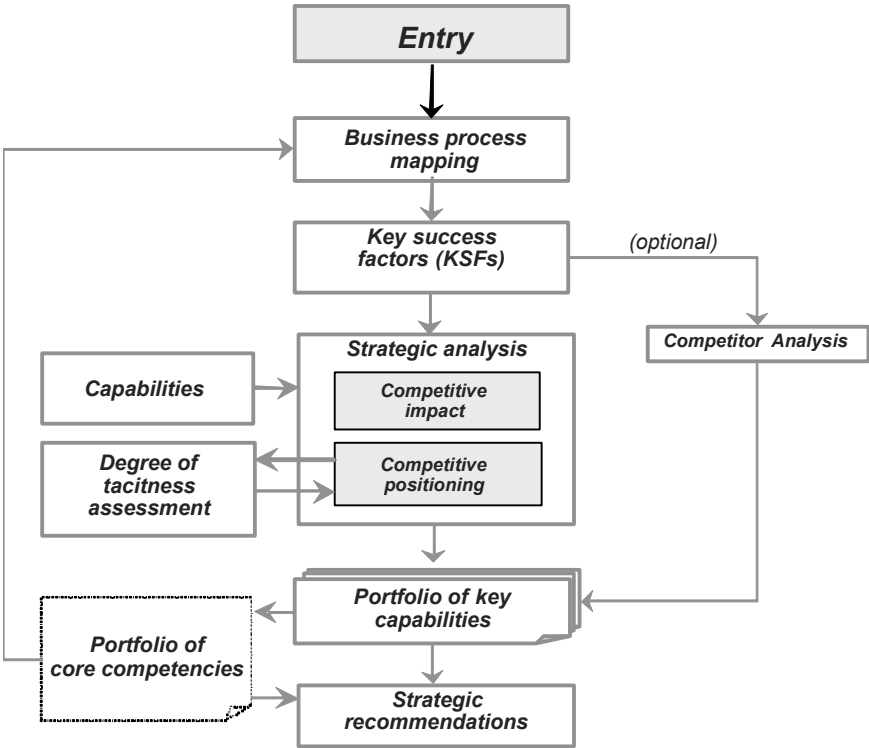
## Introduction

The purpose of the strategic capabilities portfolio analysis methodology developed by Birchall and Tovstiga (Birchall and Tovstiga 2002b, 2004a; Tovstiga and Birchall 2002) is to guide the manager through the process of identifying, mapping, and strategically evaluating the organization's portfolio of capabilities from a competitive perspective. The primary objective of the methodology is to guide the thinking process behind the strategic evaluation; it is to help the manager and his or her team articulate better questions. The real value contribution of the methodology lies in its systematic approach to a strategic exercise that can be very complicated.

A firm's portfolio of knowledge-embedded capabilities is a dynamic entity that must be managed in the context of the firm's rapidly changing environment. An appropriate strategic capabilities analysis must therefore address both where the firm stands today and where it should be moving towards, competitively speaking. It should also provide a comparative assessment of where the firm stands relative to its competitors. The methodology presented here addresses these issues in a systematic manner.

A unique feature of this methodology is its degree of tacitness analysis. Tacit knowledge is universally acknowledged to be a very important component of capabilities, yet it cannot be identified or assessed by conventional means. In the past, this has always presented a serious problem; critical insights into some of the most strategically relevant features of the firm's capabilities were simply not available. The authors have devised and integrated into the methodology an algorithm that provides a very broad estimation of the degree of tacitness of a capability. This measure is used as an indicator of the firm's position of strength with respect to a particular capability; the greater the degree of tacitness, the more the capability represents a unique competitive feature of the firm.

Figure A.1 presents a schematic overview of the methodology.



**Figure A.1** Schematic overview of a methodology for assessing the strategic impact of the firm’s portfolio of capabilities

**The methodology in a nutshell**

The analysis begins with a mapping of any one of the firm’s business processes. The objective is to do this from a value-creation perspective. Implicit here is the premise that knowledge must both contribute to, and be an outcome of, the firm’s value generation process. The relative importance of the firm’s business processes is therefore determined on the basis of their net knowledge generation. One of the core business processes is then selected and examined in terms of its key success factors. Capabilities that deliver on these key success factors are then identified and prioritized according to importance. A set of important capabilities is subsequently selected and classified according to competitive impact (maturity) and competitive position (firm’s position of strength with respect to the particular capability). These dimensions provide the coordinates for the mapping of the capabilities in a coordinate framework

showing competitive impact and position. A strategic analysis, resulting in strategic recommendations, is then carried out on the basis of this mapping. A stage-by-stage description of the methodology is presented in the following sections.

### Stage 1: Business process mapping

The first stage of the methodology focuses on breaking down the firm's business activities in terms of its business process value chain. A business process is understood to be any activity or group of activities that takes an input, adds value to it, and provides an output to an internal or external customer (Kaplan and Norton 1996). The objective of this first stage of the methodology is to map out a process value chain for the firm in question. Processes are identified according to their contribution to the overall value created. One of the important processes is selected for detailed analysis.

### Stage 2: Key success factors

Key success factors can be thought of as being common to the firm's industry. They are just as relevant to the firm's competitors and strategic partners. That is to say that key success factors are characteristic of the market place within which the firm is competing. In retrospect, they are the variables a historian would pick to best discriminate the winners from the losers in an industry. Key success factors indicate, as their name implies, the critical criteria that the firm's particular competitive strategy must fulfil in order to succeed (Roos et al 1997). Aside from this, key success factors are a constant reminder of what factors need constant monitoring. Generally there is no limit to the number of key success factors a firm can identify. If the firm enumerates too many, however, it could be a good idea to prioritize them and concentrate only on the most important ones. Having too many factors to concentrate on would otherwise dilute the focusing effect that should be the prime directive of key success factors.

Examples of key success factors include the ability to:

- deliver superior value through products and services
- carry out competitive manufacturing and commercial process reviews
- attract superior talent, employees with critical expertise and skills

- grow the business through competitive pricing and marketing image
- establish and maintain long-term relationships with satisfied customers
- establish long-term relationships with parties in the distribution channels
- run efficient operations that cut costly red tape procedures to a minimum
- employ satisfied and competent employees
- access and absorb new and critical sources of knowledge and technology.

Key success factors must be identified within the context of the firm's industry. Ongoing monitoring and assessment of the business environment provides the firm with the requisite understanding of those key success factors that determine the firm's current and emerging competitive playing field. The choice of key success factors on which the firm focuses should reflect a clear understanding of the firm's changing competitive environment. It is helpful to think about current and future developments in terms of the industry's specific dynamic timeframe and scope, stakeholder profile and overall macroeconomic context when selecting key success factors. Key success factors relevant to the core business process are then identified and selected in this stage of the methodology.

### Stage 3: Identification of capabilities

The challenge in implementing a competitive strategy is in identifying and developing those capabilities that constitute the critical building blocks of the firm's core competencies. These, in turn, will most impact the important key success factors of the industry. The firm's capabilities are drawn from the large and diverse array of fundamentally knowledge-based discrete activities, skills, and disciplines embedded in the organization. The key success factors identified in the previous stage are derived from the firm's external competitive environment. The firm's capabilities are the internal competitive activities with which the firm intends to fulfil and deliver on the key success factors.

Business processes depend on an entire range of capabilities. These can range from "supporting" to truly "core" in terms of strategic impact, as shown in Figure A.2.

The objective of this stage of the diagnostic is to compile a list of capabilities that support the core process selected in the earlier business process mapping stage of the methodology. Capabilities are selected on the basis of their impact on the key success factors identified earlier.

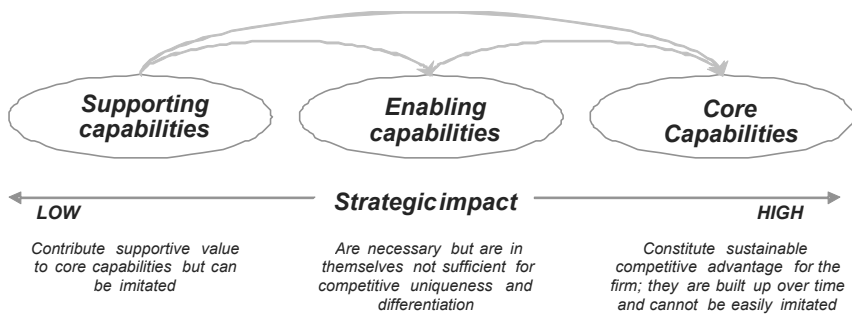
## Stage 4: Competitive impact and positioning of capabilities

Competitive impact and the degree of control of the firm over the capabilities selected in the previous stage are assessed in this stage of the methodology.

### *Competitive impact*

A capability can be classified as emerging, pacing, key, or base, as shown in Table A.1.

Similarly, a firm's degree of control over any particular capability is related to its ability to exploit that capability. The firm's degree of control



**Figure A.2** Strategic positioning of the firm's capabilities

Source: adapted from Leonard-Barton (1995).

**Table A.1** Classification of capability according to competitive impact

Competitive classification	Competitive impact of capability
I. Emerging	Has not yet demonstrated potential for changing the basis of competition.
II. Pacing	Has demonstrated its potential for changing the basis of competition.
III. Core	Is embedded in, and enables, products and processes. Has major impact on value-added stream (cost, performance, quality—and enables a proprietary position).
IV. Base	Necessary (enabling) but confers only minor impact on value-added streams; common to all competitors; commodity status (base).

can be high, neutral, or weak. For example, a capability may be controlled by a supplier if it is embedded in a bought-in component; or it can be controlled by a partner, as in the case of distribution by an intermediary. The situation in which critical capabilities are subjected to a high degree of external control requires careful review and perhaps restructuring of the strategic partnership. External recognition of the firm for its competitive capabilities, on the other hand, is a measure of a strong strategic positioning of the firm in its industry.

The decision tree schematics shown in Figures A.3 and A.4 provide a classification scheme for identifying the *degree of control* (that is, competitive position) and *competitive impact*. The outcome of the capability-by-capability analysis is used to map the firm's *capability portfolio*.

### Stage 5: Degree of tacitness

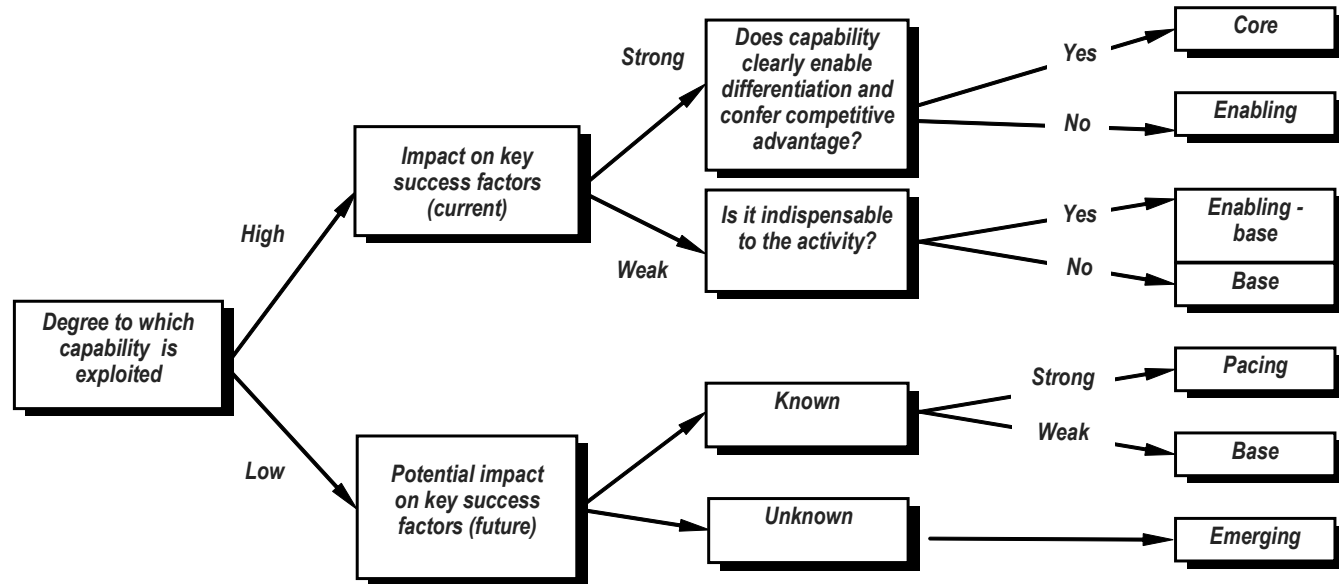
Tacit knowledge embodied in capabilities, as we showed earlier in the book, can exist to varying degrees, ranging from the barely perceptible, subconscious awareness (highly tacit) to just barely codifiable (a low degree of tacitness). Getting a grip on, and managing effectively, the tacit knowledge component of capabilities remains one of the greatest managerial challenges. The degree of tacitness of the capabilities identified in Stage 3 is examined with the help of the schematic presented in Figure A.5.

### Stage 6: Strategic analysis

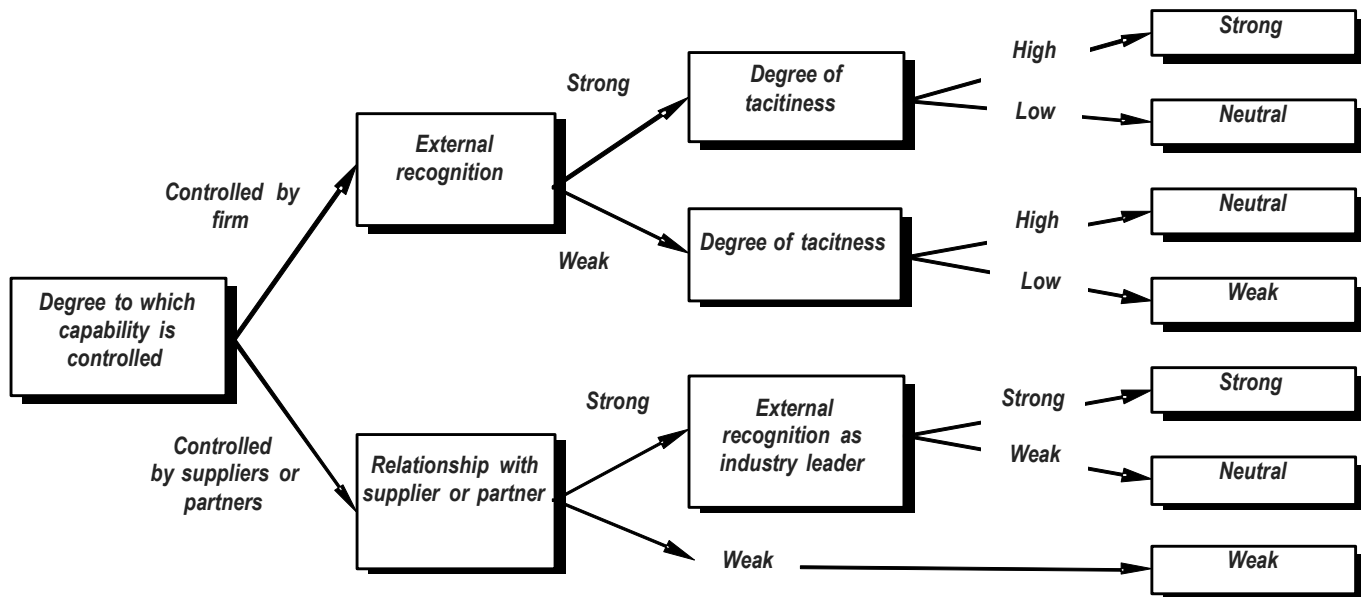
The outcome of the strategic positioning exercise is displayed in the strategic mapping framework shown in Figure A.6. The objective of this final stage of the methodology is to formulate strategic recommendations on the basis of the capabilities portfolio determined in the previous stage. The matrix scheme in Figure A.6 suggests some broad outlines for strategic action.

Depending on where the capability is positioned in the overall mapping, possible strategic action might (broadly) focus on:

- **Scanning** (emerging at all levels of competitive position). Recognizing that capabilities can originate from a very diverse set of sources, this management action focuses on casting a very wide scanning net. It further involves developing and nurturing environmental scanning capabilities so as to detect strong or weak signals indicating both threats and opportunities.

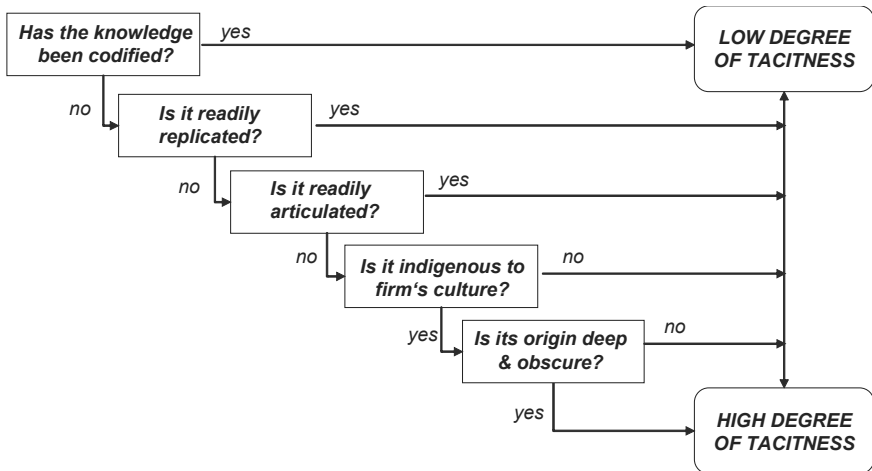


**Figure A.3** Assessment of the competitive impact of the firm's capabilities

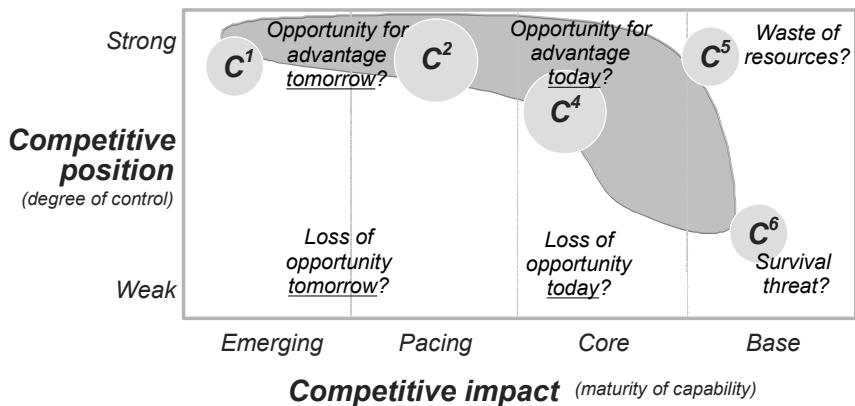


**Figure A.4** Assessment of the degree of the firm's control over its capabilities





**Figure A.5** Degree of tacitness ordering scheme



**Figure A.6** Strategic capabilities portfolio framework showing a typical capabilities mapping outcome and strategic analysis

- **Protecting** (pacing to key/core and strong). Protecting against each eventuality, whether external (competitive factors) or internal (mismanagement of knowledge resources) that threatens the integrity of the capability portfolio, in either an active or a passive way.
- **Enriching** (pacing to key/core and strong). Nurturing the business environment most conducive for the growth of current capabilities, via in-house capability building, formation of strategic alliances, or acquisitions.

- **Optimizing** (key/core and less than strong). Continually seeking to improve and refine existing capability assets toward better addressing current needs, thereby increasing the degree of control over strategically critical knowledge capabilities.
- **Disposing** (base and weak). Disposing of all or parts of a current knowledge capability/asset.

For the cases in which the degree of control is neutral, repositioning options must be examined on a case-by-case basis. The objective of this stage is to review the relevant strategic options for the portfolio of capabilities identified using the guidelines given below, and to formulate appropriate strategic recommendations for the firm's capabilities portfolio on a case-by-case basis.

1. **Emerging/strong.** This capability can have competitive impact in future, and control of technology is strong. Optimization of the capability in question is in order to reinforce the potential competitive advantage required; however, uncertainty about the necessary future impact makes it necessary to do so at low cost. Preferably this will be done in strategic partnership, internally, or via contract research. Intellectual property protection measures need to be considered.
2. **Emerging/weak.** This capability can have competitive impact in future and control of the technology is weak. Catching up in this area will potentially be necessary. Efforts need to be made to engage in an appropriate strategic partnership or alliance. Contract research will be carried out at low cost so as to enrich the existing capability.
3. **Pacing/strong.** This capability will have a competitive impact in the short or medium term, and the technological mastery is strong. Because of its strong position, the company can ultimately develop some competitive advantage thanks to this capability. It can optimize by accelerating the development in order to come ahead. Those capabilities developed ahead of competitors will need to be protected. Joining a strategic alliance with partner firms can potentially shorten the introduction schedule. Furthermore, investment will be required for research into use of the capability in new products and new markets.
4. **Pacing/weak.** The capability will have a competitive impact in the short to medium term and mastery of the capability is weak. Enriching the portfolio by rapidly acquiring the capability will be a necessity. If the internal development period is too long, acquiring licenses or a joint development may be viable alternatives. It is necessary to

continue scanning the research efforts of competitors, changes in customer needs, and potential technology sources as well new uses for the technology.

5. **Key/strong.** The capability has a strong competitive impact and the mastery of it is strong. It is necessary to continue to improve and to exploit the capability. The development of synergies with other capabilities should be investigated. The company will also attempt to market its technology externally, via licensing, where there is no commercial risk involved in doing so. Protection can be achieved through successful early launch of resulting products or through appropriate business strategy.
6. **Key/weak.** The capability has a strong competitive impact and its mastery is weak. The core process is in danger. Does the possibility exist for enrichment by catching up quickly by way of an appropriate acquisition or by introduction of a substitute capability?
7. **Enabling-base/strong.** This capability no longer has any competitive impact on the business but it is necessary to the activity. The firm's mastery over it is strong. It is necessary to maintain the capability and to harvest it. Options include seeking new uses for it, or potentially disposing of it to third parties positioned in a different core process, for which the capability may still have some pacing or key character.
8. **Enabling-basic/weak.** The capability has no more competitive impact but it is necessary to the activity and mastery over it is weak. The associated core process is endangered. Is enrichment via catching up quickly through an appropriate acquisition, or through introduction of substitute capability, a possible option?

## Stage 7: Debriefing

The methodology process can be quite involving and complex. Critical assumptions are made throughout; these need to be scrutinized and challenged at each of the stages. It is well worth the effort to review the outcome of the strategic assessment at the end of the process using the following guidelines:

1. Does the final outcome (strategic positioning matrix) make sense? Is the resulting portfolio of capabilities plausible?
2. What are the critical assumptions that the analysis is based on? How valid are they; how sensitive to variation are they? How would the outcome change if you were modify these assumptions?

3. Indeed, how, if at all, might the outcome be expected to be different if another group, representing different functional backgrounds in the firm, had carried out the same exercise?

## Summary

Ideally, the exercise is carried out as a multidisciplinary exercise on an ongoing basis. The objective of the exercise is to identify and assess, strategically, the firm's portfolio of capabilities. Early in the exercise, one of the firm's core processes is selected as a basis for further analysis. The resulting portfolio of capabilities, of course, relates only to this particular core process. The firm, on the other hand, undoubtedly has any number of key processes in its value chain. Thus, to build a more complete picture of the firm portfolio of core capabilities, one would need to repeat the assessment process for each of the key business processes.

From the integrated and collective set of capability portfolios that support the firm's core business processes along its value chain, complementary and synergistic clusters of these ultimately constitute the basic aggregate of the firm's core competencies. To qualify as truly "core," competencies must:

- make a disproportionate contribution to customer-perceived value
- represent a unique source of competitiveness
- provide unique opportunities for new business ventures.

As pointed out earlier, core competencies must also clearly transcend any single business process, as indeed they may transcend any single business unit within the corporation.

# Case study: BP Amoco and capabilities development

The oil exploration and production (oil E&P) industry is experiencing a period of fundamental change. Large players in the industry are redefining themselves through radical shifts in strategies. These are resulting in strategic combinations and alliances among asset oil E&P firms, alliances between oil E&P firms and service providers, and varying other types of outsourcing arrangements.

Much of the R&D in the oil E&P industry, for example, is being shifted from oil companies to major contractors. Major players in the industry have increasingly realized that their central R&D capabilities cannot even come close to matching the innovative potential of a well-managed outsourcing system, except in the few areas that are core to the firm. This realization has to no small extent been impacted by the drastic downsizing measures introduced by many of the large established firms in the 1980s. Service firms such as Schlumberger, on the other hand, are boosting staff, research spending, and technology development capabilities. Alliances, partnerships, and integrated, life-of-the-field management arrangements are rapidly becoming the industry norm.

Oil E&P firms, with fewer technical people and faster exploration-to-production schedules, are increasingly relying on service companies such as Schlumberger to deploy their technologies and broad arrays of competencies. New business models are emerging that are providing one stop shops that offer integrated solutions to established oil E&P firms to manage their field from cradle to grave. These initiatives are achieving new levels of reduced cost and revenue enhancement for all parties. Even more importantly, the new initiatives are also resulting in an unprecedented exchange of knowledge across the industry.

In a typical situation, for example, a strategic team is formed between a large E&P firm and a manufacturer of drilling equipment. The oil E&P firm agrees to purchase its equipment from the manufacturer. On one level, the drilling equipment manufacturer becomes an extension of the oil E&P firm by assuming responsibility for equipment

selection and operationalization; at a deeper level the teaming agreement results in a considerable exchange of experiential, project, and operational knowledge between the two partners.

The cost savings to both parties can be substantial. Strategic teaming has brought operating cost down considerably, by the exchange of knowledge that now takes place between an oil E&P firm and equipment provider from the early design specification phase, throughout commissioning, and ultimately during operations. Industry specialists suggest that real cost savings to the oil E&P firm's bottom line achieved through this continual exchange of knowledge is significantly more than can be achieved through the simple price negotiations in traditional buyer/seller relations.

### **Winning through knowledge**

BP Amoco CEO John Brown believes that all firms competing in the global information age face a common challenge: deploying knowledge more effectively than their competitors do. Brown goes on to point out that he is not referring only to knowledge already residing in the firm. Rather, he has been quoted as saying, "Any organization that thinks it does everything the best and need not learn from others is incredibly arrogant and foolish."<sup>1</sup>

BP Amoco is today a highly profitable oil E&P company. It has a strong position in essentially all of the world's strategically important oil and gas regions. Its exploration and development costs are now among the lowest in the industry. Yet organizationally, BP Amoco is much smaller and simpler than it was in the late 1980s. Before its recent merger with Amoco, BP had 53,000 employees—down from 129,000. Rather than being mired in procedures and divided into a multitude of baronies, BP Amoco now has an abundance of teams and knowledge networks across the firm in which people are eager to share and exchange knowledge.

What is BP Amoco doing differently now? What are the supportive capabilities it is developing to achieve successful sourcing and internalization of new knowledge? It has built a strong platform of supporting capabilities such as learning, strategic teaming, and relationship building with external partners, to maximize the strategic impact of its existing capabilities portfolio.

### **Learning on all levels**

BP Amoco has developed a formidable learning capability. Learning is viewed at BP Amoco to be at the heart of the firm's ability to adapt

quickly and seamlessly to changes in its rapidly moving competitive environment. Furthermore, it forms the foundation of its knowledge acquisition capability; it is at the root of recognizing and deploying new knowledge rapidly and fully. BP Amoco is currently applying a learning process known as an After Action Review.<sup>2</sup> This is a team-based learning process that is applicable to any event that offers the opportunity to capture and apply lessons learnt, to drilling operations, refinery maintenance, or even management meetings.

BP Amoco learns not only from its own people but also from contractors and from partners such as Shell. All sources of knowledge are considered to be crucial. The key to reaping big returns, BP Amoco's people have learned, is to leverage knowledge by replicating it throughout the company so that each unit is not learning in isolation and reinventing the wheel many times over.

*Virtual team networking* is BP Amoco's sophisticated computer network, which allows its people to work cooperatively and share knowledge quickly and easily regardless of time, distance, and organizational boundaries. It allows users to work together as if they were in the same room; the PCs feature videoconferencing capability, electronic blackboards, scanners, faxes, and groupware. Furthermore, the firm's virtual team networking PCs are connected to an intranet which features sites for sharing technical data on various specific topics such as muds used as drilling lubricants, sharing contacts, programs, and processes available to reduce the amount of pipe that gets stuck in wells.

BP Amoco also uses its virtual team networking capability to share knowledge with its contractors and outside suppliers. A recent development in the Andrew oil field in the North Sea is a case in point: The virtual team networking network was used by BP Amoco and its outside partner firms to figure out radical ways to cut the cost and time of projects. Partners briefed each other in places as far removed as Alaska and Columbia on how they made critical decisions. In other work, BP Amoco is using the network to improve the way it works with Shell in the Gulf of Mexico and Brown & Root in the North Sea. BP Amoco estimates that the virtual team network produced at least US\$30 million in value in its first year alone.

## Sharing capabilities through strategic partnering

BP Amoco is also developing capabilities that are focusing on forging distinctive relationships with external strategic partners. These are transforming contractual relationship management into genuine

knowledge-sharing collaboration. This process begins with a mindset that focuses not so much on looking only at technology for a solution, rather looking at the firm's relationship with its outside contractors. Traditionally, outside contractors were looked upon and treated as adversaries. Rather than continuing the practice of playing them off against each other, BP Amoco began treating them as allies, offering them a financial interest in the project's outcome, and generally establishing a collaborative environment for working together to challenge costs, seek the best value, and innovate. Knott (1996), with reference to the Andrew oil field project, notes that:

Delivering against targets became an established trademark of Andrew's team behaviour. Before the project began, BP had acknowledged that to improve business ventures beyond the benefits gained from technological advances alone, the necessary partner for technology lay in the cultivation of a positive behavioural attitude. This was sought and identified from the outset through the responses of the alliance contractors during selection, and was encouraged throughout the project at an individual level with continuous coaching of leadership skills and the active promotion of teambuilding.

A joint collaborative effort with Schlumberger, the oilfield services firm, to develop a special device called a logging tool further illustrates the point. BP Amoco was experiencing difficulties drilling horizontal wells. Schlumberger had critical knowledge in this area. BP Amoco proposed to Schlumberger a collaborative effort involving:

- bringing BP Amoco scientists and Schlumberger scientists together for joint development of the tool
- sharing development costs
- using BP Amoco wells for testing the tool.

A group of BP Amoco scientists ended up going to Schlumberger's research laboratory to work with its researchers on developing a prototype. When completed, the prototype was tested and modified until it proved to be successful in the field. Schlumberger was then asked by BP Amoco to build the tool and to make it available to BP Amoco before offering it to anyone else in the world.

BP Amoco has refocused its technology people from technology invention to technology application. Their mission is to source and access the best technology wherever it resides inside or outside the firm, to apply it



quickly, and thereby cut cost and time to market. BP Amoco understands that it cannot expect to possess more than a fraction of the world's best technology, and that its people's ability to combine and apply externally sourced technology is what really endows real competitive advantage.

## Notes

- 1 The discussion of BP Amoco's knowledge sourcing practices is based largely on Prokesch (1997).
- 2 BP's application of After Action Reviews (AARs) is described by Collison and Parcell (2001). The AAR process was developed by the US army for individuals and teams to learn and capture knowledge immediately from success and failures with just four questions:
  - 1 What was supposed to happen?
  - 2 What actually happened?
  - 3 Why were there differences?
  - 4 What can we learn?

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