

**Learning Paths to Offshore
Outsourcing
- From Cost Reduction to
Knowledge Seeking**

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LEARNING PATHS TO OFFSHORE OUTSOURCING - FROM COST REDUCTION TO KNOWLEDGE SEEKING

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Abstract

A corporation's offshore outsourcing may be seen as the result of a discrete, strategic decision taken in response to an increasing pressure from worldwide competition. However, empirical evidence of a representative cross-sector sample of international Danish firms indicates that offshore sourcing in low-cost countries is best described as a learning-by-doing process in which the offshore outsourcing of a corporation goes through a sequence of stages towards sourcing for innovation. Initially, a corporation's outsourcing is driven by a desire for cost minimization. Over a period of time the outsourcing experience lessens the cognitive limitations of decision-makers as to the advantages that can be achieved through outsourcing in low-cost countries: the insourcer/vendor may not only offer cost advantages, but also quality improvement and innovation. The quality improvements that offshore outsourcing may bring about evoke a realization in the corporation that even innovative processes can be outsourced.

Key words: Offshore outsourcing, cost reduction, innovation, experiential learning, low-cost countries

JEL-codes: L22, L23, D83, M55

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1. Introduction

With the recent advancement of information and communication technology (ICT) offshore outsourcing has emerged as an extant phenomenon of contemporary international business. Over the last couple of years the business press (see e.g. *The Economist*, 2004) and international organizations (UNCTAD, 2004/2005; OECD, 2004) have reported intensively on trends among US firms, but increasingly also among Western European and Japanese firms, to "offshore" increasing parts of their activities to low-cost countries, in particular to China and India. The reports show how current relocation is no longer primarily directed towards offshore transplants or affiliates under managerial control of the offshoring firm. On the contrary, the activities offshored are taken over by independent suppliers that meet many current quality and delivery requirements at a fraction of previous costs.

The rapidly growing strata of such independent low-cost providers now span almost the whole range from simple production and assembly of predefined modules, over provision of administrative functions and services to scientifically sophisticated or intellectually challenging designs or R&D deliverables (UNCTAD, 2005). The emergence on open global markets of an array of highly competent suppliers in low-cost settings apparently offers great rewards to any incumbent not overly concerned with the possible ensuing long-term increase in vulnerability of offshoring most or all of the tasks previously performed in-house or by domestic or regional suppliers. First movers' success can therefore, in turn, compel their competitors or previous suppliers to follow suit when they realize how abstaining from reaping the short-term benefits of offshoring might easily prevent them from being around to witness whatever future backlash they may fear.

The avalanche of offshoring that is likely to result will undoubtedly help firms in high-cost environments to increase their productivity and profitability to the benefit of present customers or shareholders or both. And the extraordinary present annual growth rates of twenty percent or more have already resulted in some low-cost countries becoming major markets for firms also in the old industrialized high-cost areas of the world.

On a broader scale the process is arguably the first stage in a true convergence of long-standing global differences in levels of economic growth and development. On the micro-level international business researchers have discerned the factors enabling the spectacular growth of offshore outsourcing

while highlighting the role of ICT, but also market integration, improvement of transportation technology, international finance, insurance and logistics, etc.

What researchers know less about is *how* firms realize strategies of offshore outsourcing. In other words, what are the processes involved when a company transforms its value chain from basically consisting of in-house value-added activities rooted in a domestic environment to being subdivided into multiple individual activities of which many are handed over to independent, foreign suppliers? Is offshore outsourcing only attainable by firms that are already fairly advanced in conducting international business? Or is it possible that such a fundamental transformation of a firm can be made within a short time if management decides to do so? And is offshore outsourcing then mainly a result of a deliberate, carefully planned strategy, or does it evolve through an incremental learning process?

In this paper we address the question of how firms approach offshore outsourcing. We use a fairly broad definition of offshore outsourcing: a firm's delegation of in-house value chain activities to independent suppliers located in low-cost environments outside its home country. The full implication of the process of offshore outsourcing for the firm comprises several traits including: (1) Loss of direct control over one or more main value-added activities; (2) Reliance on the future collaboration of independent, foreign operators for future potentially strategic innovation processes; (3) Dependence on impending abilities to cope with increased cognitive distance to new partners in low-cost environments.

In this perspective, the gap between a firm involved in export only and a firm undertaking offshore outsourcing may be substantial. Furthermore, the distance from the purely domestic firm to the exporting firm seems miniscule compared to the distance from being an exporter to being an offshore outsourcer (Fletcher, 2000). From the deduction emerges the obvious presumption that the process towards offshore outsourcing must be *more*, rather than *less* incremental and process-oriented than the internationalization processes studied so far. By utilizing a novel and unique set of data we attempt to show how this is indeed the case.

The paper is organized as follows: In Section 2 we outline the research on offshore outsourcing. In Section 3 we derive a hypothesis for testing. Section 4 accounts for the data compilation and sample characteristics. The model estimation and results are informed and discussed in Section 5 and Section 6, which account for the extent of, and motives for, offshore outsourcing respectively. Section 7 concludes and indicates managerial implications and further research.

2. Research on offshore outsourcing

The research of firms' offshore outsourcing is primarily found in three literature streams: (1) International business literature emphasizing

international localization and factor endowment aspects, (2) Strategic management literature emphasizing the resource base, core competencies and boundaries of the firm, and (3) Supply chain management literature, emphasizing different aspects of distribution/logistics. We will briefly outline the offshore sourcing components found in these three streams of literature.

International business literature

In the IB literature offshore outsourcing took off as a research field in the 1960s along the emerging phenomenon of offshoring of labor-intensive manufacturing processes by US multinationals to low-cost production zones in developing countries, such as Mexico and the Philippines. The offshoring surge was induced by the establishment of tax-exempted and tariff-free export production zones in a number of developing countries in tandem with the US government's introduction of tariff provisions permitting duty-free reentry to the United States of US-made components sent abroad for further processing or assembly. Several international business scholars (e.g. Stopford and Wells, 1972; Moxon, 1982), scholars of developing economies (e.g. Lall and Streeten, 1977; Nayyar, 1978), and economic geographers (e.g. Schoenberger, 1985; Dicken, 1986) paid attention to this new phenomenon.

Until the mid 1990s offshore outsourcing was predominantly associated with manufacturing, but the massive outsourcing of US firms of IT services to Indian software firms - spurred by the anticipated Y2K problems – heralded a shift of attention towards offshore outsourcing of a variety of business processes (popularized as “back-office activities”), such as call centers, accounting services, pay-roll administration, debt collection, patent filing, and clinical research.

Process-oriented theories of firms' internationalization were developed already in the 1970s and 1980s (Bilkey and Tesar, 1977; Johanson and Vahlne, 1977/1990; Luostarinen, 1979; Cavusgil, 1984), but one may question to what extent the offshore outsourcing phenomenon falls within the “boundary assumptions” (Andersen, 1993) of these theories. The internationalization process models are primarily concerned with the early internationalization stages of firms and the focus of these theories is on downstream value-added activities including marketing, sales and servicing of customers (Fletcher, 2000). Forsgren *et al.* (1992) have labeled these downstream activities “internationalization of the first degree”. Without disregarding downstream activities the process of offshore outsourcing has, in contrast, its main focus on *upstream* value-added activities.

The common feature of sales-oriented internationalization process models has been their emphasis on the *incremental* nature of firms' internationalization (Mudambi and Graf, 2005). The empirical evidence of the incremental nature has been quite robust over the years, although opposing evidence of instantaneous internationalization has emerged during the last decade (for an overview see Rialp *et al.*, 2004). The conclusion is that internationalization of the first degree, i.e. firms' pursuit of foreign market sales opportunities, has been demonstrated to be quite time consuming and sequential, including several consecutive stages of increasing resource

commitment and geographical expansion in accordance with the cognitive distance to the foreign markets as perceived by the decision-makers of the exporting firm. Our initial deductive argumentation suggests that sales-oriented internationalization processes would require only a modest organizational transformation in comparison with that of offshore outsourcing.

Strategic management literature

The localization issue is one of two dimensions of firms' value chain configuration; the other decisional dimension is the make-or-buy choice that strategists translate into a cost-benefit discussion of outsourcing (see e.g. Quinn and Hilmer, 1994; Nayyar and Bantel, 1994). The outsourcing analysis in the strategy literature is based on the concept of core competencies of firms (Prahalad and Hamel, 1990), with supplementary insights from transaction cost economics – the risks and costs of exchanging via markets (Williamson, 1985) - and basic operational economics (Stiegler, 1951), including considerations of scale and scope economies. The outsourcing discussion has been focused on IT services specifically, but general analyses of firms' outsourcing usually use a value chain framework.

In more general terms all processes of offshore outsourcing represent, of course, a deepened division of labor that is often closely associated with an acceleration of the growth of knowledge: As producers become more focused they often find solutions to problems otherwise overlooked and bypassed, even when specializing in performing some particularly trivial tasks (Smith, 1776). In this sense, offshore outsourcing can be very conducive to innovative outcomes, especially if it is backed by knowledge-intensive support services such as engineering, design and product development consultancy. However, the outcomes of dispersed tasks must be assembled in order to produce something useful. It has been argued that firms in high-cost environments increasingly become system integrators that reap significant benefits from innovative successes at lower levels while orchestrating the interfaces between suppliers and controlling the access to high-value markets (Pavitt, 2004).

At the heart of this idea lies the perception that parameters and tasks are basically interdependent within and independent across modules. Independence of modules implies that changes in one module do not affect other modules in the overall product. Nor do such changes decrease the overall performance of the product. Module independence implies that incremental innovation can occur freely and frequently within each offshored module without affecting the overall architecture. The strategy literature has, however, pointed out that modules of outsourced activities or tasks may over time reveal subtle interfaces and hybrid modular-integral architectures. The offshore outsourcing strategy may also, if not carefully and continuously readjusted, lead to the detrimental ossification of the architectural design.

Supply chain management literature

Probably with more rigor and consequence than other scholars, logistics researchers have addressed the make-or-buy and localization issues as closely related decisions. The research on firms' (global) supply chain management (SCM) may be seen as a precursor of the current research of

firms' global configuration of value-added activities. As an example, studies of SCM practices of car manufacturers, such as General Motors, Ford, and Volkswagen, have provided evidence of, and insights into, far-stretched global configuration of manufacturing processes.

The SCM research suggests that analyses of firms' offshore outsourcing call upon new business models accommodating business phenomena like value chain unbundling (Quinn, 1992), modularization (Sanchez and Mahoney, 1996, Baldwin and Clark, 2000), business process re-engineering (Scheer, 1994), time zone economies (Zaheer, 2000), etc. Since the early research of firms' offshore outsourcing of manufacturing the scope of analysis has broadened significantly (now comprising a full range of value-added activities) and the unit of analysis has shrunk considerably. Today, an offshore outsourcing analysis would detect optimal localization and ownership of relatively fine-grained activities - for example, an airlines' call center servicing outside office hours of its business class passengers - rather than broad business functions, such as a firm's "customer servicing" as a whole.

3. Development of the hypothesis

An economy/strategy view as well as a behavioral/process view can be found in all three streams of literature. In an economy/strategy view offshore outsourcing is a result of a rational decision. The decision-makers are considered if not omniscient, then at least very well informed about the cost and differentiation (dis)advantages of the firm (Porter, 1985; Quinn and Hilmer, 1994). Hence, offshore outsourcing is seen as a one-off operation resulting in a considerable down-sizing of the firm; only those value-added activities in which the firm possesses core competencies are kept in-house. Other value-added activities are being outsourced.

A behavioral or process perspective highlights the incremental aspects of offshore outsourcing while emphasizing factors that erode discrete and rational decision-making such as bounded rationality, cognitive limitations, organizational problem solving, and non-availability of resources and capabilities. In contrast to the economy/strategy perspective, offshore outsourcing is recognized as a result of numerous adjustments reflecting a learning-by-doing process. Knowledge as to how offshore outsourcing is conducted is to a large extent acquired through an experiential search process. Furthermore, decision-makers tend to consider control over the firm's value chain as a legitimate objective and rank value-added activities according to their "strategic importance". Since innovative activities in general are considered of strategic importance, decision-makers resist any outsourcing of these activities. As noted by Dossani and Kenney (2003) in their study of US firms' offshoring of business processes to India: "Consider the unit that is surrendering the process: though it is under intense pressure to cut costs, there is, at a minimum, a perception of increased risk as it becomes dependent upon an Indian counterpart that is not under its direct supervision. This unease may be heightened in the case of mission-critical activities" (Dossani and Kenney, 2003:26). Moreover, decision-makers are subject to

chauvinistic prejudices about foreigners' ability to perform knowledge-intensive, innovative activities in ways that are aligned with the interest of the focal firm. In other words, decision-makers are characterized by cognitive limitations as to the full range of opportunities of offshore outsourcing.

Within the IB literature the economy/strategy perspective has characterized the international product life cycle theory (Vernon, 1966; Hirsch, 1986), the internalization theory (Buckley and Casson, 1976; Hennart, 1982), and the eclectic paradigm (Dunning, 1980/1993), whereas pronounced process-behavioral elements are found in e.g. Aharoni's (1966) theory of FDIs, in the Uppsala internationalization process model (Johanson and Vahlne, 1977/1990), and in Douglass and Craig's three-stage internationalization model (1989).

In the SCM literature, the process-behavioral view is found in the research of supplier relationship development. According to this research ties to suppliers get closer as a result of a learning process involving a number of distinct stages: initially, firms exchange with a supplier on an arm's length basis. As the need for specific investments increases suppliers are upgraded to strategic (OEM) suppliers and eventually to "partners". The number of different classifications of supplier-customer stages is considerable (Bagchi and Skjøtt-Larsen, 2002; Harland *et al.*, 2001), but the underlying idea is the same: strategic outsourcing is the result of several preceding stages of supplier upgrading. As an example of classification in a specific global context, see Gereffi *et al.* (forthcoming).

Of the three literature streams the process/behavioral view is – not surprisingly - least pronounced in the strategic management literature on outsourcing. Yet, process elements are found as well, in particular in the description of developments of supplier-customer relationships. As an example, Hilmer and Quinn (1994) see outsourcing as preceded by first short-term and then long-term supplier contracts.

To the extent that the three literature streams highlight process/behavioral aspects of offshore outsourcing this abides with the concept of "functional migration" (Beamish *et al.*, 2003). The functional migration concept is very much based on empirical observations of MNCs' patterns of offshoring concept and promotes the view that a firm's value added activities are ranked in a natural, or generic, hierarchy of strategic importance. In the "lower end" of the hierarchy the downstream activities of sales and marketing are found. In the "upper end" are management and R&D activities. Hence, these two activities are among the least internationalized segments of the MNCs' value chain (see e.g. UNCTAD, 2005; Forsgren *et al.*, 1992).

However, the observations are in general made on a fairly aggregated basis that excludes detection of the fine-grained aspects of offshore outsourcing. Hence, the contention that individual, broadly defined value-added activities (such as sales & marketing, production, logistics, R&D) can be assigned a certain degree of strategic importance or knowledge intensity, may very well be wrong. As an example, R&D activities are, at large, considered to be

knowledge-intensive and discretionary by nature. However, new research methodologies permit greater codification of scientific knowledge and standardization of some R&D work, which facilitates the geographical dispersal of R&D units (Patel and Pavitt, 1991; Hobday *et al.*, 2005; UNCTAD, 2005). So, some R&D sub-activities, like clinical testing a new drug candidates, may fit a characterization of being modularized, standardized, and fairly knowledge-extensive.

Recognizing that any broadly defined value-added activity consists of knowledge-intensive as well as knowledge-extensive sub-activities may have far-reaching implications: Potentially, offshore outsourcing of any broadly defined value-added activity can be driven by a cost minimization motive as well as a knowledge-seeking motive.

In the remainder of the paper we will explore this insight and investigate to what extent offshore outsourcing can be described as a learning process in terms of what is pursued: cost advantages or some “higher order” objectives, such as quality improvement, knowledge seeking or innovation – all of which can be summarized as differentiation advantages. In particular, we attempt to qualify the learning/process argumentation by suggesting that the way firms become knowledgeable about offshore outsourcing differs significantly with respect to the sourcing motive.

Drawing on Penrose (1959), Polanyi (1966) and Nonaka and Takeuchi (1995) we would expect offshore outsourcing motivated by cost minimization to pertain to sourcing of explicit and codified knowledge. The outsourcing firm may fairly easily retrieve information about cost differentials between value-added activities performed in-house and by vendors (in-sourcing firms) in low-cost countries. Data on average hourly wages and productivity measures of various industries and countries are, for instance, widely accessible to firms regardless of location. In contrast, reliable and detailed information on quality and innovation are much less tangible and accessible. Decision-makers may retrieve aggregated data on human capital costs of various countries, but this information does not translate easily into firm-specific advantages. To illustrate, one might calculate the US-China cost ratios of production engineers holding university degrees; but university degrees tell little about how well Chinese engineers absorb firm-specific knowledge of US firms, and even less about the extent to which these engineers would be able to collaborate effectively with US counterparts embedded in organizations founded on American values and beliefs. As has been argued by Nelson and Winter (1982), to solve the specific problems of the individual firm, there is a need for firm-specific knowledge, part of which is tacit and embodied in routinized organizational behavior. Hence, how usable relatively low-salaried Chinese engineers are to an US MNC depends not only on their general engineering skills and industry experience, but also on their ability to understand the organizational and technological premises of the corporation's competitive advantage. In an Indian business process outsourcing context, Dossani and Kenney (2003:14) note that when US firms consider offshoring “...there may be reasons to worry about quality slippage if the remote location

cannot understand the quality or qualities needed, or (even if it understands) cannot match the quality needed.”

The two types of capabilities – the formal and educational as well as the firm-specific capabilities – determine the qualities and innovative skills of the Chinese engineers. To what extent engineers in the vendor/insourcer organization can provide the requisite quality can only be learned as the collaboration unfolds (Dossani and Kenney, 2003). A recent UNCTAD study of MNCs’ internationalization of R&D describes this stepwise process in the following way:

“Enterprises may start by contracting out “commodity” R&D. If this succeeds, they may realize the benefits of greater specialization and learn how to manage better the contractual and integration process. With time they may develop trust in their collaborators and establish durable knowledge networks. This process can continue, pushing back the limits of what is acceptable at any given time.” (UNCTAD, 2005:170)

Whereas quality can be codified and certified it is almost impossible for a firm to establish – or envisage – hands off whether a Chinese engineer is able to come up with process or product innovations. However, what initially starts as a pure cost reduction exercise may unexpectedly lead to observations of process or product quality improvement in the course of the outsourcing collaboration. The outsourcer’s realization of quality improvements is probably a vital and indispensable precondition for vanquishing the cognitive limitations residing in the organization as to the innovative capabilities of the insourcer. Only via experiential learning does the outsourcing firm recognize the innovation opportunities offered by offshore outsourcing.

Hence, we conjecture the following hypothesis:

Firms’ offshore outsourcing develops as a sequential learning process in which cost advantage motives precede the pursuit of differentiation advantages.

4. Data compilation and sample characteristics

In order to test this hypothesis a postal survey was conducted during September and October 2004. The survey included a sample of 2,642 firms that existed in 2000-2004, drawn from Denmark’s total of 11,892 firms (stratified by firm size and sector)¹ with more than 19 employees in 2002. Denmark is ideal for surveys of this kind for two reasons. First, the modest size of the national economy (with little more than five million inhabitants) makes surveys manageable with high degrees of coverage. Second, by engaging the national statistical institute, Statistics Denmark, to conduct the

¹ The stratification percentages are disproportional among the 24 strata. This is to ensure a fair number of responding firms even in a sparsely populated stratum, thereby reducing variances.

survey it becomes possible to supplement the survey responses from firms with background data collected by other means (tax accounts, trade records, employment reports, etc.) as long as procedures securing the anonymity of individual firms are observed when processing the resulting, enriched dataset.

The response rate varied from 54 per cent in retailing to 73 per cent in construction, with an overall average of 63 per cent (see Table 1). Thus 1,674 firms provided usable responses. Unit non-response analysis showed that the responding firms are representative for the entire population.² The statistics presented below are weighted so as to approximate the relations in the total population.³

The present survey is probably the first survey with large-scale national coverage that investigates the current surge in outsourcing behavior as well as the underlying motives and foreseeable future actions.

² A small qualification is warranted. To test whether we can treat the unit non-responses as random events, the firms in the survey were divided into unit response or unit non-response and variables collected by Statistics Denmark independent of the present survey were added to both. A logistic procedure was applied to test for differences in the added variables between these two groups (Agresti, 2002). Since the sample was divided into 24 strata each background variable was tested as a main effect and in interaction with a stratification factor. This factor had one level for each unique stratum. All but one of the background variables turned out to be insignificant ($p < 0.01$), both when tested alone, in interaction with the stratification factor and when using a log-transformation of the variable. However, the main effect of the firm's absolute amount of wages and salaries paid was significant ($p = 0.0045$) thus implying that firms with the highest wage expenses have not responded quite as often as firms with lower wage expenses. However, it is only in the top 1 percent that a small difference occurs.

³ To account for the disproportional stratification of the survey sample the total population proportions are estimated by weighting each response depending on the stratum. The weight assigned to a firm in a given stratum is calculated as the proportion of the number of firms in the total population within the stratum to the number of responding firms in the stratum (Cochran, 1977). This weighting scheme is used in the analyses throughout the paper where appropriate.

Table 1
Total employment by industry and firm size*
and survey response rate

Industry	Total number of employees 2002 (in '000)				Response rate
	20-49 employees	50-99 employees	> 100 employees	All	
Manufacturing	59	49	246	353	63 %
Construction	36	16	38	90	73 %
Wholesale (including cars)	49	28	73	150	63 %
Retail	26	14	34	73	54 %
Hotel & Restaurants	20	13	31	64	56 %
Transportation & Telecom	20	13	38	71	62 %
Business Service & Finance	37	29	115	181	62 %
Total	247	161	574	982	63 %

* The survey sample is drawn from private sector firms in Denmark with more than 19 employees in 2002, and the employment figures shown refer to such firms only
Source: Survey conducted by Statistics Denmark on the request of the National Spatial Planning Agency in collaboration with Professor NN, DRUID, CBS. .

5. The extent of offshore outsourcing

Status in 2004

In the survey firms were asked if they had outsourced activities that had previously been conducted in-house, to independent firms⁴ in low-cost countries during the preceding three years.⁵ A total of 11 percent of all firms answered in the affirmative.⁶ However, the tendency to outsource varies with the industry (Table 2): Almost one in four of the manufacturing firms have been engaged in offshore outsourcing to low cost countries while wholesale

⁴ Independent firms were defined as suppliers or partners where the outsourcing firm had an ownership share of less than 10 %.

⁵ Firms were asked to indicate whether they had outsourced to low-cost countries in Eastern Europe, the Far East or other parts of the world. The vast majority indicated that their offshore outsourcing activities were directed to the former two regions, but as firms could have experience with outsourcing to more than one region no further use has been made of this distinction in the present paper.

⁶ We use logical imputation where appropriate. For example, where a given firm has answered that it does not outsource production of goods, a missing answer in the amount of goods production outsourced is treated as 0 %. The possible variation in the true item non-responses that cannot be explained by logical imputation is accounted for using multiple imputation as outlined in Rubin (1987; 1996). As the predictive model for which the imputed values are drawn at random, we use an ordinal cumulative logistic regression model (McCullagh, 1980; Agresti, 2002) based on a complete case analysis of the observations actually present. On average 10-20 % of the observations for each question are imputed.

and business service & finance follow with 19 and 8 percent respectively. Other industries, including retailing, had rather insignificant levels of offshore outsourcing.

All in all it is fair to say that the level of outsourcing to low-cost countries is still on a moderate level when looking at the entire population of firms: only one in ten firms is engaged in this kind of offshore outsourcing.

Table 2
Offshore outsourcing to low-cost countries by industry

Industry	Outsourced activities last 3 years		Number of firms
	Yes	No*	
Manufacturing	24 %	76 %	3.260
Wholesale (including cars)	19 %	82 %	2.199
Business service & Finance	8 %	92 %	1.935
Other industries**	3 %	97 %	4.498
All industries	11 %	89 %	11.892
Number of firms	1.359	10.533	

* Including firms that did not answer this question.

** Construction: 1,521 firms, Retailing: 1,175 firms, Transportation: 941 firms and Hotels and Restaurants: 861 firms.

Source: Survey conducted by Statistics Denmark on the request of the National Spatial Planning Agency in collaboration with Professor NN, DRUID, CBS. .

The firms included in the survey were also asked about the activities outsourced and the extent of outsourcing for each activity (Table 3). Production of goods and services is by far the focal activity of outsourcing. Almost nine out of ten firms engaged in outsourcing have outsourced such activities. For logistics & purchasing or research & development the corresponding levels are 17 % and 12 % respectively. Less than 10 percent have outsourced any activities related to administration and sales & marketing. Not only is the proportion of firms engaged in offshore outsourcing modest throughout the business community, the firms that actually *do* outsource are only doing so to a limited extent. Most outsource less than 10 percent of their activities to low-cost countries. Only in the area of production activities has more than 10 percent of the production of goods and services already been outsourced to low-cost countries.

However, this overall picture conceals the large variation in terms of both nature and extent in the patterns and processes of outsourcing among firms . For example, the behavior of manufacturing firms differs from that of service firms and the firms in business service & finance follow a very different pattern than other service firms.

Table 3
Offshore outsourcing to low-cost countries by function

	Number of firms outsourcing each activity	Percent of all firms engaged in outsourcing	Share of activities that are outsourced	
			1-9 percent	10-100 percent
			Number of firms	
Production of goods and services	1.221	89.8 %	576	645
Logistics and purchasing	227	16.7 %	197	30
Research and development	156	11.5 %	118	38
Administration	122	9.0 %	93	29
Sales and marketing	78	5.7 %	46	32

Source: Survey conducted by Statistics Denmark at the request of the National Spatial Planning Agency in collaboration with Professor NN, DRUID, CBS. .

Looking three years ahead

The survey included questions related to the firms' plans or perceived actions in the immediate future: the next three years. The response showed a significant increase across the board, but with huge differences between functions (Table 4). Of particular interest is the fact that firms plan to outsource Research & Development to a far greater extent than they do now, with an increase from 11 % of firms to 23 % of firms over the coming three years.

Presently, about one half of all offshore outsourcing firms have outsourced the production of goods and services to a larger extent, but 85 per cent of all firms currently engaged in offshore outsourcing expect that more than 10 percent of their production activities will be outsourced in three years' time. If we include firms not yet outsourcing to low-cost countries in the calculation, a total of 71 per cent of all firms with a minimum of 20 employees can be expected to outsource 10 per cent or more of their total production by 2007. Again, it is interesting to notice the high level of expected offshore outsourcing of administrative tasks (51 %) and research and development (32 %).

Table 4
Current (2004) and expected (2007) offshore outsourcing to low-cost countries by function

	Share of firms		Difference between current and expected degree of outsourcing (points)	Share of firms outsourcing more than 10 percent of the activity		
	Currently outsourcing	Expecting to outsource during next three years		Currently	Expected three years on	
					Firms currently outsourcing	All firms
Production of Goods and Services	90 %	92 %	2.1	53 %	85 %	71 %
Logistics and Purchasing	17 %	28 %	11.4	13 %	36 %	45 %
Research and Development	11 %	23 %	11.8	24 %	42 %	32 %
Administration	9 %	16 %	7.1	24 %	55 %	51 %
Sales and Marketing	6 %	11 %	5.6	41 %	38 %	39 %

Source: Survey conducted by Statistics Denmark at the request of the National Spatial Planning Agency in collaboration with Professor NN, DRUID, CBS.

The overall conclusion is that while general outsourcing is still only in its early stages, it is expected to increase significantly in extent and depth: many firms across industries expect to outsource for the first time during the coming three years and firms already outsourcing plan to increase the number of functions and proportion of activities outsourced to low-cost countries.

Apparently, firms learn during their first probing into offshore outsourcing that the benefits far outweigh the potential disadvantages of increased exposure to risks, loss of control, and reliance on the seamless co-operation with new partners and increase in cognitive distance. In a learning perspective the latter aspect is quite significant. While some threshold of cognitive distance is obviously needed between partners before they become sufficiently dissimilar to learn anything from each other, we may also assume the existence of ceilings above which the cognitive distance becomes too great for firms to bridge, and the ability to benefit from resource heterogeneity will, consequentially, cease. If optimal cognitive distance for knowledge creation is curvilinear (inverted U), offshore outsourcing carries the risk of creating insurmountable barriers for any kind of user-producer learning or similar non-formal innovative collaboration (Nooteboom *et al.* 2005, Wuyts *et al.* 2005). Based on the general increase in the willingness to move further down this track we may assume that outsourcing firms have developed ways to manage the main problems associated with increased cognitive distance either by building an appropriate absorptive capacity or by creating appropriate

knowledge overlaps when cognizant of the nature or complexity of the knowledge in question. It is, however, still too early to ascertain whether and under which circumstances increased offshore outsourcing may inhibit creativity or slow down the spurring of superior ideas within the value chain.

6. Motives for offshore outsourcing

As argued earlier, the motives for outsourcing to a very large extent determine the pattern of outsourcing. Firms typically start out by focusing on the cost-factors as the main motivators of outsourcing. However, as firms learn about other potential resources in the foreign locations their motives change. The focus on diminishing wage or other operational costs remains significant but motives related to acquisition of knowledge increase in importance.

In order to investigate possible associations between the potential motives for outsourcing we perform a factor analysis to decompose the correlation matrix of the motives.⁷ While satisfying the Kaiser-Guttman criterion (Basilievsky 2000, Jackson 1993) we retained three common factors with eigenvalues above 1, which jointly explain almost two thirds of the total variance for all motive variables.⁸ The coefficients are shown in Table 5 after orthogonal varimax rotation (Kaiser 1958).⁹

Four variables load on the first factor, which seems to capture the knowledge oriented motivations, i.e. the desire to get access to new knowledge and technology. We denote this factor the *innovation motive*. Three variables load on the second factor, which we denote the *quality motive*. Finally, two variables load on the third factor, and these are both cost-oriented motivators. Therefore, we denote the third factor the *cost motive*.

The results of the factor analysis correspond very well to the notion of cost advantage motives versus differentiation advantages, where the latter is reflected both in the

⁷ Factor analysis is based on a normality assumption, but we use the analysis in an essentially descriptively manner when we decompose the correlation matrix and we do not rely heavily on the distribution assumptions in the interpretations. The factor loadings are estimated by the principal factor method. Before decomposing the correlation matrix we perform a likelihood ratio test on the correlation matrix of the motives to test for mutually independence of the motive variables (Anderson, 2003). The result ($p < 0.0001$) is highly significant and we conclude that the variables are not mutually independent. Complete independents of the motives would result in the correlation matrix having the form of an identity matrix. The test relies on a normality assumption of the variables. Since the response is on a 5-point-Likert-scale this assumption is violated. But as we have a fairly large dataset, we use the test as an approximation test.

⁸ The Kaiser-Mayer-Olkin criterion or Kaiser's measure of sampling adequacy exhibits a value of 0.594. Kaiser (1970) suggests that the data is valid for factor analysis if the test statistic lies above 0.5. High eigenvalues ensure that each of the factors retained account for more summarized information than any of the original variables. While a cut-off at 1 tends to generate too small a subset of the common factors, we found a significant drop in the eigenvalues for the remaining factors and, consequentially, excluded them from the subsequent analyses.

⁹ The orthogonal varimax rotation facilitates interpretation by relating each factor to a limited number of variables with a large positive loading without altering the communalities.

innovation and quality motive. In the following we will explore further how these motives are related to expectations and outcomes of outsourcing to low-cost countries.

Table 5
Varimax factor analysis of stated motives for firms' offshore outsourcing to low-cost countries

Motives for outsourcing	Factor 1	Factor 2	Factor 3
	Innovation motive	Quality motive	Cost motive
Focus on core competencies	0.75	0.12	-0.09
Expand capacity	0.78	0.01	-0.15
Improved logistics and reduced delivery time	0.71	-0.07	0.41
Access to new knowledge and technology	0.57	0.54	-0.20
Improved quality	0.42	0.73	0.00
Follow competitors	-0.13	0.70	0.06
Reduced wages	-0.08	-0.16	0.85
Reduced operating costs (not wages)	-0.03	0.41	0.64
Variance explained (percent of total variation)	27.5	19.1	17.3

Source: Survey conducted by Statistics Denmark at the request of the National Spatial Planning Agency in collaboration with Professor NN, DRUID, CBS. .

For each observation a factor score is created for the three factors/motives based on the actual values of the eight motive variables. As shown in Table 6, firms' ex-post assessment of offshore outsourcing outcomes varies substantially depending on the strengths of the three motives. In particular, the perceived outcome compared to expectations is different for the innovation motive and the cost motive.¹⁰

None of the variables are significant for the quality motive, indicating that the perceived outcome is in line with expectations on all dimensions. In other words, for the offshore-outsourced activities the set goals have been met for the listed performance measures for those firms emphasizing the quality motive.

For firms pursuing the cost motive decreases in wages and operating costs are significant outcomes. The coefficients are negative, indicating that perceived reductions in wages (-0.48) and operating costs (0.77) are significantly higher than expected by the firms engaged in offshore

¹⁰ Within the marketing literature Rust, Moorman and Dickson (2002) reach a somewhat similar conclusion when analyzing the relationship between performance and cost cutting versus revenue generating objectives.

outsourcing. All other performance measures are assessed to be as expected for the firms focusing on the cost motive.

In contrast, firms emphasizing the innovation motive have experienced a strikingly broader set of outcomes including shortened delivery time, reduced development time for new products, improved access to new knowledge, increased revenue as well as employment growth in their home country (!).

The data confirms that the cost motive at one end of the scale focuses on the cost aspects and performs better than expected on these dimensions, while the innovation motive at the other end of the scale captures a broader set of aspects including knowledge, development and delivery time.

No alternative strategies of capital deepening, automation, etc. seem to offer at present the same range of benefits as offshore outsourcing to low-cost countries. Interestingly, the overall performance is perceived to be significantly higher than expected for firms pursuing the innovation motive, while it turned out as expected for all other firms.

These findings might be interpreted as providing support for the hypothesis that while the initial steps in offshore outsourcing to low-cost countries may often be motivated by wage and other operation cost considerations, other and even more rewarding factors will subsequently enter the decision making process. Offshore outsourcing might thus be seen as a learning process where firms discover new possibilities abroad and new organizational ways of utilizing such possibilities.

Table 6

Perceived outcome of offshore outsourcing to low-cost countries during the previous three years compared with ex-ante expectations

	Innovation motive	Quality motive	Cost motive
Access to new knowledge	0.39***	-0.03	0.09
Revenue	0.36***	0.00	0.19
Employees in Denmark	0.26*	-0.03	-0.22
Overall performance compared with expected performance	0.25**	-0.11	0.15
Development period for new products	-0.33**	0.11	-0.24
Delivery time	-0.53***	0.09	0.30**
Wages	0.08	0.12	-0.48***
Operation costs (not wages)	-0.15	-0.02	-0.77***

Note: A positive sign indicates outcome exceeding expectations. *, ** and *** indicates a significance level of 10 %, 5 % and 1%', respectively. All variables are measured on a 5-point Likert scale

Source: Survey conducted by Statistics Denmark at the request of the National Spatial Planning Agency in collaboration with Professor NN, DRUID, CBS. .

Furthermore, and in accordance with the notion of firms learning about the sourcing possibilities as they go along, the data reveal how firms scoring high on the cost motive in particular expect to increase their non-production activities in the years to come (Table 7). The cost motive is significantly and positively associated with an increase in the activities of logistics and purchasing, research and development, administration, and sales and marketing during the next three years. The innovation motive on the other hand is associated negatively with the production activities over the next three years (Table 7). Yet firms with a strong innovation motive maintain their current level of outsourcing. Only about 3 % of the firms engaged in outsourcing expect to scale down their future offshore activities.

Table 7
Change in expected level of offshore outsourcing to low-cost countries over the next three years by activity

	Innovation motive	Quality motive	Cost motive
Production of goods	-0.26**	-0.22*	0.26**
Logistics and Purchasing	-0.21	-0.01	0.45**
Administration	-0.04	-0.10	0.33**
Sales and Marketing	-0.16	-0.02	0.28**
Research and Development	-0.03	0.02	0.21*

Note: The sign of the parameter indicates the direction of the change. *, ** and *** indicates a significance level of 10 %, 5 % and 1%, respectively. All variables are measured on a 5-point Likert scale
Source: Survey conducted by Statistics Denmark at the request of the National Spatial Planning Agency in collaboration with Professor NN, DRUID, CBS.

This result provides additional support for the hypothesis that the initial outsourcing activities are typically driven by wage and operational cost motives that enable firms to learn about other sourcing possibilities. Learning about novel outsourcing possibilities will in turn promote further outsourcing of activities based on additional, innovative, motives.

Another way of examining how the motives determine the pattern of outsourcing is to treat the number of activities¹¹ outsourced as a dependent variable. We perform an ordinary regression and a cumulative logistic

¹¹ In the survey it is possible for a firm that has engaged in offshore outsourcing during the past three years to have between 1 and 5 activities outsourced.

regression¹² (McCullagh 1980, Agresti 2000) on the motives scores from the factor analysis while controlling for firm characteristics¹³.

The results displayed in Table 8 show how neither the size nor the export ratio of an outsourcing firm has any impact on the number of activities outsourced. What does have a strong effect is, however, the fixed asset rate of the firm, which might be taken as a proxy for its degree of capital-intensive automation. The analysis confirms the intuition of a strong trade-off between automation and the number of activities outsourced. Firms with a high turnover rate of sales to assets also tend to have a large number of activities outsourced.¹⁴

A strong innovation motive is strongly associated with a high number of activities outsourced. This could explain the fact that the firms with a strong innovation motive expected to maintain their current level of outsourcing (table 7), since these firms already have a high number of activities outsourced.

Table 8

Regressions of the number of activities outsourced over the past three year for firms engaged in offshore outsourcing to low-cost countries.

		Ordinary regression	Cumulative logistic regression
Type	Variables/Level	Estimates	Odds ratios ¹⁵
Intercept(s)		1.315	-
Factor	Sector/ Manufacturing versus Other	0.087	2.62 ***
	Sector/ Wholesale versus other	-0.107	1.36 ***
	Sector/ Finance versus Other	-0.326 ***	0.78
Variates	Log Firm Size	0.020	1.02
	Export ratio	-0.062	0.74
	Fixed asset rate	-0.471*	0.26 ***
	Turnover rate of sales to assets	0.141	1.70 ***

¹² The two regressions yields similar results but with different significance levels. The cumulative logistics regression requires an ordinal categorized dependent variable and takes advantage of this structure with regards to inference i.e. significance levels, whereas the ordinary regressions assumes normality of the error terms and a continues dependent variable and both condition are violated. We therefore base the conclusions on the cumulative logistic regression.

¹³ Based on accounting figures for 2002 provided by Statistics Denmark.

¹⁴ Additional statistics show that firms that have outsourced in 3 or more activity areas do not differ significantly over the variables shown in table 8. This could influence the outcome of the regressions, but in this study this is not the case. The indifference of the models to this aspect is probably due to a small number of firms with 4 or 5 activities outsourced.

¹⁵ For a definition and interpretation of the odds ratios see Agresti (2000).

	Innovation score	0.384 ***	3.00 ***
	Quality score	-0.117	0.90
	Cost score	0.099	1.06

Note: The dependent variable takes values between 1 and 5. Probabilities in the clogit are cumulated over higher values of the dependent variable. *, ** and *** indicates a significance level of 10 %, 5 % and 1%', respectively.

Source: Survey conducted by Statistics Denmark at the request of the National Spatial Planning Agency in collaboration with Professor NN, DRUID, CBS.

The cost motive is not significant in explaining the activity level of offshore outsourcing. Practically all the firms engaged in outsourcing want to cut their expense and this is independent of their current level of outsourcing. The quality motive is insignificant in determining the level of outsourced activities.

7. Conclusions

This paper attempts to make four basic points:

The first is the simple claim that offshore outsourcing is something immensely more complicated and challenging than any exporting activity or domestic inter-firm relationships the firm might previously have experienced.

The second point suggests that little has been said in the literature so far about *how* firms go about attempting to reap the potential benefits of offshore outsourcing to low-cost countries.

The third point concludes that firms across industries engage in a sequential learning process starting with the experiences obtained when pursuing the cost advantages of outsourcing production tasks to independent firms in low-cost countries. The next step implies both an increase in the proportion of production tasks outsourced *and* a widening of the range of activities considered suitable for outsourcing, including administration, sales, logistics and R&D.

The fourth and final point concerns the general effect for the business community when subsets of first movers in various industries acquire very positive perceptions and bottom line results of offshore outsourcing experiments. Even though they may be hesitant or apprehensive of the potential negative consequences of increased risk, loss of control, inhibited long-term innovation etc. the continuous actions of the first movers will change the competitive landscape in ways that arguably compel them to follow suit.

The push effect of the market logic is, however, also supported by the cognitive pull effect of firms watching each other and imitating what is considered to be rewarding behaviour. Experiences and outcomes are observed, appraised and disseminated just as successful strategies are emulated up and down the value chain as well as among groups of

competitors. Taken together the foreseeable joint effect of cognitive pull and market push is an avalanche of offshore outsourcing to low-cost countries and a consequential breakdown of previous regional, national or continental supply systems.

In the longer run opposing forces of trade conflicts, currency adjustments, communication congestions or terror and war may easily upset this process. Open global markets are, after all, novel and fragile entities, not to be taken for granted in any manner or way. Just maintaining them requires considerable understanding, nurturing and care. Developing them further entails the immense and coordinated effort of numerous governments, organizations and individuals. The risk of failure is always immanent. Yet, the conjectures and evidence of the present paper suggest that the present business system is on the brink of a dramatic transformation and will be replaced by new global configurations of suppliers and customers, the contours of which we are only now beginning to envision.

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