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PART I

Conceptual frameworks and theories

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1 *Global outsourcing and offshoring*

In search of the optimal configuration for a company

FAROK J. CONTRACTOR, VIKAS KUMAR, SUMIT KUNDU, AND TORBEN PEDERSEN

Introduction

The activities of any enterprise can be broken down into a large number of discrete steps along its value chain, from research and design, to production, marketing and distribution, to customer service. Even these are but broad categories which can be micro-dissected into their component pieces. For instance, the "research" function can include creative design, requiring high technical skills and intelligent market feedback into the design process. But research also entails several mundane activities such as field testing, patent applications, and data compilation.

This chapter deals with three broad trends affecting the reconfiguration of company functions, for which we propose an integrated approach for theory and strategy:

(a) The increasingly finer micro-dissection of company functions all along the value chain. This enables a finer-grained evaluation of which of the micro-activities are best performed within the company, and which may be outsourced – in short, the *organizational relocation* of functions which previously may have been performed in-house.
(b) *Geographical relocation* and the choice of foreign country and partner.
(c) The greater outsourcing and offshoring of activities that used to be considered "core," proprietary, or strategically crucial, such as Research and Development vital to the continued competitiveness of the firm.

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The chapter addresses a crucial global strategy question, "What is the optimal global and organizational configuration for each micro-activity or function for a company?"

Although the driving forces of outsourcing and offshoring have recently escalated, the roots of geographical and organizational restructuring of economic activity can be traced back into prehistory. Along the central spine of Italy, in the Abruzzo province, are a series of caves carved into mountainsides amidst picturesque deep valleys and gorges. One such cave is the Grotta Sant'Angelo which used to be visited by pilgrims hoping to have their sins purged, ever since the year 490 CE when the Archangel Michael appeared to Saint Lawrence Maiorano and proclaimed absolution for all who visited such grottos thereafter. The tourists, hikers, or penitents who climb up the hillside into the cave are oblivious to its much longer history. Excavations by the University of Michigan into the floor of the cave reveal an entire workshop for making flint tools, as early as 25,000 years ago.[1] Early hominids as well as *homo sapiens sapiens* made flint tools, such as spear heads for hunting, or scrapers for skinning and de-boning. Initially, these were made by each hunter or family for their own uses. However, the raw material, flint, is not ubiquitous. Quarries can be many miles apart. Flint knapping is a skilled art requiring much experience in the worker. Otherwise there is considerable wastage, and the end product is misshapen or useless. In the best of hands, tool-making is a significantly weight-reducing process. As human history progressed, later in the Chalcolithic era, it made economic sense to concentrate production preferably near the raw material sources in skilled workshops, under an organized hierarchy, and then distribute the finished product over the entire region by trading arrangements. This chapter is a story of separation and disaggregation that began over 25,000 years ago – separation between producer and consumer, organizational separation between specialized producers over a fragmented value chain that could be hundreds, and later thousands, of miles apart. Ochre of various colors (brown from Roussillon, France, and yellow from Cyprus) was used to paint dwellings, bodies, and murals such as the famous Lascaux cave paintings. The ores were transported across a continent to specialist workshops which would add proprietary adhesives and grind the mixtures to desired consistencies, before selling them to customers for their rituals, tribal markings, cosmetic

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embellishments, or art. The benefits of specialization, economies of scale and learning, technological innovation, weight-reduction criteria for the location of production, and inter-regional trade all have their seeds in human prehistory.

Today, this organizational and geographical fragmentation has progressed to an unparalleled extent – global in scope and scale. An automobile made by a major producer has more than twelve thousand parts. Components are typically sourced from hundreds of major suppliers in a dozen or more nations worldwide, in addition to making key parts in the car company's own factories. In theory, for each of the twelve thousand parts, the firm may decide to make it internally, or outsource. If the decision is to make it within the company, the question is where, and in which nation. If the decision is to outsource the production of that component, then the question arises as to choice of supplier and country.

The maximum number of combinations amount to 12,000 parts, times 193 nations, times 2 (for the "make" vs. "buy" decision) – which comes to 4,632,000 configurations. For the minimum number, at the other end of the organizational spectrum, the answer is 1.0 – all production being in-house, under one organization, in one country. In practice, of course, the answer is neither 1.0 nor 4,632,000, but some optimum solution in between these two extremes. A typical automobile major has direct relationships with at most a few hundred suppliers and development partners, located in fewer than twenty nations.[2]

What constitutes the optimal configuration for a firm? What is the optimum degree of outsourcing (versus internal production)? What are the best geographical or country locations for adding value along the value chain? The answer depends on how finely the firm wishes to slice its product or service. Clearly, dissecting an automobile into all its more than twelve thousand individual parts is too detailed, and too fine grained. Outsourcing all of them would be impossibly complex and inefficient, even in an information technology (IT)-enabled world. On the other hand, since a century ago when Ford produced everything from its own steel to the finished automobile, no producer has been that vertically integrated. The fact is that no company is able to produce every piece of the product itself. They all rely on outsourcing to some extent. The question amounts to what the optimal level of outsourcing should be.

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The answer also depends on the sector. IBM, which is today better understood as an IT services consulting company, rather than a hardware producer, claims "90,000 business partners worldwide, including consultants, integrators, software vendors, value-added resellers, and distributors" who act as suppliers, buyers, as well as strategic or tactical allies to IBM (IBM, 2009). The large number is a reflection of the multiplicity of the end-applications of information technology in very diverse business arenas in thousands of industries. It is also a reflection of the fact that no company today – not even a giant like IBM – has the internal knowledge or capability to put together a service "bundle" or solution for all its clients. The totality of the knowledge inputs required to produce or design efficiently, or to meet the diverse needs of customers, has today grown beyond the ken of most companies.

In 2007, out of IBM's 375,000 employees worldwide, some 125,000 were in the US. The second-biggest contingent was 73,000 employees in its Indian affiliates, with 177,000 in other countries (Associated Press, 2007). It is ironic that IBM's Indian employees today comprise almost 20 percent of the global total, and that in India alone IBM has alliance and supplier relationships with well over a thousand companies – when one recalls that in 1977, rather than accept the Indian government's mandate to share some technology and accept local partners, IBM shut down its entire operation in India. Vertically integrated, internally controlled hierarchy was then the operating business model for IBM and most companies.

Besides IBM, companies in 2006 that had more than 15 percent of their global employees in India included Accenture, Oracle, EDS, and Cap Gemini, to name just a few.

The spatial and organizational fragmentation of economic activity

Today, the vertical integration or internalization model of business is in retreat. Most major companies are in the process of fragmenting themselves by examining each piece of their operations and asking how it may be deconstructed (Zaheer and Zaheer, 2001). And if deconstructed, in which nation the fragmented function can best be performed.

Traditionally most companies added value "in-house" and in their "home nation" – Cell A in Figure 1.1. Today, the firm adds value

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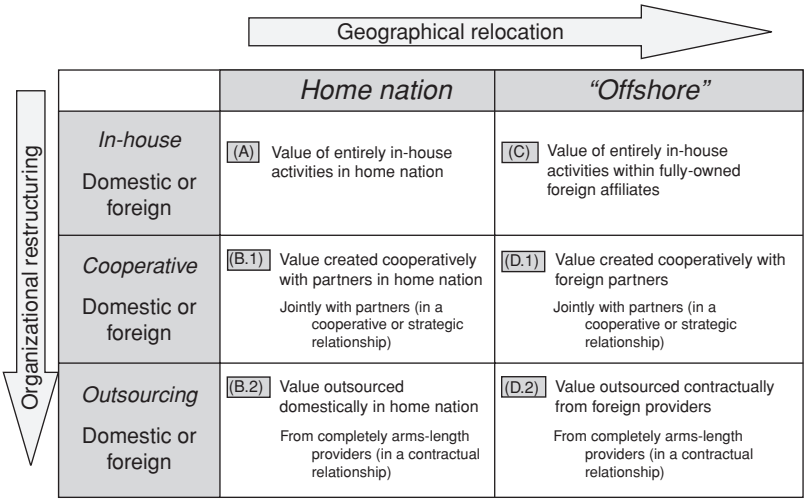

Figure 1.1. The spatial and organizational choices available for each piece of the value chain.

internally (in the home nation [Cell A] or in fully owned foreign subsidiaries [Cell C]) only to selected portions of its value chain where it determines it has "core competence" (Prahalad and Hamel, 1990) while leaving other selected bits of the value chain (and support services) to external providers or in other nations. The latter, in turn, are linked to the focal firm in a spectrum of organizational relationships, ranging from highly "cooperative" or "relational" to mostly contractual or arms-length over the other four categories B.1, B.2, D.1, and D.2 in Figure 1.1.

- **"Offshoring":** [Cells (C) + (D.1) + (D.2)] refers to the geographical relocation of activities outside the home nation of the firm under any organizational arrangement, including foreign subsidiaries of the company (Cell C), foreign alliance partners (D.1) or foreign contract providers (D.2).
- **"Outsourcing"**: [Cells (B.2) + (D.2)] refers to value added by contractual external providers, whether in the home nation of the firm (B.2) or foreign nation (D.2).

Incidentally, Cell (D.2) is the only one which constitutes *both* offshoring as well as outsourcing. By contrast, Cells [(B.1) + (D.1)]

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comprise cooperative relationships in one case with strategic partners or cooperative vendors in the home country, and in the latter case in a foreign nation. Cooperative alliance relationships are "half way" in organizational terms, between completely in-house operations and completely contract-based outsourcing where the relationship is arms-length.

The offshoring and outsourcing phenomenon is, in a way, the logical outcome of the strategic focus on "core competence" which implies that a firm should abandon functions it cannot best perform in-house or at home, to external vendors, or partners, or foreign countries.

The scale of this devolution or deconstruction of the firm is enormous. But exact data are unavailable. While we have (imperfect) figures on international trade in goods and services, as well as some estimates of the internal value-added by sector, it is impossible to distinguish, in the aggregate, between, say, the purchase of raw materials or components from the relocation of the job or production based on *conscious strategic intent*. For example, we know from the World Trade Organization (WTO, 2009) that the sum total of merchandise exports of all countries in 2008 amounted to $16.13 trillion. But we do not know what portion of that total was formerly carried out in the home nation of the firm and subsequently offshored by a conscious decision made by the firm.

We do know that the outsourcing of manufactured goods is far more advanced than in services. Trade in manufactures began millennia ago.[3] In comparison with the $16.13 trillion in goods, the total of world trade in services was only $3.7 trillion (WTO, 2009). However, the growth rate of services exports has been much higher in recent years (UNCTAD, 2004), especially in the area of "Commercial Services" exports, where the bulk of the figure likely entails a conscious offshoring decision.

The driving and constraining factors

It is not simply a search for lower costs. The outsourcing and offshoring phenomena cannot occur without the firm (i) first deconstructing itself (breaking down its value chain), then (ii) devising appropriate interfaces between the organizationally and spatially separated functions, and finally (iii) minimizing transaction costs between the outsourced

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entities as well as minimizing global governance overheads. This has been spurred by some well-known trends in the last decade, such as

- *The precipitous drop in IT costs* resulting from the massive investment in international bandwidth and developments in information and communication technology that have made communication over distance not just much cheaper but also much easier (Blinder, 2006).
- *Shortage of skilled technical and managerial personnel* in the US and in Europe as the population ages (McKinsey Global Institute, 2009).
- *Acceleration in the rate of technical change* (Teece, 1992) which forces a greater degree of externalization so that companies can keep up with the pace of competition.
- *Greater codification of corporate knowledge*. Technical or administrative processes which formerly were "tacit" or resident only in the minds of experienced engineers or managers are increasingly been written down in manuals, software, process specifications, and expert systems (Balconi, Pozzali, and Viale, 2007). This (i) makes the outsourced/offshored tasks more visible to the vendor or foreign affiliate personnel, (ii) reduces asymmetric information and bargaining power, (iii) improves quality control and thus reduces the fears of the outsourcing/offshoring principal, (iv) reduces negotiation, monitoring, and control costs, and finally (v) the codified "template," once created, can be used repeatedly, and in many nations, so as to reduce costs of outsourcing/offshoring through repeated experiences.
- *The modularization and distribution of tasks*. The division or dissection of complex or creative designs over geographically distributed teams is difficult, especially if considerable interactions are needed between the design teams. However, according to Sanchez and Mahoney (1996), if the tasks can be modularized, together with objective criteria for outputs and the interfaces between the components of the design (or finished product), then distributed teams can function more effectively.

The starting point for offshoring and outsourcing is for companies to deconstruct (i.e., fine-slice, codify, standardize interfaces, and modularize) their many activities. This is often described under the rubrics of knowledge management or lean programmes. In that sense it can be said that "offshoring and outsourcing start at home." The deconstruction and reorganization of company activities is a precondition

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for making corporate activities offshorable and reaping the benefits of offshoring and outsourcing.

In retrospect, it now seems quaint that academic literature of just two decades ago cast doubt on the exportability of services because of their alleged "inseparability," "heterogeneity," "intangibility," and "perishability" (Boddewyn, Halbrich and Perry, 1986; Zeithaml, Parasuraman, and Berry, 1985). But while remaining intangible, services can indeed be separated or deconstructed. Each service component can be rendered homogeneous through codification and standardization. And many services can be stored and transmitted electronically (Karmarkar, 2004). Can one export a haircut, a restaurant meal, or an airplane ride? No, but the reservations system, procurement function, advertising content and booking of advertising space, and other back-office functions can all be offshored or outsourced.

In the ultimate analysis, *any* business or technical operation that can be (a) codified and (b) digitized is amenable to outsourcing and offshoring. This appears to be a serious threat to advanced nation economies where the majority of jobs are in services (most manufacturing jobs having already been offshored). According to McKinsey Global Institute (2007: 5), "in 2008, we estimate that 160 million jobs, or about 11 percent of the 1.46 billion service jobs worldwide, could in theory be carried out remotely, barring any constraints on supply." Lest that create unwarranted panic, the same report shows the actual adoption of offshoring in 2008 to be a minuscule percentage of the theoretical maximum. Most importantly, even in the future, the actual extent of offshoring will fall well below its theoretical maximum because of:

(i) the consequent escalation of wages in the foreign location,
(ii) the persistence of tacit knowledge and embedded experience,
(iii) transaction costs that can be avoided with vertical integration (such as negotiations, monitoring, coordination, "hold-up," and quality control),
(iv) fears of supply chain disruptions,
(v) fears of technology spillovers and consequent competitive threat in the event that the operation is outsourced to external parties, and
(vi) regulatory prohibitions and constraints on offshoring.

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For a more extended discussion of the constraints see the section entitled "Inhibiting factors" later in this chapter.

This chapter and book by no means predict the collapse of internalization or vertical integration – but only their partial retreat in the face of the global trends described.

Will high-value or core functions also be outsourced and offshored?

It is not simply a search for lower costs. In recent years, companies have also been looking for new ideas, talent, and human capital outside their companies and abroad. We are beginning to see the breakup and relocation of even R&D and innovation activities which were formerly considered "core competencies" (Mol *et al.*, 2004). Outsourcing/offshoring is no longer about cost-cutting but about closer connections, better service to clients, creativity, and innovation: "to open the enterprise up in multiple ways, allowing it to connect more intimately with partners, suppliers and customers and, most importantly, enabling it to engage in multifaceted, collaborative innovation" (Palmisano, 2006).

In part, this is because companies today are even micro-dissecting and disaggregating their R&D into finer sub-segments which are distributed to different nations and external providers. R&D is no longer treated as one sacrosanct and monolithic piece of the value chain. A pharmaceutical company can do the clinical testing (approximately 40 percent of the typical R&D budget) portion abroad, the foreign data are then fed back to a data management firm at home, which in turn outsources the data compilation, tabulation, and analysis to Hyderabad.

Mowery and Macher (2007) describe how innovation in personal computers is disaggregated worldwide. Product planning and design take place in the US or Japan while applied R&D and the design of new platforms occur in Taiwan. Design extension development takes place in China, where the bulk of assembly operations exists. Chinese engineers also design the engineering processes in their factories. Similarly, a company like Motorola while keeping aspects of chip design in the US, now has its mobile handsets designed in China.

However, this may only be the beginning of a larger recent trend for emerging nation companies to creep upward in the value chain. US,

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