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Strategic Change

Outsourcing: a core or non-core strategic management decision?

Jussi Heikkilä^{1*} and Carlos Cordon²

Helsinki University of Technology, TAI Research Centre, Finland

² International Institute for Management Development (IMD), Lausanne, Switzerland

- Practicing managers often use the idea of core competence as one of the principal guidelines for making decisions about outsourcing. Managers of large corporations commonly support their outsourcing decisions with the familiar argument that We keep core competences in-house, and we outsource non-core activities'.
- This paper questions the usefulness of the 'non-core competence' concept for practical decision making. It reviews and discusses a comprehensive list of drivers for outsourcing decisions as well as the potential risks related to outsourcing initiatives.
- Instead of taking the simplistic 'core or non-core' approach, the paper suggests a more creative way to evaluate a larger variety of competencies. The business contexts of four successful companies are described and several examples of their outsourcing/insourcing decisions are presented.
- Examples show that poor implementation undermines decisions that are based on even the most imaginative definition of competence structures. Successful outsourcing depends on managing the outsourcing relationship well after the decision is made. Copyright © 2002 John Wiley & Sons, Ltd.

The oft-heard justification for outsourcing decisions is: 'We keep core competencies in-house, and we outsource non-core activities.' However, the question remains: what is 'core' and what is 'non-core'? Typical managerial answers are 'Well, that depends on how we define our business.' Or 'Obviously, if we plan to continue this activity in-house, it should be a core competence.' Granted, the process of defining a company's core competence is important but the non-core realm also offers a wide spectrum of choices.

E-mail: jussi.heikkila@hut.fi

Corporate dilemmas

Corporations are increasing their outsourcing significantly. The drive to increase shareholder value and focus on core business is pushing companies to continuously assess outsourcing opportunities. In 1997, a survey of large European corporations (Vollmann et al., 1997) revealed that 52% of the responding companies expected to increase their levels of outsourcing activity. This is what we saw during the last years of the 1990s. For example, in the electronics and telecommunications industries, the electronics manufacturing services (EMS) providers, such as Solectron, Flextronics, SCI Systems, Jabil Circuit, Celestica, ACT Manufacturing, Plexus and Sanmina were growing

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^{*} Correspondence to: Dr Jussi Heikkilä, Research Director, Helsinki University of Technology, TAI Research Centre, PO Box 9555, Fin-02015 HUT, Finland.

faster than their customers, the major original equipment manufacturers (OEMs) like Dell, Compaq, Sony, Philips, Cisco, Nokia, Motorola and Ericsson. From 1996 to 2000, the combined capital expenditures of the above-mentioned EMS firms grew eleven fold, revenues increased almost 400% and the annual growth rate of the market capitalization was 87%. Solectron alone made 27 acquisitions in 2000.

The year 2001 saw a change in the business cycle of high-tech industries. OEM sales volume growth stopped, which caused scaled-down manufacturing volumes, layoffs and growing inventories at both the OEMs and EMS. OEMs needed to rethink their outsourcing strategies.

Evaluating and implementing outsourcing decisions is challenging. Many corporations

Evaluating and implementing outsourcing decisions is challenging

are facing a situation where the very activities they outsource in one business unit are considered fundamental in another (and are therefore not outsourced). Different sets of competencies in similar businesses create among the corporate strategy makers the suspicion that some business units may be misaligned. Line managers face the dual pressures of both making efficient use of resources and resolving the recurring question of whether to outsource or not. The decision to outsource or keep in-house seems, in many cases, to be situation-dependent rather than strategy driven. Therefore, if companies choose to follow the dictum of insourcing core activities and outsourcing non-core activities, they may well end up with either:

- Outsourcing too many activities, or
- A tortuous and unhelpful definition of their core competencies that confuses

rather than clarifies the outsourcing decision.

Non-core activities require accurate classification

Classifying an activity as 'non-core' may lead to serious oversimplification of the complexity of the real business situation. The concept of core competence, as coined by Prahalad and Hamel (1990), is widely used as an essential element in formulating global company strategy and it has proven useful in that process. Prahalad and Doz (1987) use an example of core competence from Honda. The authors of this paper see the internal combustion engine as Honda's core competence, because engines are the common core ingredient of Honda's diversity of products that include cars, motorcycles, lawnmowers, power generators, outboard motors, snowmobiles, snow blowers and garden tillers. Originally, Prahalad and Hamel developed their core competence concept as an alternative to Strategic Business Unit (SBU) thinking. They criticized the SBU organization format of poor resource allocation because it does not allow diversified multinational corporations to allocate resources to core technologies, distribution, and brand development, all of which can cut across several SBUs.

The core competence concept can help an organization focus on the key strategic actions it needs to take in order to maintain its special expertise. We wish to emphasize however, that classifying an activity as 'non-core' should not be meant to imply or support the argument that 'non-core' equals 'unimportant'. The Honda example clarifies the many-faceted role of 'non-core' activities. During the 1980s, Honda was extremely successful. From 1980 to 1988, the company grew 200%. Focusing on the internal combustion engine, the company's core competence was an important factor in this success. Honda established a worldwide reputation for quality, first in motorcycles, and then in automobiles. A slowdown of the motorcycle business in the 1980s encouraged Honda to

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look to other markets to maintain full use of their production facilities. The company identified outdoor power equipment (OPE) as an appropriate new business opportunity. In many respects, OPE products represented a natural business diversification for Honda. After all, the company had originally been founded in 1948 to produce small internal combustion engines.

How did Honda enter the OPE business? By manufacturing engines and outsourcing the rest? The answer is not that simple. The strength of Honda's products stemmed from its extensive R&D expenditures and its speedy incorporation of cutting-edge technological developments. Honda marketed its products with the aid of extensive advertising and promotion and priced them competitively. Until 1984, Honda lawnmowers bound for the USA had been manufactured in Japan. When US sales reached a level at which it made sense economically to establish a production base in the USA, Honda built a manufacturing plant for engines and lawnmowers in Swepsonville, North Carolina. Honda was also one of the few companies in the OPE industry in the USA that vertically integrated backward into components. In addition to engines the plant made housings, frames and components (Hoffman et al., 1996). Thus Honda did not concentrate on core competencies only and outsource the rest. Instead the company saw good strategic reasons for backward integration.

Honda's quick access to the OPE business can be attributed (in addition to their superiority in engines) to their well-known brand. But manufacturing components also made economic sense. Although making components might not have reflected a core competence, it did allow Honda to reach its objectives *and* do good business.

Reasons to outsource

If the 'core or non-core' distinction is insufficient, how do managers' decide what to outsource? One conceptual framework for understanding the configuration and coordination of a firm's activities is the firm's

value chain and its place in the larger stream of activities in the industry's value system (Porter, 1985). Analyzing the firm's value chain reveals the value created by the various activities in its chain. It also reveals how activities are linked to each other and to other activities in the whole value system. The management of the linkages among activities in the system is essential to creating and sustaining competitive advantage.

Outsourcing, the management of virtual organizations, developing supplier networks and partnerships in various industry environments have all been comprehensively researched (Alexander, 1997; Dyer, 1996; Insinga and Werle, 2000; Lambert *et al.*, 1996; Upton and McAfee, 1996). We started building our outsourcing decision-making framework from observations made during case research. According to much of the literature and observations from research on case studies, the most common outsourcing drivers are:

- Scarcity of capital. Fast-growing companies often have insufficient capital to fund all the activities they could profitably develop. Outsourcing some activities reduces the capital required.
- Lack of know-how. In many cases, other firms know how to perform certain activities better. Lack of knowledge is often related to the difficulty of developing competencies in-house fast enough.
- Flexibility and the need for quick response or small production. Some companies specialize in being able to quickly increase production to support the marketplace.
- Speed or time to market. In many cases, outsourcing development activities to key suppliers allows a company to bring products to market or enter a new geographical area much faster than they could by doing everything internally.
- Asset utilization or spare capacity. Many chemical companies require a minimum level of asset utilization to justify an investment. If this minimum is not reached, production is often outsourced, in some

cases even to competitors who have free capacity.

• Economies of scale. Personal computer manufacturers used to undertake many more assembly activities internally. Now specialized contract manufacturers carry out assembly for several companies, obtaining economies of scale that a single company could not obtain on its own. As a consequence, the cost of assembly has been reduced significantly.

At the same time, several potential drawbacks to outsourcing initiatives have also become apparent:

- Transfer of know-how that encourages new competitors. In the 1980s in order to reduce manufacturing costs, many American businesses outsourced activities to Asian manufacturers, only to see these manufacturers emerge years later as their toughest competitors.
- Changes in the balance of power in the industry. IBM's decision in the 1980s to outsource its microprocessor to Intel and its operating system to Microsoft set the destiny of the entire industry for years to come.
- Dependency, confidentiality and security issues. For years many oil companies outsourced crewing for their oil tankers. However, after one or two serious accidents, many of these companies decided to use their own crews, making sure that they are properly trained and fully understand their responsibilities.
- Fear of opportunism. As companies become increasingly interdependent, transaction costs tend to rise. Frequently the time and resources needed to manage the outsourcing relationship and to clarify contracts and expectations are too exorbitant or too daunting. Such has been the case with many IT outsourcing arrangements where aligning the objectives with the supplier has been extremely difficult.

Most of the above drivers for outsourcing and potential drawbacks are only partially related to the issue of core competence. Many activities that companies perform fall in the 'gray category' of competencies, i.e. they are neither clearly distinctive nor are they clearly unrelated to the main business. Nevertheless, companies still have to answer the fundamental question of what to outsource and what to keep in-house.

Lessons from practice

Evidence from major manufacturing companies suggests that there is a rich variety of approaches to outsourcing. DuPont,

There is a rich variety of approaches to outsourcing

one of the world's biggest producers of polymers, has its largest European manufacturing facilities concentrated in the Benelux region. A wide variety of industries, including consumer electronics and automobile manufacture, use DuPont's highperformance polymers to build plastic components. The manufacturing process itself consists of two major steps: (1) resin creation, a chemical process for creating the polymer from petroleum components, and (2) compounding the physical extrusion process through which the polymer is converted into small pellets sold directly to customers. DuPont has an outstanding record of product research and innovation. The company is renowned for developing proprietary manufacturing processes with the primary objective of producing high volumes at competitive prices.

In 1996, outsourced activities at DuPont represented a significant proportion of sales in some divisions, yet activities considered core in one part of the business might well have been outsourced in another (Vivanco *et al.*, 1997). In DuPont's polymer business,

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for instance, the European operation considered that, for both competitive and economical reasons, the compounding of special compounds was a core competence. Not only was a detailed knowledge of the chemical characteristics of the product necessary for carrying out the compounding process efficiently, but DuPont Europe could compound polymers at a lower cost than other companies. However, DuPont Europe had not always had the facilities to carry out all compounding operations in-house. Prior to 1996, they had outsourced part of production. Only recently had the division decided to invest in developing the necessary facilities to be able to undertake all compounding in-house. The situation was different in the USA. There DuPont continued to outsource its compounding activities as US union agreements dictated that all chemical company employees be paid according to the same guidelines. As chemical industry salaries were substantially higher than those paid in a compounding-only company, outsourcing as much as possible made economic sense.

At the same time, a set of more complex outsourcing decisions characterized DuPont's resin-creation business. With small batch sizes where the product was not a proprietary product, DuPont referred its customers directly to an outside supplier and took no responsibility for product quality. However, the company did make an exception for key customers who refused to take products DuPont had not manufactured. In such cases, the company produced small lots in-house. Similarly, DuPont had outside contractors producing its unique products with small sales volumes for key customers. However, the company ensured that the quality was the same as it would have been if the product had been made in-house.

Another example worth noting is recycling. DuPont did not consider recycling a distinctive competence. The company was aware that in the future, legislation might require chemical manufacturers to have recycling capabilities. For this reason they had invested in a recycling plant in the UK but outsourced the operation to a third party.

DuPont provided the raw materials and the two companies agreed on yields and performance measures.

Outsourcing some activities allows a company to focus on developing distinctive competencies and increasing flexibility. As a case in point in addition to core competence, DuPont's outsourcing decisions took into consideration factors such as resource costs, as well as how it could best manage the potential risks in the quality of its product and in environmental issues.

Nokia Mobile Phones: flexibility for choosing future technologies

Nokia Mobile Phones is a major player in an industry characterized by phenomenal growth, rapid technology development and rapid price erosion. During the first half of 1990s, Nokia's value of purchases grew over three times faster than their sales. The price erosion of a mobile phone model could exceed 80% in just two years.

Nokia defined its core competence as developing and manufacturing mobile phones (Heikkilä et al., 1998). Product life cycles were short and in order to utilize new technologies, technology leaders in the business had to make considerable progress with each new product generation. Nokia's core business, technologyrelated competencies developed rapidly, from distinctive to widely available. The company followed a strategy of not being vertically integrated because this could easily lead to having 'parasitic' competencies. Essentially, differentiation meant designing and manufacturing cellular phones and finding and co-managing the best suppliers for each product generation. For Nokia, co-managing meant aggressively driving the price and performance characteristics of selected technologies together with their suppliers.

A good example of the user interface is the Nokia 2110 mobile phone. Introduced in 1995, the new phone needed a flexible circuit board assembly, a technology that the company did not possess at the time. In response, Nokia initially outsourced the whole model to one global supplier located in Japan. After some time, however, Nokia decided that it did not want to depend on a single supplier and decided to develop the necessary competence internally. At the same time, Nokia wanted to further increase flexibility and improve local responsiveness by having a regional European supplier. The company therefore decided to subcontract some production to Elcoteq Network, a Finnish contract manufacturer.

The history of the Nokia 2110 is basically the history of Nokia moving from having one global supplier through doing its own production to one of having several regional suppliers working in flexible roles. As the least vertically integrated company in its business, Nokia faced the contradictory challenge of avoiding vulnerability in the competencies that distinguished it from its competition, while at the same time going for the advantages of long-term partnerships with wide geographical focus. Nokia's suppliers had to be able to maintain both the immense growth and the foreseen cost reduction, while at the same time coping with the drop in model prices.

Nokia followed a supply chain strategy that was flexible enough to adjust to the changes in their business environment. Above all, in the rapidly changing business the company wanted to avoid being tied to a wrong technology partner. Partnerships were meant to last for the life of a product and Nokia did not hesitate to aggressively develop their supplier base to meet their regional responsiveness needs. Two types of competencies were involved in the company's outsourcing considerations: (1) protection from potential abuse of a sole supplier and (2) having an essential competence available regionally.

Efficiency and risk

The fundamental issues in outsourcing decisions are the efficiency of performing the considered activity internally compared to a partner's efficiency and the risk of either

keeping or outsourcing the activity. When managers start analyzing the possibility of outsourcing a particular activity, they should give serious thought to how the activity contributes to the overall success of their business. Instead of trying to oversimplify the analysis of whether to outsource or keep an activity, management should take full account of the variety of issues involved in a strategic business decision. We suggest categorizing activities that a company wants to keep in-house as belonging to one of the following three types:

- Distinctive competencies. Distinctive competencies are the key capabilities of an organization and invariably the ones that allow it to excel. Examples cited here include Honda's internal combustion engines, DuPont's product design and innovation and proprietary manufacturing processes and Nokia's design and manufacture of mobile phones, combined with selecting the right technologies for future product generations.
- Essential competencies. Essential competencies are the activities the organization needs for sustaining its profitable operations. For DuPont, essential competencies are compounding, resin creation and recycling and, depending on the particular conditions, the company either performs them internally or outsources them. For Nokia, making technologies available globally for the entire operation is essential for their successful growth, but it alone would not distinguish Nokia from their competitors.
- Protective competencies. Protective competencies relate to those activities that pose a considerable risk for the success of the whole organization if they are not properly managed. For example, DuPont needs to secure product quality for their customers by keeping some of the manufacturing and Nokia Mobile Phones needs to master flexible circuit board assembly before outsourcing it regionally.

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The three competencies can be depicted in a framework to reflect efficiency compared to other companies and risk. **Figure 1** describes this arrangement and thus allows a clearer examination of outsourcing choices.

Our advice for management in making decisions between retaining an activity inhouse and outsourcing it, is to follow the following guidelines:

- If the efficiency of the particular operation is high, it is logical to keep the activity in-house, assuming that the company can maintain this efficiency well into the future.
- Risk can be managed by distinctive competence. Examples include firms that have special systems for handling volatile and dangerous materials, with the resulting high profitability. The competence tends to be necessary in the area of high risk, although it might be less desirable from the point of view of efficiency. Keeping a high-risk activity means protecting the firm by controlling the activity better.
- If the operating efficiency is low and the associated risks are also low, the logical action is to outsource the activity. As shown in Figure 1 this might apply for some essential competencies.
- The main challenge comes when the activity efficiency is low and the risks are high. In this situation management either has to redesign the activity so that either the company's performance becomes more efficient or the risks are reduced. That is, for any activities in the upper left-hand quadrant of **Figure 1**, whether protective or essential, the company needs

to redefine the activity to fit in a different quadrant. Thereafter, management can consider other outsourcing alternatives.

This model should be understood as dynamic and activities will move from one category to another over time. Typically, an essential activity can become a target for outsourcing if a competitive supply market develops. The model can serve as the basis for deciding what to outsource, when and how. Essential competencies and protective competencies might be outsourced if an appropriate relation can be created to ensure that the service is available continuously and the risks minimized.

Managing outsourcing relationships

The competence dimension of outsourcing decisions needs to be tightly coupled with the issues related to implementing the resulting outsourcing relationships. The following two cases illustrate the point.

Thomas Medical Systems: higher-level purchasing

Thomas Medical Systems, or Thomas (the name of this company is disguised to maintain confidentiality), is a leading supplier of diagnostic imaging systems that used X-ray, magnetic resonance and ultrasound technologies. The Apollo B product series was the newest addition to the Thomas cardiology product family and included many innovative new features the company had pioneered. The Apollo B was a digital cardiac imaging system that produced high-quality digital

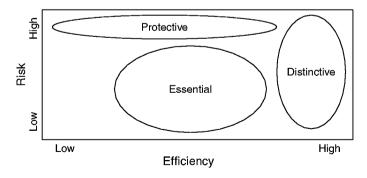


Figure 1. Efficiency and risk considerations in outsourcing.

images using X-rays combined with exclusive sensor technology. It also incorporated the company's comprehensive approach to X-ray dose management, which provided the tools necessary for cardiologists to optimize the image quality while minimizing the dose applied to the patient.

To develop Apollo B, Thomas had piloted a new way of working with their suppliers. They started by purchasing assemblies rather than individual parts for assembly in-house. The company's intention was to enhance the value chain in order to provide more integrated solutions to hospitals. Making their suppliers responsible for larger assemblies was consistent with this intent and would allow the company to focus their management and financial resources on better serving their customers (Julien *et al.*, 1998).

Thomas wanted to move from purchasing individual parts towards what the company called 'higher-level purchasing'. This shift embodied management's goal of purchasing assemblies in order to reduce the quantity of parts the company had to purchase. Subcontracted assembly was expected to be cheaper than assembling the parts in-house. The fundamental objective was to turn fixed costs into variable costs.

Thomas completed the Apollo B project on time and the market received it well. Although the project came in on budget, the new way of working failed to bring the anticipated savings. In fact, while the overall cost of the system was acceptable, the two outsourced modules exceeded estimated costs by 10–15%. Furthermore, members of the project team were unhappy with the overall performance of the project. A lot of time and many resources had been wasted because neither Thomas nor the suppliers had understood the changes needed at the outset.

The strategic intent was directionally correct but, as often happens, the devil was in the detail. For example, the central supplier did not have compatible CAD/CAM systems and they had a different approach to engineering design and database maintenance.

Also the company had seriously overestimated the supplier's competence in certain areas, including assembly. The problems were largely attributed to lack of a clear outsourcing policy and the fact that the project team had been developing in parallel both a new product and a new way of working.

As a direct result of their first outsourcing experience, Thomas Medical Systems developed an outsourcing policy that included a number of criteria for defining non-core areas that could be outsourced. The company formed eleven technology clusters that encompassed all the 'non-core' activities for which they would search for outsourcing partners. If Thomas could find no company with the necessary competencies, they would need to launch a dedicated effort to develop the competencies in the existing supplier base.

The net result of this new outsourcing policy was to ask many new questions.

- What was required from the outsourcing partners to meet Thomas's requirements?
- How long would it take to implement the policy given the constraints in the partners' skills and competencies?
- How could Thomas follow the outsourcing policy and not make outsourcing decisions that, above all, merely took care of immediate cost concerns?

Thomas's central concern became finding outsourcing partners with the right skills and competencies and in the absence of such new partners, how it could develop the right skills and competencies with the available partners.

TeStrake: learning to work together in a partnership

TeStrake, a Dutch company, recently took the initiative to find a new way to work in a consortium of suppliers for new product development (Julien *et al.*, 1997). The aim was to develop new products rapidly and cost efficiently by leveraging the best in each supplier. At the time, Stork Digital Imaging (SDI) was developing an inkjet

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colour printer, PIP (Perfect Image Printing) for high-resolution textile printing. PIP was seen as a completely new generation of textile printers. Working on the project were SDI, which led the development; TeStrake, a second subcontractor, and DuPont, the marketing agent.

TeStrake and SDI had previously worked together developing a printer called AX4 but a host of problems had plagued the project. While TeStrake and SDI had been developing the AX4, DuPont had regularly identified and refined customers' requirements, which resulted in many changes in AX4 design. Consequently, the project ran significantly over budgeted cost and came late to market. What were the main problems with the AX4? It had taken too long, had cost too much, and communication problems had plagued the companies, which had also significantly underestimated the difficulties of system integration. Market information was inadequate and when problems surfaced, the firms resorted to time-consuming negotiations. TeStrake had not been involved early enough in the product design and no real trade-off existed between the technical specifications, the development cost and the product cost. Too much time had elapsed before the companies understood the extent of the cost increases.

With their new working methods, the companies tried to avoid making the same mistakes in the next product development project, the PIP. In the PIP, SDI involved its suppliers early, even at the stage of developing the functional specifications. SDI sought fixed-cost estimates at the beginning of the project. Development costs were not openended and the partner companies shared the risks and the rewards. The companies changed their approach to research and development dramatically. They resolved major uncertainties early, even if this meant increasing the overall development time. They froze design specifications early with the time to market driving the development activities.

A central concern here was who should be involved at what point in the project. Managers advocated dividing the major responsibility for different parts of the work more equally between the partners. From a relationship perspective, this desire underpinned the need to work differently in a long-term partnership from the normal working procedures in an ordinary customer–supplier relationship.

Conclusions and recommendations

The Thomas Medical Systems and TeStrake examples illustrate the challenges companies face when they implement outsourcing partnerships according to the strategic guidelines discussed earlier. It seems clear that when the outsourced activity is crucial for the success of the companies involved, the choice of partners and the approach to comanaging the relationship become central factors in the outcome of an outsourcing arrangement. **Figure 2** captures our understanding of the essential dynamics companies need to consider when they make vital outsourcing decisions.

Companies need to consider both strategic and operational issues when they make

Companies need to consider both strategic and operational issues

outsourcing decisions. Outsourcing strongly influences the organization's ability to meet its challenges. Quick decision rules should be avoided. Managers need to evaluate from different points of view the relationship between the activity under consideration and its relationship with the rest of the organization. The following guidelines should lead to a more comprehensive outsourcing decision-making process:

(1) Management should adopt a creative approach to evaluating the competencies of the company. The three types

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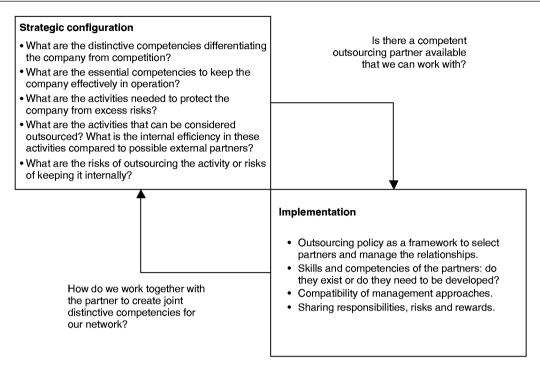


Figure 2. The full scope of an outsourcing decision.

- of competencies presented here, distinctive, essential and protective, serve as a useful starting point for the evaluation.
- (2) Managers should then engage in a wideranging discussion of where an activity belongs in the framework depicted in Figure 1. Analyzing the targeted activity in terms of its efficiency compared to other activities and risk sharpens management's understanding of the activity and its relative organizational impor-
- (3) Determining what actions the company might take to reposition the targeted activity in the efficiency-and-risk framework brings dynamism to the planning process. How are the competencies expected to evolve? How do we increase the value we produce to our customers? How do we develop our set of competencies in order to thwart future competition?
- (4) Thereafter, the next step is to evaluate the possible supply alternatives. Is there a good outsourcing option? Can another organization undertake the activity as efficiently as we can? Do we have

- confidence that the supplier can provide the activity and continually improve it? What are the risks and what are the implications of these risks?
- (5) Finally, each firm needs to continuously assess their ability to operate in a 'virtual organization'. The objective of real strategic outsourcing partnerships is to create joint distinctive competencies in order to change the rules of the industry and to orchestrate the whole supply chain.

Biographical notes

Jussi Heikkilä is research director at the TAI Research Centre at the Helsinki University of Technology. He earlier worked as a research associate at the International Institute for Management Development — IMD. His research interests include demand/supply chain management and manufacturing strategy.

Carlos Cordon is professor of manufacturing management at IMD. His research interests include manufacturing management and demand/supply chain management.

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