IMP Conference 2007
Competitive paper

Outsourcing and Supply Network Performance - consequences of sourcing and producing in low-cost countries

Lars-Erik Gadde
Industrial Marketing
Chalmers University of Technology
SE-412 96 Gothenburg
Phone: + 46 31 772 12 11
Email: largad@chalmers.se

Corresponding author

Patrik Jonsson
Logistics and Transportation
Chalmers University of Technology
SE-412 96 Gothenburg
Phone: + 46 31 772 13 36
Email: patjon@chalmers.se

Outsourcing and Supply Network Performance
- consequences of sourcing and producing in low-cost countries

Lars-Erik Gadde and Patrik Jonsson

INTRODUCTION

Background

Outsourcing has been one of the key strategic business issues in recent decades. By specializing on a limited activity structure, outsourcing companies have been able to improve the performance of their in-house activities (e.g. Quinn and Hilmer, 1994; Ellram and Billington, 2001; Kakabadse and Kakabadse, 2005). In addition, most cases of outsourcing are based on transfer of activities to suppliers serving a multitude of customers. Since these firms are working on larger scale than the outsourcing firm, also these activities have become more cost efficient. Moreover, access to the technological resources of suppliers has been an important driving force for outsourcing.

Currently many US and European firms are involved in taking what has been identified as a second step in outsourcing. By switching from suppliers in Western countries to vendors in low-cost countries a buying firm may be able to reduce costs of purchased materials even further. Therefore, sourcing in low cost countries has become a strong trend in recent years as part of the global sourcing strategies of firms (Byrne, 2005; Matteo, 2003; Fang and Axelsson, 2005; Trent and Monczka, 2005). Many companies go even further in their attempts to benefit from economizing on low cost in other countries. They do so by moving their own manufacturing operations from the home base to foreign countries with lower costs of labour (e.g. Vestring et al 2005, Lei 2007). In this extended outsourcing not only manufacturing jobs are moved away. Company functions involving 'white collar jobs' also have become subject to outsourcing (Emsberger, 2005; Meredith 2005). These activities include, for example, IT, call centres, and soft ware activities (Venkatraman, 2004; Lei, 2007), as well as services (Gupta 2007) and "product innovation and design, R&D, and engineering" (Lewin and Peeters 2006:22).

Anticipated savings on cost owing to low labour expenditures have put offshoring (sourcing or producing in low-cost countries) at the top of the management agenda. Vestring et al (2005) found that more than 80% of the companies in a survey indicated that shifting activities to low-cost countries was a high priority and nearly two-thirds of the firms had launched significant off-shoring initiatives. Substantial increases in actual as well as expected offshoring arrangements are reported by, for example, Bronfenbrenner and Luce (2004) and Farrell (2005).

In many cases, however, the effects of these attempts have not met expectations (e.g. Pedersen, 2004; Venables, 2005; Kennedy and Clark, 2006). A representative example is reported from the information technology industry where it is argued that "farming out IT services doesn't always pay off in lower costs" (Totty (2007:7). One of the reasons for these shortcomings is the difficulty in foreseeing the long-term consequences, and it is even argued that companies rarely take other costs than labour cost into consideration (Hogan 2004). The problems related to imperfections in terms of strategic analysis are illustrated also by King (2005) and Venables (2005). Based on experience from low-cost offshoring in the pharmaceutical industry it has even been claimed that "many companies have outsourced because of 'groupthink' rather than because careful investigation showed that it made sense" (Kuwahara, 2006).

Aim and outline of the paper

The overall aim of the paper is to shed some further light on the issues introduced above. The outsourcing boom – initiated in the middle of the 1980s - illuminated the advantages that may be provided through specialization and the benefits obtained from resource sharing with business partners. When these efforts were extended to involve outsourcing and offshoring to low-cost countries some companies obviously have been able to further enhance these gains. On the other hand, many companies have been less successful and found that expected benefits have not been realized. Such experiences have made companies reconsider their strategies in this respect and turn towards insourcing (see e.g. Caputo and Palumbo, 2005) and back-sourcing (Whitten and Leidner, 2006). Similar drawbacks have been discussed also in relation to outsourcing in general and it has repeatedly been claimed that outsourcing might have gone too far (e.g. Hendry, 1995; Gadde and Håkansson, 2001; Doig et al., 2001; Berggren and Bengtsson 2004).

Our analysis of the effects of outsourcing in general, and to low-cost countries in particular, takes its point of departure in the modified view of outsourcing consequences. From being considered the main means for business success, the actual advantages related to outsourcing are increasingly questioned. To understand this shift we begin the paper with an exposé of the transformation of the supply side of companies in the late 1900s and relate outsourcing to other concurrent changes in the supply context. The interpretation offered is that the initial wave of outsourcing supplemented other simultaneous strategic changes on the supply side of the company.

We continue by exploring the consequences of the current boom of outsourcing to low cost countries in relation to the three dimensions of the ARA-model: activities, resources, and actors. We show that in these outsourcing efforts some of the actions aiming at further cost rationalization actually contradict and challenge other endeavours to improve efficiency and effectiveness on the supply side. On the basis of this analysis we conclude the paper by bringing up three strategic issues in outsourcing.

STRATEGIC CHANGES ON THE SUPPLY SIDE OF COMPANIES

The supply sides of companies have gone through major transformations during recent decades (Carlisle and Parker, 1989; Lamming 1993; Spekman et al 1998; Gadde and Håkansson 2001; van Weele 2002; Axelsson et al 2005). These changes are described in different ways but relates to four main aspects. First, the view of *purchasing efficiency* has shifted from focusing single transactions toward performance improvements in series of transactions. Gaining the benefits from this life-cycle perspective required a total cost approach to purchasing. A second change relates to the *role of purchasing* in the company. From being considered a clerical/administrative function it has now become repositioned as a strategic function for companies. This is because the costs of purchased goods and services tend to account for an ever-increasing part of the total costs of a company.

Thirdly, when purchasing becomes more significant, and the view of efficiency is modified, the perception of the *role of suppliers* will be affected. It is, in fact, the potential contributions of suppliers that are the underlying reasons for the reconsideration of purchasing efficiency. The resources provided by suppliers are crucial for a purchasing department's involvement in the rationalisation and development efforts of the buying company. Finally, reaping these potential benefits from suppliers calls for a revised perception of what kind of *relationships with suppliers*

are most appropriate. Our exploration of the changes on the supply side of companies takes the changing nature of supplier relationships as the point of departure.

Changing supplier-buyer relationships

A review of purchasing practice and literature clearly illustrates a shift in the view of what is perceived the preferred type of relationship. Historically, buying firms were recommended to avoid becoming dependent on individual sources. By having a number of alternative suppliers the buying firm is able to (i) reduce uncertainty in single transactions since alternative suppliers will be available, (ii) avoid becoming 'locked in' into the technical solution of a particular supplier, and (iii) encourage competition among different vendors, primarily in terms of price. When this strategy is applied the relationship between buyer and supplier is characterized as 'arm's-length'. Such relationships are cheap to operate, impose little dependence, and make it possible for the buying company to switch supplier when better conditions are offered elsewhere. Investments in this type of relationships are limited, making it appropriate to identify this as a 'low-involvement' approach towards suppliers (Gadde and Håkansson 2001).

In the 1980's however, the above benefits associated with low-involvement relationships became subject to reinterpretation, since companies became aware of the advantages available through increasing involvement with suppliers. In high-involvement relationships a customer can make better use of the skills and capabilities of suppliers. Through such relationships a buying firm may improve both in terms of cost rationalization and technical development by relying on supplier resources. Cost rationalization involves activities concerned with the company's need to carry out its day-to-day operations as efficiently and economically as possible. These efforts include systematic influences on design, manufacturing, logistics, and administrative operations. The main sources of the potential benefits are the mutual adaptations between buyer and supplier (Gadde and Håkansson 2001). In these rationalization efforts the single most important issue is to develop effective routines for dealing with a large number of purchases (Ford et al., 2003). Thus, rather than trying to optimize a single transaction – the main concern in arm's-length relationships - buying firms relying on high involvement relations consider series of transactions in their rationalization efforts.

Buying firms can gain from suppliers also when it comes to innovation and technical development. Suppliers can be important resource providers for the technical progress of customers. In this respect suppliers' problem solving ability and potential development role have become increasingly important over time. Today, most firms are involved with products and services based on a variety of technologies. Therefore it has become increasingly difficult for the single firm to develop and maintain its own capability in each specific area of technology relevant to its operations (e.g. Granstrand et al 1992; Ford et al 2003). Buying firms thus have come to rely more and more on suppliers as sources of technical development and product design (see for example, Takeuchi and Nonaka, 1986; Womack et al, 1990; Bonaccorsi and Lipparini, 1994; Wynstra, 1988; Croom, 2001; Johnsen and Ford 2005). The efforts of buying firms to improve in terms of rationalization and innovation thus have been based partly on outsourcing of in-house operations to suppliers.

Specialization and access to supplier resources through outsourcing

In an historical review of purchasing, Morgan (1999) claims that in the reengineering of purchasing starting in the 1980s a main issue was "taking an operation or function traditionally performed in-house and jobbing it out to a contract manufacturer or third-party service provider". The impact of outsourcing was substantial, which is illustrated by, for example, the changes in the

proportions of inhouse manufacturing and supplier deliveries at Ford Motor Company. In 1980 the costs of components and systems manufactured in-house accounted for 70 % of the total cost for producing a Ford Car. Twenty years later suppliers accounted for 70% of total costs, while the proportion of in-house manufacturing had decreased to 30% (Quinn, 1999). Similar changes occurred for most car manufacturers although most of these started from an in-house proportion lower than Ford. The outsourcing trend first diffused to other industries based on assembly of components and systems, such as home appliances and telecommunications. The most widespread impact, however, relates to information technology (see e.g Lacity et al, 1995; Barthelemy and Geyer, 2004). Increasingly, however, other types of services are subject to outsourcing like 'general' business services (Kakabadse and Kakabadse, 2002) and logistics (Razzaque and Sheng, 1998; Carbone and Stone, 2005).

Numerous analytical frameworks have pointed out the potential consequences provided through outsourcing (e.g. Bryce and Useem, 1998; Vining and Globerman, 1999; Quinn, 1999 and 2000; Gilley and Rasheed, 2000; Momme and Hvolby, 2002; Kim, 2003; Mc Ivor, 2003; Berggren and Bengtsson, 2004; Abdel-Malek et al., 2005; Buehler and Haucap, 2006; Jiang et al., 2007). Despite the huge amount of literature dealing with outsourcing, however, the actual realization of the potential benefits is less well documented. Berggren and Bengtsson (2004:211) claim that, for example, cost savings "tend to be taken for granted, but detailed analyses of actual outcomes and potential side effects are hard to find". We will come back to these issues in our analysis of the impact of offshoring to low cost countries.

Finally we can conclude that a general view of the benefits that outsourcing is suggested to provide to the buying company are "full utilization of external suppliers' investments, innovation and specialized capabilities that would be prohibitively expensive to acquire or even impossible to duplicate internally" (Quinn and Hilmer, 1994:43). It must be emphasised, however, that high-involvement relationships with suppliers is a prerequisite for the full exploitation of these advantages. Increasing involvement with suppliers in turn impacts on the supplier base of the buying firm.

Consolidation of the supplier base

A third strategic issue related to the transformation of purchasing concerns the supplier base. Numerous examples of considerable reductions of the numbers of suppliers for individual companies have been reported (e.g. Avery 1999; Stork 1999; Milligan 1999 and 2000; Dubois 2003). At first glance it might seem strange that the numbers of suppliers decrease at the same time as outsourcing is increasing, but there are several explanations behind these changes. First, the enhanced attention to high-involvement relationships illuminated the substantial costs of handling and managing suppliers. When low-involvement was the recommended approach companies relied on multiple sourcing in order to reduce dependence on individual suppliers. Multiple sourcing implies a large supplier base, but since involvement in arm's-length relations is limited, the costs for handling the supplier base will not be too comprehensive. These conditions changed when high involvement became a strategic issue, since this approach is applied in order to establish substantial activity links, resource ties, and/or actor bonds with suppliers. These efforts are resource demanding and so a buying firm cannot handle too many high involvement relationships (Gadde and Håkansson 2001). In many cases therefore buying companies turned into single sourcing of components and other input items (see e.g. Newman 1988).

A second explanation of enhanced consolidation is offered by increasing reliance on system sourcing and reduction of the supply base. System sourcing is one way for a company to reduce supplier-handling costs by assigning one vendor to supply a system of five components rather

than dealing with five component suppliers individually. The gains in relationship handling costs, however, have to be balanced against the complex situations arising when both production and development of systems are outsourced – sometimes to different suppliers (Gadde and Jellbo, 2002). Furthermore, companies with a multitude of operations and plants may gain substantial cost benefits by centralizing their buying efforts. In doing so they may be able to reduce the variety of the input on the supply side and standardize requirements which may improve quality and consistency of supply. A further step in this direction is when the supplier takes on other manufacturers' products in its assortment to cover the whole demand range of a specific customer (e.g. Dubois, 2003).

So far we have dealt with the relationship between the buying firm and individual suppliers. We need to take into consideration also how the suppliers in the supply base are connected. A customer can achieve considerable benefits through active co-ordination of what is going on between suppliers, and through adapting its internal operations to a network of embedded suppliers, rather than to individual vendors (Lamming et al., 2000; Ford et al., 2003; Choi and Krause 2006). For example, the assembly operations of an automobile manufacturer would be difficult to conduct efficiently if each supplier delivered in its particular way. In this case, the buyer can improve performance considerably by organizing the supplier network so all suppliers deliver in a coordinated way.

OUTSOURCING AND OFFSHORING TO LOW-COST COUNTRIES

In this section we provide some brief details concerning the effects of companies' attempts to source and produce in low-cost countries. It is claimed that the first steps of what is identified as offshoring were taken in the 1980s when American Express outsourced its accounts receivable processes to India, followed by Texas Instruments and Motorola locating their captive technology centres in Bangalore (Lewin and Peeters 2006). The same authors argue that it was in the economic recession after the dotcom hype that offshoring really took off since US firms searched for cost-cutting strategies. India is still the main location for these arrangements later followed by Malaysia, China, Philippines and other Asian countries, while European firms initially relied on the Baltic states, Poland, Hungary etc. and then moved further east towards Ukraine, Belarus and China.

In the beginning offshoring ambitions related to taking out costs by shifting manufacturing or assembly operations to low-wage countries and gaining access to emerging markets by establishing presence (Lewin and Peeters 2006). Cost savings has continued to be the main reason and in the survey by Lewin and Peeters 93% of the respondents declared this to be the main driver while access to new markets was mentioned by 33%. Over time however other factors have gained in importance. More than half of the respondents declared that 'improving service levels' and 'assessing qualified personnel' were important strategic drivers in their offshoring decisions. These figures show that the increasing outsourcing of 'white collar' jobs and technical functions is a general trend. The functions most frequently offshored were IT (66% of the companies in the survey), finance/accounting (60%), contact centres (54%), and engineering services (44%). What might be more surprising is that one third (32%) of the companies had offshored research and development activities. When it comes to future plans, research and development is the function that was expected to grow most of all with a forecasted offshoring growth rate of 81 % between 2005 and 2008. The survey also identified whether the offshored operations were captive (i.e. owned and operated by the offshoring company) or outsourced to a service provider. The study shows that about one third of the implementations involve the captive model while two thirds are outsourced to others. IT and contact centres are almost entirely outsourced to service providers

(about 90% of the implementations), while finance and accounting, and procurement are primarily captive (more than 50%). Again research and development shows a somewhat unexpected pattern since the distribution between outsourced and captive arrangements showed to be 53%-47%.

Company illustrations of these changes include, for example, that the Boeing Co has established a centre for design and technical work in Russia, Proctor and Gamble has its taxes done in Costa Rica, and General Electric has built an R&D centre in India with a staff of 500 people (Vestring et al, 2005). In all these cases availability of skilled people played an important role. Russia is a country with deep aerospace engineering capabilities. Costa Rica has a strong cadre of workers with accounting skills and the GE staff in India consists to one third of locals with doctorates. Texas Instruments, IBM, and Intel are setting up complex production and R&D facilities in India and China (Lei 2007). Airbus is presently involved in developing new airliners in a radically new way. Previously the company designed, engineered, and manufactured as much as possible in-house and subcontracted components on a strict build-to-print basis. Today, also design and engineering tasks are delegated to external partners and about 50% of the aero structure work is done in low-cost regions (Betts 2007). It is possible thus to agree with the conclusion by Gupta (2007:7) that outsourcing arguments seem to be "transiting from pure cost savings from labour arbitrage to that of value creation through leveraging of resources".

Once large firms become involved in offshoring efforts like these, the basis for the division of labour may change completely, in turn affecting not only firms but also countries. For example, China is now the third largest R&D performer in the world (Anonymous 2005). Moreover, when it comes to China's economic growth it is claimed that "outsourcing has fueled much of this growth" (Lei 2007:24). These changes in the division of labour have been perceived as threats in other countries. One example is that in the presidential campaign in the US in 2004 "no economic issue generated more heat or shed less light than the debate over offshore outsourcing" (Mankiw and Swagel 2006), primarily because of its expected consequences for domestic jobs. However, the conclusion by the authors is that it is unlikely that offshoring accounted for a meaningful part of the job losses in the recent downturn. Similar arguments are raised by Harrison and McMillan (2006) declaring that the increases in employment by US-firms in low-cost countries have not hurt employment at home. Other analysts point to the advantages related to changes in the division of labour, which historically have increased social welfare, even when reducing the number of domestic jobs (e.g. Farrell 2004; Baily and Farrell 2006: Blinder 2006; Venkatraman 2004). In this paper the societal consequences of outsourcing are not discussed further since our aim is to deal with the implications for companies. In the section below we bring up some problems with outsourcing identified in previous studies.

Problems in outsourcing – a movement towards back-sourcing

It was mentioned in the Introduction that in many cases the effects of offshoring to low-cost countries have not met expectations. It was pointed out also that one of the reasons for these shortcomings relates to lacking analytical rigor. 'Group-thinking' have made companies perceive the pressure to outsource irresistible and the idea that "it is not appropriate is fast becoming inconceivable" (Hendry 1995:196). Other quotes illuminate the inadequacies in this respect:

> "The fundamental query 'to outsource or not to outsource' has been beyond the analysis" (Berggren and Bengtsson 2004:221).
>
> "offshoring strategies largely emerge as…opportunistic bottom-up random experiments that evolve following trial and error" (Lewin and Peeters 2006: 225)

> "businesspeople often do not fully understand the complex relationship among outsourcing and corporate sources of competitive advantage" (Lei 2007:21)
>
> "Offshoring is often done with little or no understanding of its true costs. Oftentimes the cost benefits are calculated solely on the basis of the incredibly low labour cost." (Hogan 2004:76)
>
> "They should look carefully at the economics before they send production overseas. Too many of them overestimate the savings to be had from going abroad". (Venables 2005:7)
>
> "The low unit product cost….is only one part of a very complex equation and must be considered against the direct, indirect, and hidden costs of longer and more complicated supply lines" (Smyrlis 2006:6)

It is not surprising that the shortcomings when it comes to analytical rigor and cost estimations have caused severe problems in implementation and subsequent disappointments in terms of the actual effects of offshoring. As reported in the Introduction these experiences have made many companies reconsider their previous decisions. Such observations are reported in a number of studies. In a survey organized by the American Management Association three quarters of the respondents stated that outsourcing outcomes had fallen short of expectations, and more than half had brought at least one outsourced activity back in-house (Bryce and Useem 1998). Lacity and Wilcox (2001) found that a third of the companies in their survey had cancelled outsourcing contracts. Linder (2004) summarizes experiences from three surveys concluding (i) that most companies found that outsourcing outcomes have fallen short of expectations (three quarters of the managers in a survey), (ii) that 20-25 percent of outsourcing relationships end within two years and that 50 percent fail within five years, and (iii) that only about 10 per cent were completely satisfied with their outsourcing arrangements. The technology research and consulting firm Gartner reports that 52% of small-business, and 42% of mid-sized business contracts are backsourced once the contract has been discontinued (Whitten and Leidner 2006). JP Morgan Chase & Co returned all IT-functions back in-house after having them outsourced to IBM (Cowley 2004). Finally, a recent Compass poll of executives from 70 outsourcing companies in North America found that only 4 percent of these organizations would not consider taking all or some services back in-house when their contract term was to expire (Fowler 2006). Later in the paper we will come back to the causes of these consequences as they are presented in the respective papers. We use them as illustrations in our exploration of the reasons underlying the problems associated with outsourcing and offshoring, in particular to low-cost countries.

A NETWORK EXPLANATION TO OUTSOURCING PROBLEMS

Our review of the transformations on the supply side of companies illuminated three main changes:
- increasing reliance on suppliers through outsourcing
- increasing involvement in relationships with suppliers
- consolidation and coordination in the supplier base

Initially these three changes were complementary. Before the transformations on the supply side most companies tended to rely on 'make' rather than 'buy', which called for a broad spectrum of internal capabilities and resources. Through outsourcing and specialization companies were able to improve their performance. Activities subject to transferring to suppliers were previously

integrated within the buying firm. When these operations were outsourced they still needed integration. In turn, this called for high-involvement relationships with suppliers. Moreover, the operations of a particular supplier had to be coordinated with the operations of other suppliers. These conditions made it necessary to reduce the size of the supply base since collaboration and coordination is resource demanding. Before the transformation a buying firm normally relied on huge numbers of suppliers. Multiple sourcing and low-involvement with suppliers were the preferred purchasing strategies in order to reduce dependence on individual suppliers and encourage competition among these. When these strategies were challenged in the transformations on the supply side, outsourcing, development of high-involvement relationships, and supply base consolidation, tended to go hand-in-hand.

The basic point of departure for our analysis is that these conditions are no longer at hand. Increasing outsourcing, and particularly offshoring to low-cost countries, tends to contradict the ambitions of buying firms when it comes to strategic aims concerning supplier involvement and the features of the supplier base. In our analysis of the impact of offshoring on the overall supply conditions we rely on the industrial network model (e.g. Håkansson and Snehota 1995). The exploration of the consequences of offshoring to low-cost countries thus relates to the three network layers: activities, resources, and actors. For each layer we present its main characteristics after the transformations on the supply side, followed by an exploration of how offshoring to low-cost countries may affect these features.

Off-shoring and the activity layer

Features of established activity patterns

The main characteristic of the networks' activity patterns after the supply side transformation is increasing integration of business processes. Synchronization within and between manufacturing and logistics processes has become a top priority for most firms (see e.g. Pfohl and Buse 2000; Christopher and Towill 2001, Garcia-Dastugue and Lambert 2003, Juttner et al 2006). The first main impact of process integration was the development of just-in-time deliveries in the automotive industry in the beginning of the 1980s. These pioneering attempts were followed by similar implementations in other industries and the design of systems for efficient-consumer-response (ECR), see for example White and Pearson (2001), Bhatt (2001), Kaynak (2002), Kannan and Tan (2005), and Christensen et al. (2005). The main characteristic of these systems is the increasing interdependence among activities. Previous arrangements typically relied on inventories functioning as buffers that decoupled sequentially related activities from each other. Once these buffers are eliminated the sequential interdependence must be coordinated in other ways. A particular problem here is that owing to specialization in supply chains these interdependencies increasingly cross the boundaries of firms. The requirements on, and the effects of, systematic planning for activity coordination are discussed in Jonsson and Mattsson (2003a, b) and Jonsson and Zineldin (2003).

Some other reconfigurations of activity patterns have contributed to increasing interdependence and subsequent requirements for coordination. Firstly, 'customization' in relation to the particular needs of specific business partners has become an issue on the top of the management agenda (e.g. Lampel and Minzberg 1996). In the efforts to customize, the principle of postponement has been instrumental since it "enables firms to provide product variety and quick responses" (Kotha 1996:42). Increasing attention to, and consequences of, the principle of postponement are discussed in, for example, Pagh and Cooper (1998), van Hoek (2001) and Su et al (2005). 'Mass' customization is applied in numerous and various industries and firms, such as IT (Feitzinger and

Lee 1997), home appliance products (Henke, 2000), textiles (Abecassis et al., 2000), farm equipment (Berman, 2002), and electronics (Partanen and Haapasalo, 2004).

Secondly, the ultimate form of postponement and customization is build-to-order. Build-to-order implies that the individual customer's order initiates the supplier's operations (see e.g. Gunasekaran and Ngai, 2005). In this way it becomes possible to completely eliminate inventories of finished products. This approach is commonly used in the PC industry which is characterized by short product life cycles and risk of obsolescence (Magretta 1998, Hulthén 2002). In the car industry, build-to-order production is a major issue, because car buyers nowadays are given the opportunity to be involved in the design of the product (Alford et al 2000). For example, a study in the UK found that 75% of the cars sold in 2002 were individualized in some way (Svensson and Barfod, 2002).

The main conclusion concerning the features of current activity patterns is thus the strong sequential interdependencies following the supply chain logic (see for example Dubois 1998, Dubois et al 2004, Håkansson and Persson 2004).

Impact of outsourcing and offshoring

Business process integration and the subsequent synchronization of activities crossing boundaries of firms is thus the main outcome of the transformation of the supply side of companies. Offshoring to low-cost countries results in disintegration of these business processes and requires the establishment of new activity links with new business partners. Moreover, these new links need to be coordinated with prevailing links along the whole supply chain. It is not surprising, therefore, that many findings regarding the consequences for the network's activity pattern tend to be negative.

The changes in the reconfiguration of activity patterns following offshoring lead to problems with activity synchronization exemplified in, for example, Mucha (2003), Trunick (2004), King (2005), Li and Lin (2006). A typical example of these changes is described in one of our own case studies dealing with a Swedish firm (Bankvall et al. 2004). This company (Telecom Inc.) began sourcing some components from China in the early 2000s and over time these efforts were extended to involve other components and also assembly operations in own facilities. One impact of the change is that sea transportation from China to Sweden takes about eight weeks. Owing to the prolonged lead-times, security stocks are required and inventories have to be kept by Chinese suppliers, Telecom's Chinese pre-assembly facility and their Swedish facility dealing with final assembly. Moreover, the demand and supply volumes are somewhat unpredictable and Telecom also has to meet urgent demands. In China the inventories amount to about two months of demand of which Telecom China stocks 20% and suppliers keep the remaining 80% of inventories. These costs for warehousing and tied-up capital considerably reduce the benefits obtained through low-cost labour. Another company moved operations to Estonia and found that lead-times had to be increased with three weeks. Two weeks are required for transportation and assembly and an extra week is added for security reasons. A related offshoring problem is the increasing requirements for packaging, which also ties capital. This is necessary because the assembled products have to be customer packed in Estonia (Bankvall et al 2006).

These examples seem to be representative of general problems related to ex ante identification of activity modifications required and additional costs associated with offshoring. For example it is argued that companies underestimate the problems with offshoring in China (Forrest 2005**:**1). In many cases offshoring firms have not "thought through the logistics of delivery assurance of supply, flexibility of supply and quality". In similar vein Venables (2005:7) claims that too many

"fail to recognize the problems dealing with inventory, obsolescence, and currency exchange". Such shortcomings lead to unexpected costs and make offshoring less economical than expected. Smyrlis (2006) discusses indirect and hidden costs associated with moving operations to low-cost countries. Indirect costs include shipping from Asia, nesting and de-nesting of containers at both ends of the ocean freight, inventory storage, materials handling, procurement, insurance and financing. These costs may be difficult to estimate but are possible to identify to some extent. Other costs are less visible and these hidden costs include, for example, costs associated with lengthened supply chains. The extension of chains means that it will (i) take more time to move products, (ii) be more difficult to manage the supply chain, and (iii) induce larger fluctuations which create costs. In addition, Smyrlis (2006) conclude that numerous studies in recent years found that logistics costs are considerably higher in China than in many developed countries.

The final outcome for many offshoring firms is therefore that costs are rising and service levels are dropping in comparison with expectations (see, for example, Barthelemy 2001; Hirschheim and Lacity 2000). The main explanations behind these effects are, incomplete analyses, that contracts many times are poorly negotiated, and extra charges owing to problems in estimating indirect and hidden costs related to the transformation of activities.

Above we touched upon increasing uncertainty and problems with planning. Telecom Inc. experienced increasing risks and uncertainties in relation to their Chinese operations. For example, the long lead times impose obsolescence problems when it comes to facing-in new products and facing-out old ones. Another type of uncertainty relates to fluctuations in raw material prices, since Telecom China signs long-term contracts with suppliers with fixed prices. Uncertainty concerning exchange rates and product quality are also offshoring consequences experienced by Telecom Inc.

In most cases the impact of outsourcing on activity configurations is discussed in terms of the consequences for individual supply chains. In reality, however, the activities in a particular supply chain affects (and are affected by) activities in other supply chains (Christopher 1998, Gadde and Håkansson 2001). Such effects are illustrated in the Telecom Inc. case. Over the years Telecom has put in massive efforts to make its manufacturing operations in Sweden as 'lean' as possible. The company had adopted the common lean supply chain approaches, like just in time, in order to be able to reduce inventories and shorten lead times. These principles had to be abandoned when the company gave priority to reaping the benefits from the low prices of Chinese suppliers. Consequently, the activity patterns in the Swedish facility for final assembly had to be reconfigured and rely on buffers in terms of inventories. One of the representatives of Telecom described the reorganization of the inbound operations of the Swedish assembly unit as "going ten steps backwards".

Offshoring and the resource layer

Features of established resource constellations

The literature review of the transformation on the supply side of companies showed that outsourcing initially aimed at making better use of resources located outside the boundary of the firm. The main reason behind this development is the increasing problems for the single firm to be at the cutting edge at all the technologies on which it relies. For example, Masi (2006:14) points out the benefits of a cross-company approach in a time when the "mix of skills needed to produce even a simple household appliance exceeds what any company can assemble or, more importantly, manage". Therefore, at an increasing extent, the resource base available to a company is located outside its ownership boundaries. To make the best use of its total resource

base a company needs to coordinate external and internal resources in the short term and secure long-term joint development with business partners.

The short term performance of a specific combination of resources – whether they are external or internal – is contingent on the way resources are adapted to each other. Through adaptations the combined benefits of two resource elements will be enhanced. This insight is the basis for the increasing attention to high-involvement relationships on the purchasing side. Close relationships makes it possible to integrate processes and exchange knowledge. These potential benefits made buying firms reconsider previous business recipes recommending arm's-length relations in order to avoid dependence. Adaptations in high-involvement relationships are key mechanisms in what is considered 'systematic combining of resources' in order to enhance productivity and innovation (Gadde and Håkansson 2006). This combining may be more or less consciously undertaken, and more or less successful. Irrespective of what alternative is actually at hand, the resource elements become increasingly related over time through their interfaces. The more systematic combining, and thus adaptations, of two resource elements – the better they will function in relation to each other. On the other hand, the better they function in relation to each other – the more difficult it will be to use these elements effectively in combination with other resources. Therefore, any resource adaptation must be considered an investment that constrains the utilization of the particular resources involved. Over time resource constellations are modified and adapted to new conditions. However, the opportunities for future recombining of resources are dependent on previous adaptations which tend to direct the future development of resources. The principles for, and consequences of, systematic resource combining are discussed in Gadde and Håkansson (2006) and Jahre et al (2006).

Implications of outsourcing and offshoring

Outsourcing was originally the outcome of buying firms' efforts to better exploit and explore resources available outside the border of the own organization. The same driving force is still crucial and illustrated, for example, by Hawkins (2006:12) claiming that outsourcing "offers a dynamic opportunity to benefit from low-cost providers, access new skill bases, integrate specialist capabilities and drive down cost", at the same time as it can reduce head count to achieve short-term targets. The study by Lewin and Peeters (2006) concluded that cost saving is the main strategic driver for offshoring. However, once firms start experimenting with offshoring "they quickly discover a seemingly unlimited source of talented people willing and capable of providing high-quality work in many different areas" (ibid. p. 235). Again we are confronted with difficulties in predicting offshoring effects, but in this case the impact is on the positive side. These findings are in accordance with the recommendation of Langlois and Robertson (1992:131) where it is argued that in early stages of development "experimentation is a much more important concern than coordination".

What is obvious from the analysis of the activity patterns in the network is that the basic infrastructure for logistics is crucial for offshoring outcomes. In low-cost countries this infrastructure is typically less developed in comparison with the previous 'home-based' logistics structure. For example, McKinsey Corporation concludes that despite the fact that many developing countries are improving their logistics considerably, problems occur when it comes to terminals and transportation vehicles (Dobberstein et al 2005). China is one of these examples where the logistics "infrastructure is poor by Western standards", illuminated by rail bottlenecks, railcar shortages, and truck capacity (Handfield and McCormack 2005:34). Also when it comes to logistics planning and supply chain management thinking, Chinese companies tend to have a limited understanding (ibid. p. 30). On the other hand, however, Chinese production lines are perceived very reliable, since managers are skilled at production planning and scheduling.

Initially, off-shoring was concerned with resources perceived to be 'non-core' – mainly in order to gain from labour arbitrage (Gupta 2007). However, as indicated in the Introduction, evidence from research suggests that over time more advanced tasks and systems have become subject to outsourcing. In the IT industry, for example, Beulen et al (2005) identified a shift from outsourcing of single applications towards 'infrastructure management'. In the same vein Linder (2004) made a distinction between 'conventional' and 'transformational' outsourcing. The latter form of outsourcing is not necessarily just for non-core activities and is not characterized by well-understood processes and easily measured outputs. Such extended offerings show to increase the risks and the requirements on both the vendor and the buying company. On the other hand they also provide opportunities for greater benefits and it is claimed that it has become increasingly profitable to outsource projects that are more complex and strategic in nature (Gupta 2007). Obtaining these benefits will require that clients and vendors "are prepared to get into a strategic long-term relationship (ibid. p. 7). We will bring up this aspect in the discussion about the actor dimension.

Offshoring and the actor layer

Features of established webs of actors

The central characteristics of the actor dimension have been brought up indirectly in the previous sections on transformations on the supply side in the discussions of 'changing buyer-seller relationships' and 'consolidation of the supplier base'. When it comes to the nature of relationships buying firms found that avoiding dependency on individual suppliers also implied avoidance of the benefits associated with high involvement relationships. When buyers wanted to exploit these advantages and modified the view of the relationship content they also had to reduce their numbers of suppliers since close cooperation is resource demanding. A further change in the efforts of improving conditions on the supply side has been the active attempts to establish connections among the suppliers in the network.

Impact of outsourcing and offshoring

Offshoring and outsourcing to low-cost countries implies changes in the actor structure since it means abandoning established relationships in the current structure and building new ones. Moreover connections between current suppliers will be affected. Also this seems to be an area where companies underestimate the requirements. For example, King (2004) argues that many companies have been surprised with negative results owing to shortcomings in this respect. To be successful in these efforts it is required that companies are aware of the fact that "close attention must be paid to everything about the client-vendor relationship: from the criteria for selecting a vendor, to the details of the outsourcing contract, to the frequent monitoring of progress, to the level of control exerted over the vendor, to the level of trust that is developed in the client-vendor relationships" (King 2004: 2). Crucial issues in the actor structure thus include the numerous investments in buyer-seller relationships to establish communication patterns, personal relations, quality control systems etc. At the same time previous investments in efficient supply chain practices may be made obsolete, such as just-in-time deliveries and customer order driven production systems.

The crucial role played by relationships with business partners for well functioning outsourcing are pointed out in numerous publications. Tompkins et al (2006) claim that successful outsourcing depends as much on the kind of relationship developed as on the details of the operational execution. Whitten and Leidner (2006:606) found that one of the key drivers for

backsourcing was “poor relationship between the vendor and the outsourcer”. The nature of the business relationships tend to become increasingly important when the scope of outsourcing is enhanced to include also activities perceived ‘core’. For example, Lei (2007) concludes that demanding technical specifications and intricate manufacturing requirements call for close cooperation and continuous knowledge sharing. Lewin and Peeters (2006:234) identified examples of successful outsourcing of critical activities. In these cases Western companies were “not considering service providers as mere suppliers of organizational processes but instead building partnerships and strategic alliances with them and embedding these providers into their core organizations”.

Business relationships seem to be vital also in less advanced types of outsourcing. Smyrlis (2006) claims that a crucial means to improve conditions in logistics services would be to develop closer relationships with transportation providers. Such solutions would cost more but also improve benefits and require other relationship features than standardized logistics. In the section on the resource dimension it was emphasized that the logistics infrastructure and supply chain planning is a drawback in China. Even so, it is claimed that “logistical considerations and expertise might be important factors when choosing a partner, but never as important as the relationship which includes the networks of contacts the local partner will bring into the project” (Denault 2006:52)

Therefore, the active management in business relationships is vital to outsourcing performance. Overby (2007:2) concludes that misjudging the management efforts required was one of the main problems in outsourcing since many companies were “stumbling because they underestimated the knowledge transfer issues, the cultural differences, even the time zone issues”. Lei (2007) also points out the importance of technology transfer and providing suppliers with access to knowledge and skills in order to enhance their performance. Successful effects of such efforts are exemplified in a study of Suzuki’s program for development of their Indian supplier network. Through systematic transfer of skills Suzuki managed to significantly change the nature, content, and extent of the local supplier’s capabilities (Okada 2004). These effects are not always easily accomplished. Wilkinson et al (2005) observed severe difficulties associated with ambitions of UK firms to develop strategic partnerships in China. These efforts were hindered by barriers in terms of “difficulties in staff training and retention, problems in cross-cultural communication, poor working practices in supplier firms, and corrupt staff behaviour” (ibid, p. 1886)

In some cases the increasing attention to supplier relationships has focused more on control than on transfer of skills. For example, Hawkins (2006) concludes that failures come when organizations look to control through contracts alone and not by building effective relationships. Similarly, King (2004:2) claims that many unsuccessful arrangements occur since firms thought “they could offshore through a contract and then do little to monitor and manage the client-vendor relationship”. The argument of Tompkins et al (2006:52) is that “outsourcing requires giving up control of a business function and trusting others to handle that function for you”. On this basis they outline a comprehensive plan for development of such relationships. Similar recommendations are provided by Totty (2007) pointing particularly to the benefits that may be attained in well-managed relationships in terms of, for example, shared expectations and discoveries of hidden costs.

CONCLUSIONS AND IMPLICATIONS

In the presentation of the evolution on the supply side of companies we concluded that outsourcing served as an integral part of the transformation in the late 1900s. Outsourcing was in fact the main instrument in these strategic changes. Outsourcing contributed to specialization in

the activity pattern and moreover it provided access to the resources of suppliers that were vital for the improvements of productivity and innovation in the buying firm. Some of the activities transferred to suppliers were previously closely integrated within the boundary of the outsourcing firm. When they were outsourced they still needed integration which called for close relationships with suppliers, in turn affecting the prevailing business recipe of arms'-length relations. The close relationships in the actor dimension were prerequisites for the integration of business processes in the activity dimension and the mutual knowledge sharing in the resource dimension. And once process integration and knowledge sharing were in place they further strengthened the bonds among the actors. In this respect outsourcing went hand in hand with other strategic improvements on the supply side.

Outsourcing and/or offshoring to low-cost countries considerably impacts on this network configuration. Activities that are linked in supply chains or other business processes will become disintegrated and need to be linked to other activities. And the more the outsourced activity has been adapted to its present context – the greater the problems with linking the new activity into the same context. When it comes to the resource dimension one particular resource element has been the main driver in recent outsourcing: the low cost of labour. However, as illustrated by our exposé, single resource elements are combined into constellations of resources. Changes in one of these elements will impact also on other elements and consequently require modifications in the interfaces among resources. The more efforts that have been put into systematic resource combining in order to make the current resource constellation efficient and effective – the more efforts will be needed in the recombining of the resource constellation.

Finally, outsourcing to low-cost countries breaks established bonds between actors. As argued above these bonds are investments made in order to improve performance in the activity and resource dimensions. Breaking these bonds thus means that previous investments lose their value and that new efforts and investments are required to establish bonds with actors located in low-cost countries. Previous efforts aiming at consolidating the supply base are also challenged. Cohen and Young (2006) conclude that when companies outsource more and more of their business the result is that they have to manage an expanded and increasingly complex supplier base. In a survey of 700 US companies more than half of the respondents forecasted that the number of contract manufacturers they manage should increase (Cecere 2005).

The conclusion of the above is obvious. When outsourcing is extended to involve low-cost countries it does not necessarily go hand in hand with other strategic aims on the supply side. On the contrary, outsourcing to low-cost countries stands in direct confrontation to vital interests in all three network dimensions. It should come as no surprise therefore that many outsourcing arrangements have not lived up to expectations and are considered failures. Our review of the literature also shows that in many cases outsourced activities have been insourced (back-sourced). It is easy therefore to agree with the conclusion drawn by Cohen and Young (2006) that outsourcing has become the victim of its own success. The success of initial outsourcing has turned many companies into what Cohen and Young identify as 'compulsory outsources' – i.e. companies that outsource more and more business with increasingly irrational expectations of success. Our review illustrates that many outsourcing decisions tend to be based on incomplete analyses. Indirect and hidden costs associated with outsourcing can easily outweigh the benefits in terms of reduced labour costs. Our argument is that these indirect and hidden costs stem from the impact of outsourcing decisions on the existing network configuration.

The main conclusions

Our exploration in previous sections leads to three main conclusions.

First, the initial benefits provided through outsourcing made it a recipe for business success. A business recipe represents particular ways of organizing, controlling, and directing business enterprises that becomes established as a dominant form (Whitley 1992) and define "what is appropriate behaviour for firms and how these kinds of organizations ought to work" (Fligstein 1990:295. A business recipe becomes powerful because it reflects what is perceived to be *the* successful pattern of business behaviour. Owing to these conditions recipes tend to build their own momentum. History shows that business recipes continue to be exploited long after the conditions that gave rise to their emergence are no longer at hand (Gadde and Araujo 2007). Our conclusion is therefore that outsourcing in many situations is overexploited. A decision to outsource is based on expectations related either to obtain solutions to some problems or to attain unrealized opportunities. But there are always other options available for problem solving and opportunity realization. Therefore, outsourcing may be a more or less viable alternative depending on the characteristics and timing of the particular situation. A first strategic issue to bring up in our implications is therefore to discuss *the alternatives to outsourcing.*

Second, when outsourcing is found to be a relevant option the main problem is to determine the extent of outsourcing. This is a crucial issue since our review indicated that there is huge variety of alternatives available when it comes to decide what form to apply. The main strategic consideration relates to finding the appropriate *combining of inhouse and external activities and resources.*

Thirdly, the literature review showed that the relationship with the business partner is of profound importance for the outcome of the outsourcing venue. As discussed in the presentation of the transformation on the supply side the involvement between buyer and supplier considerably impacts on the benefits and costs of a relationship. Therefore, the third strategic issue relates to the *identification of the appropriate relationship involvement.*

The implications of our findings are discussed under these three headings below. In these discussions we bring in further findings from our literature review.

The alternatives to outsourcing

Since many outsourcing decisions have been taken without adequate analysis it might well be that other options would have worked better in the realization of what outsourcing was expected to contribute to. Linder (2004) presents a framework for analysis of alternatives to outsourcing when a company is involved in transformation of some of its business processes. The first, and most obvious, alternative would be 'do-it-yourself', i.e. to continue in-house or at home. In many cases, however, this alternative becomes a loser since the comparison with outsourcing is based on the current in-house alternative. Forrest (2005) claims that a company sometimes would be better of by redesigning its products and maintain production at home. In many situations, however, companies tend to look at the current design of the product and assume that its redesigned predecessor will cost the same amount to produce, which is not necessarily the fact. Similar arguments are presented by Venables (2005) in reporting that Toyota still makes Corollas in Silicon Valley. In his view staying local is most desirable when product life cycles are short, obsolescence costs are high, and customers are time sensitive, implying that long lead times will cause problems. Also Mucha (2003) and Ritter and Sternfalls (2004) conclude that some products are in fact not suited for offshore manufacturing, for example, because they incur huge opportunity costs since their weight makes air shipment too costly in terms of actual dollars and sea shipment too costly in terms of loss of schedule flexibility.

Cattani et al (2005) have made an interesting comparison between two manufacturing set-ups. The first, identified as a 'focused strategy', involved a combination of an offshore facility focused on manufacturing of standard products and a flexible domestic facility focused on making customized products. The second strategy, identified as 'spackling', relies on the domestic capacity to produce both customized and standardized products. The analysis showed that in an overall evaluation the spackling strategy was advantageous. By keeping the manufacturing of standard products in-house the economies of scale in the production facility were improved at a rate that compensated for the cost disadvantages in relation to producing standard products in a low-cost country.

Benefits of staying home can be traced also in the experiences of companies that have taken home activities previously outsourced to low cost countries. In a study of call-service centers it is concluded that 'homeshoring' can "expand a company's reach for talented workers" since it enables employers to hire workers from a much broader geographical area (Frase-Blunt 2007). In many cases this staff showed to posses more advanced skills and be better motivated. Therefore, home-shoring even resulted in cost advantages when indirect costs and hidden costs were considered. Caputo and Palumbo (2005) report the effects of re-insourcing in the textile industries. Companies bringing home functions obtained advantages in terms of stricter quality control and capacity buffering to handle variations in demand and lead times, which are substantial in textile supply chains. Moreover, one of the companies also witnessed great benefits form the set-up of a small line for pilot production which could be used for improving product development processes and customization.

In a long-term perspective cost chasing advantages may disappear also for other reasons. Lewin and Peeters (2006) argue that cost reduction strategies are highly imitable and will provide advantages only for short time. Furthermore, rapid diffusion of outsourcing to low-cost countries will create upward pressures on labour costs in these countries, implying that an outsourcing company over time will have to move its operations around various locations. A further aspect for consideration is that the importance of direct labour is declining (Venables 2005), which makes the advantages of low-cost manufacturing less obvious.

For the analysis of problems and opportunities related to outsourcing numerous models and frameworks are available. Among these can be mentioned Holcomb and Hitt (2006), Yang et al (2006), Vining and Globerman (1999), Momme and Hvolby (2000), Sislian and Satir (2000), and Denault (2006).

The scope of outsourcing

Sanders and Locke (2005) criticize existing outsourcing frameworks and models for lacking differentiation and argue that the outsourcing concept in reality is used for sourcing arrangements of great diversity. On this basis they explore the variety characterizing available outsourcing arrangements and conclude that determining the extent (or scope) of outsourcing is a crucial strategic issue. In this respect they differentiate between four types of arrangements ranging from 'out-tasking' (transferring one or a few tasks) to 'full outsourcing' where an entire function or process is outsourced. The main differential between these arrangements is the extent of responsibility offered to the vendor. Factors impacting on the scope of outsourcing are the strategic importance of the task/function, the degree of customization employed, and the nature of the relationship with the supplier. Also Jahns et al (2006) propagate for differentiation since the off-shoring concept has been used to describe a multitude of scenarios. The authors derive a framework for understanding the features of different forms of offshoring along two dimensions: one contractual and one geographical. This framework should be seen as a means for broadening

the view of companies to avoid that they neglect the potential benefits offshoring may actually involve. Similar arguments are raised by Lewin and Peeters (2006) claiming that more differentiated approaches are required when outsourcing changes from cost chasing to efforts aiming at creating value and enable innovation. Recommendations for such differentiation are made also for sourcing in general (e.g. Bensaou 1999, Gadde and Håkansson 2001, Wagner and Johnson 2004).

The main conclusion concerning the scope of outsourcing is that relying on a combination of scopes is the most appropriate approach. For example, in a study of IT-outsourcing 'selective outsourcing' showed to result in the most successful arrangements (Whitten and Leidner 2006). These arrangements were 'selective' in two respects. First, they relied on an 'intermediate' level of outsourcing (between 20% and 80% of the total budget). Second, successful organizations tended to "selectively outsource and subsequently to backsource" (ibid. p. 606) thus making the scope of outsourcing a dynamic issue. Another type of combining is discussed by Fowler (2006) on the basis of a survey of 70 North American companies involved in outsourcing. The study shows that small and midsized vendors tend to allow clients to demand customized solutions and be more adept at servicing clients than larger organizations are. For a global company this means that "a selective approach employing a mix of regional players and insourcing can be the global optimal mix" (ibid p. 3). One of the characteristics of this mix is that a truly global company may outsource to itself by moving operations between its facilities. Such arrangements have shown to be important for large multinational corporations that tend to break down their value chains into a variety of discrete functions and locate them wherever they can be carried out effectively. Securing high performance in these operations requires transferring technical and managerial knowledge to upgrade the skills of local suppliers (Ernst and Kim 2002). The benefits of knowledge exchange and learning are mutual. Customers actively involved in generating feedback from suppliers may benefit considerably from across-country knowledge transfer (Kedia and Lahiri 2007).

Decisions concerning the scope of outsourcing must take the connections between various functions and operations into consideration. For example, there is an ongoing debate concerning the relationship between in-house manufacturing and innovation ability. One argument is that outsourcing of manufacturing operations provides access to supplier resources that may be beneficial for internal design and development activities. The other view is that a company lacking internal production operations will lose some of its innovation capabilities since the integration of manufacturing knowledge in product design and development will be missing. In our view both these arguments may be valid. The actual outcome in these respects is contingent on the nature of the relationship between client and vendor in the particular case, which is the theme of the section below,

The client-vendor relationship

The literature review clearly illustrated the significant impact on outsourcing outcome due to the nature of the business relationships. It is even argued that successful outsourcing ultimately is not about processes and requirements. Rather it is the result of a "continuous build up of 'social capital' between customer and supplier" (Overby 2007:4). A huge bulk of publications deal with processes for building relationships with providers of outsourcing services (e.g. Tompkins et al 2006). It is interesting to see that the network context of the relationship is seldom dealt with in these publications. We find it crucial that this aspect is taken into consideration and suggest Ford et al (2003) for recommended action in this respect. The importance of business relationships and networks has been enhanced by the shift from cost chasing towards value enhancement. Kedia

and Lahira (2007) conclude that in value enhancement arrangements cumulative experience sharing and learning are vital and that these joint actions require strategic partnerships.

We agree that the performance level of an outsourcing arrangement can always be improved by increasing the involvement in terms of process integration and resource combining. Unfortunately, the benefits of increasing involvement are accompanied by increasing sacrifices. Adaptations in terms of process integration, resource combining, and interaction among people are always costly. In many situations, therefore, the benefits of increasing involvement are more than offset by increasing costs. Both customer and supplier must thus carefully evaluate the relationship benefits and the relationship costs associated with different degrees of involvement and identify the appropriate level. The supplier relationships of a firm therefore should be characterized by variety: in some cases a high-involvement approach makes sense while in other situations low-involvement is preferable (Gadde and Håkansson 2001). The need for variety is advocated also by Kedia and Lahira (2007:13) concluding that "all forms of cooperative behaviour between clients and providers are not the same in terms of value proposition and degree of involvement". Further empirical illustrations of the need for differentiation when sourcing from China are provided by Campbell et al (2004), Salmi (2006), and Nassimbeni and Sartor (2006).

Irrespective of the level of involvement customers have to engage in some way in the operations of the supplier in order to secure the performance of the outsourcing arrangements. Therefore, 'teaching suppliers' is an important managerial issue for buying firms (Sachin and Mabert 2004, Gadde and Håkansson 2007). These teaching activities concern both what is required by the individual supplier and what is needed by the network around the single supplier. It is vital, however, that these teaching efforts do not become overly ambitious. First, the potential gains from teaching have to be balanced in relation to its costs. Second, too detailed directions from the client might hinder the vendor to make the best use of its available resource set-up. Therefore, outsourcing requires the client to give up some of its control ambitions when operations are no longer carried out in-house. This is a problem for many companies since increasing attention to value enhancement also results in enlarged risk exposure (Beulen et al 2005; Crone 2006) which in some way have to be dealt with through controlling activities (Amaral et al 2004). All efforts in this respect need to take the contexts of both client and vendor into consideration.

Concluding comments

The outsourcing boom in the last decades of the 1900s provided major benefits to most outsourcers (but not to all). A huge untapped resource potential was made available through the suppliers of the company. Moreover, the outsourcer could concentrate on a narrow span of activities in turn providing advantages in terms of the scope of technology required. The main consequence for the division of labour in industrial networks thus was increasing specialization at the firm level. These effects are discussed in, for example, Quinn (1999), Gadde and Håkansson (2001), and Lynch (2004).

This paper has illuminated some obvious problems related to overexploitation of the outsourcing recipe. A common feature of the international division of labour is that decision making of management nowadays is "slicing the activities of firms more finely and [results] in finding optimum locations for each closely defined activity" (Buckley and Ghauri 2004:81). Ever since Adam Smith's days it is a well known fact that by increasing specialization it is possible to improve the efficiency in the undertaking of single activities. At the end, however, the outcomes of these single activities are to be integrated to form something together: a car, a refrigerator, an information system, a bundle of logistics services etc. Therefore, as expressed by Piore (1992),

increasing specialization at one point in an industrial system must be balanced by greater integration at some other point. An obvious consequence is that "both the pattern of specialization and the relationship between specialists have decisive influence on the performance of an economic system" (Loasby 1999:90). The gains from specialization are thus accompanied by ever escalating demands for integrative efforts that increasingly have to cross the boundaries of firms.

In the long run inter-organizational integration in constellations of specialists may be problematic since the various specialists may have different opinions concerning the nature of integrative efforts required. This diversity is due to the fact that each actor is connected to numerous other actors – each with its particular requests for integration. Such conditions provide a breeding ground for a return to some of the ideals related to the hierarchical organization where integration mainly takes place within the boundaries of the firm. The frequent call for insourcing and the examples of backsourcing reported in this paper clearly illustrate these issues. Transferring outsourced activities back in-house, however, is not without its problems. The difficulties related to insourcing escalate (i) the more embedded the particular activity is in its current context and (ii) the more the outsourcing company has downgraded its capabilities and competences related to this activity. Great problems are to be expected in situations where both manufacturing and development are outsourced, and particularly when they are undertaken by different firms. In the long run outsourcing makes it difficult to preserve innovation capacity since lacking internal capability obstructs learning. It is an obvious problem for firms to "absorb external knowledge when they do not develop such competencies internally" (Lung, 2001:118).

For insourcing and outsourcing decisions firms are always recommended to define their core competence. But core competence is a problematic concept (Quinn and Hilmer, 1994; Gadde and Håkansson, 2001). The main reason is that it is difficult to determine what the core competence of the company actually is. This is true both in the short term (e.g. Chanaron 2001) and the long term, since it is never possible to know what competences will be core for a firm in the future. It always takes time to develop skills and capabilities which means that the decisions taken today will be critical for an uncertain future. What is important to a company will change over time due to dynamic environments and the capabilities developed by other firms. By prescribing what is 'core' – and thus also what is non-core – a company may run into big trouble in two respects. First, problems may occur through an overly reliance on capabilities that might not be important in the future. Second, by focusing what is perceived core today a company may pay too little attention to capabilities that will show to be important in the future. A company that has deliberately avoided maintaining its own competence base within a particular area of technology may find it very problematic to redevelop it again when needed. The decisions related to outsourcing and insourcing thus constitute a formidable complexity to handle and this complexity is multiplied by the observation of Tompkins et al (2005) that companies in general do not have a core competency in outsourcing.

References

Abdel-Malek, L., Kullpattaranirun, T. and Nanthavanij, S. (2005) A framework for comparing outsourcing strategies in multi-layered supply chains, *International Journal of Production Economics*, 97, 3, 318-328

Abecassis, C., Caby, L. and Jaeger, C. (2000) 'IT and Coordination Modes: The Case of the Garment Industry in France and US', *Journal of Marketing Management* 16: 425-447.

Alford, D., Sacket, P. and Nelder, G. (2000) 'Mass customization – an automotive perspective', *International Journal of Production Economics* 65 (1): 99-110.

Amaral, J., Billington, C. and Tsay, A. (2004) Outsourcing production without losing control, *Supply Chain Management Review*, 8, 8, 44-52

Anonomous (2005) Globalization Increases Offshoring, *Manufacturing Engineering*, December p. 23

Avery, S. (1999) Brunswick saves big bucks by centralizing services buy, *Purchasing Magazine*, March, 25, 38-41

Axelsson, B., Rozemeijer, F., and Wynstra, F. (2005) *Developing sourcing capabilities*, Chichester, Wiley

Baily, M. and Farrell, D. (2004) Exploding the myths of outsourcing. *The McKinsey Quarterly*, Web Exclusive, July

Bankvall, L., Dubois, A. and Gadde, L.-E. (2006) Supply Network Consequences of Sourcing in Low Cost Countries, *In proceedings of the 22nd IMP Conference*, Bocconi, Milan.

Barthelemy, J. (2001) The hidden costs of IT outsourcing, *MIT Sloan Management Review*, 42, 3, 60-69

Barthelemy, J. and Geyer, D. (2004) The determinants of total IT outsourcing: an empirical investigation of French and German firms, *Journal of Computer Information Systems*, 44, 3, 91-97

Bensaou, M. (1999) Portfolios of Buyer-Supplier Relationships, *Sloan Management Review*, Summer, pp. 35-44

Berggren C. and Bengtsson, L. (2004) Rethinking outsourcing in manufacturing, *European Management Journal*, 22 (2) 211-223

Berman, B. (2002) 'Should your firm adopt a mass customization strategy?', *Business Horizons* July-August: 51-60.

Betts, P. (2007) Airbus and Boeing are taking risks on outsourcing, *Financial Times*, Feb. 15, 22

Beulen, E., van Fenema, P. and Currie, W. (2005) From Application Outsourcing to Infrastructure Management, *European Management Journal*, 23, 2, 133-144

Bhatt, G. (2001) 'Business process improvements through electronic data interchange systems: an empirical study', *Supply Chain Management: An International Journal* 6 (2): 60-73.

Blinder, A. (2006) Offshoring: The next industrial revolution? *Foreign Affairs*, 85, 2, 113-118.

Bonaccorsi, A. and Lipparini, A. (1994) Strategic partnerships in new product development: An Italian case study, *Journal of Product Innovation Management*, 11, 2, 134-145

Bronfenbrenner, K. and Luce, S. (2004) The Evolving Profile of Corporate Global Restructuring. *Multinational Monitor*, 25, 12, 26-29

Bryce, D. and Useem, M. (1998) The impact of corporate outsourcing on company value, *European Management Journal*, 16, 635-643

Buckley, P. and Ghauri, P. (2003) Globalisation, economic geography and the strategy of multinational enterprises. *Journal of International Business Studies*,35, 81-98

Buehler, S. and J. Haucap (2006), Strategic Outsourcing Revisited, *Journal of Economic Behavior & Organization*, 61, 3, 325-338

Byrne, P.M. (2005) Global Sourcing: Opportunities and approaches for the 21st Century, *Logistics Management*, January, pp. 27-28

Campbell, R., Hexter, J. and Yin, K. (2004) Getting sourcing right in China, *The McKinsey Quarterly*, Special edition: China Today, 34-41
Caputo, A. and Palumbo, M. (2005) Manufacturing re-insourcing in the textile industry, *Industrial Management + Data Systems*, 105, 1/2, 193-206
Carbone, V. and Stone, M. (2005) 'Growth and relational strategies used by the European logistics service providers: Rationale and outcomes', *Transportation Research Part E: Logistics and Transportation Review* 41, 6, 495-510
Carlisle, J. and Parker, R. (1989) *Beyond negotiation. Redeeming customer-supplier relationships*, Chichester, Wiley
Cattani, K., Dahan, E. and Schmidt, G. (2005) Offshoring Versus Spackling, *MIT Sloan Management Review*, 40, 3, 6-7
Cecere, L. (2005) So you want to outsource manufacturing?, *Supply Chain Management Review*, 9, 6, 13-14
Chanaron, J.J. (2001) Implementing technological and organizational innovations and management of core competencies: lessons from the automotive industry, *International Journal of Automotive Technology and Management*, 1, 1, 128-144.
Choi, T. and Krause, D. (2006) The supply base and its complexity: Implications for transaction costs, risks, responsiveness, and innovation, *Journal of Operations Management*, 24, 5, 637-652
Christensen, W., Germain, R. and Birou, L. (2005) 'Build-to-order and just-in-time as predictors of applied supply chain knowledge and market performance', *Journal of Operations Management* 23 (5): 470-481.
Christopher, M. and Towill, D. (2001) An Integrated Model for the Design of Agile Supply Chains. *International Journal of Physical Distribution & Logistics Management*, 31, 4, 235-246
Christopher, M., (1998) *Logistics and Supply Chain Management - Strategies for Reducing Cost and Improving Service*, Financial times Professional Ltd., London
Cohen, L. and Young, A. (2006) *Outsourcing the right way*, Boston, Harvard Business School Press
Cowley, S. (2004) J.P. Morgan scraps 5 billion dollar IT-deal with IBM, *Computerworld*, 38, 38, 1-16
Crone, M. (2006) Are global supply chains too risky? A practitioner's perspective, *Supply Chain Management Review*, 10, 4, 28-35
Croom, S. (2001) The dyadic capabilities concept: examining the processes of key supplier involvement in collaborative product development, *European Journal of Purchasing & Supply Management*, 7, 1, 29-37
Denault, J. (2006) Offshoring to China: What should your model be? *Biopharm International*, December, 48-52
Dobberstein, N., Neumann, C-S and Zils, M. (2005) Logistics in Emerging Markets. *The McKinsey Quarterly*, No. 1, pp. 15-18
Doig, S., Ritter, R., Speckhals, K. and Woolson, D. (2001) Has outsourcing gone too far?, *The McKinsey Quarterly*, 4, 25-37
Dubois, A. (2003) Strategic cost management across boundaries of firms, *Industrial Marketing Management*, 32, 5, 365-374
Dubois, A. (1998) *Organising Industrial Activities Across Firm Boundaries*. Routledge, London
Dubois, A., Hulthén, K., Pedersen, A-C. (2004) Supply chains and interdependence: a theoretical analysis, *Journal of Purchasing and Supply Management*, Vol. 10, No. 1, pp. 3-9.
Ellram, L. and Billington, C. (2001) Purchasing Leverage Considerations in the Outsourcing Decision, *European Journal of Purchasing & Supply Management*, 7, 15-27
Emsberger, R. (2005) The Big Squeeze: A 'second wave' of offshoring could threaten middle-income, white-collar and skilled blue-collar jobs, *Newsweek*, May 30, p. 48-50

Ernst, D. and Kim, L. (2002) Global production networks, knowledge diffusion, and local capability formation, *Research Policy*, 31, 1417-1429
Fang, T. and Axelsson, B. (2005) Startegic change towards global sourcing. In B. Axelsson et al (eds): *Developing sourcing capabilities*, Wiley, Chichester
Farrell, C. (2005) An Onshore Play in Offshoring, *Business Week*, May 2, p. 90
Farrell, D. (2004) How Germany can win from offshoring, *The McKinsey quarterly*, 4, 115-123
Feitzinger, E. and Lee, H. (1997) 'Mass Customization at Hewlett Packard: The Power of Postponement', *Harvard Business Review* January-February: 116-121.
Fligstein, N. (1990) *The Transformation of Corporate Control*. Harvard University Press, Cambridge
Ford, D., Gadde, L-E, Håkansson, H., Snehota, I., (2003) *Managing Business Relationships*. Wiley, Chichester.
Forrest, W. (2005) Analyzing the pros and cons of outsourcing to China, *Purchasing Magazine*, Issue 2, February 3, www.purchasing.com
Fowler, B. (2006) Is insourcing the new outsourcing? *Cio Compass*, September 20, 1-4
Frase-Blunt, M. (2007) Call Centers Come Home, *HR Magazine*, January, 85-89
Gadde, L-E and Araujo, L. (2007) Business Recipes, Historical Narratives and The Discovery of Networks, *IMP Journal*, forthcoming
Gadde, L-E and Håkansson, H. (2001) *Supply Network Strategy*, Wiley, Chichester
Gadde, L-E and Håkansson, H. (2006) Business Relationships and Resource Combining. Paper presented at the IMP Journal Seminar in Gothenburg, May 18-20
Gadde, L-E and Håkansson, H. (2007) Teaching in Supplier Networks. In Gibbert, M. and Durand T. (eds.) *Strategic Networks*, Oxford, Blackwell Publishing
Gadde, L-E and Jellbo, O. Systems sourcing – opportunities and problems, *European Journal of Purchasing and Supply Management*, 8, 43-51
Garcia-Dastugue, S. and Lambert, D. (2003) Internet-enabled Coordination in the Supply Chain. *Industrial Marketing Management*, Vol. 32, pp. 251-263.
Gilley, K. and Rasheed, A. (2000) Making more by doing less: an analysis of outsourcing and its effects on firm performance, *Journal of Management*, 26, 763-790
Granstrand, O., Bohlin, E., Oskarsson, C. And Sjöberg, N. (1992) External technology acquisition in large multi-technology corporations, *R & D Management*, 22, 2, 111-133
Greco, J. (1997) Outsourcing: The New Partnership. *Journal of Business Strategy*, July-August, 48-54
Gunasekaran, A. and Ngai, E. (2005) 'Build-to-order supply chain management: a literature review and framework for development**',** *Journal of Operations Management* 23, 5, 423-451.
Gupta, A. (2007) Offshoring: The transition from economic drivers toward strategic global partnership and 24-hour knowledge factory, *Journal of Electronic Commerce in Organizations*, 5, 2, 1-23
Håkansson, H. and Persson, G. (2004): Supply chain management – the logic of supply chains and networks, *International Journal of Logistics Management*, 15, 1, 1-11.
Håkansson, H. and Snehota, I. (1995) *Developing Relationships in Business Networks*, London, Routledge
Handfield, R. and McCormack, K. (2005) What you need to know about sourcing from China. *Supply Chain Management Review*, 9, 6, 28-36
Harrison, A. and McMillan, M. (2006) Dispelling some myths of outsourcing. *The Academy of Management Perspectives*, 20, 6, 6
Hawkins, D. (2006) Outsourcing debate continues, *Supply Management*, November 2, p.16
Hendry, J. (1995) Culture, community and networks: the hidden costs of outsourcing, *European Management Journal*, 13, 193-200

Henke, J. (2000) 'Strategic selling in the age of modules and systems', *Industrial Marketing Management* 29 (3): 271-284.
Hirschheim, R. and Lacity, M. (2000) The myths and realities of information technology insourcing. *Communications of the Association for Computing Machinery*, 43, 2, 99-107
Hogan, B. (2004) Going Offshore's Easy, Right? *Manufacturing Engineering*, December, 75-84
Holcomb, T. and Hitt, M. (2007) Toward a model of strategic outsourcing, *Journal of Operations Management*, 25, 2, 464-481
Hulthén, K. (2002) *Variety in Distribution Networks: A Transvection Analysis*. Doctoral Dissertation, Göteborg: Chalmers University of Technology.
Jahns, C., Hartmann, E. and Bals, L. (2006) Offshoring: Dimensions and diffusion of a new business concept**.** *Journal of Purchasing and Supply Management*, 12, 4, 218-231 .
Jahre, M., Gadde, L-E, Håkansson, H., Harrison, D. and Persson, G. (2006) *Resourcing in Business Logistics.* Liber and Copenhagen Business School Press, Lund
Jiang, B,. Belohlav, J. and Scott, T. (2007) Outsourcing impact on manufacturing firm's value: Evidence from Japan, *Journal of Operations Management*, article in press
Johnsen, T. and Ford, D. (2006) Customer approaches to product development with suppliers, *Industrial Marketing Management*, 36, 3, 300-308
Jonsson, P. and Mattsson, S-A (2003a) The Implication of Fit Between Planning Environments and Manufacturing Planning and Control Methods, *International Journal of Operations and Production Management*, 23, 8, 872-900.
Jonsson, P. and Mattsson, S-A (2003b) The Use and Applicability of Capacity Planning Methods, *Production and Inventory Management Journal*, No. 3/4, pp. 89-95.
Jonsson, P. and Zineldin, M. (2003) Achieving High-Satisfaction in Supplier-Dealer Relationships, *Supply Chain Management: An International Journal*, 8, 3.
Juttner, U., Christopher, M. and Baker, S. (2006) Demand Management – integrating marketing and supply chain management, *Industrial Marketing Management*, 36, 3, 377-392
Kakabadse, A. and Kakabadse, N. (2005) Outsourcing: Current and Future Trends. *Thunderbird International Business Review*, March-April, 183-204
Kakabadse, A. and Kakabadse, N. (2002) Trends in outsourcing: Contrasting USA and Europe. *European Management Journal*, 20, 2, 189-198
Kannan.V. and Tan, K. (2005) 'Just in time, total quality management, and supply chain management; understanding their linkages and impact on business performance', *Omega* 33 (2): 153-162.
Kaynak, H. (2002) 'The Relationship Between Just-in-time Purchasing Techniques and Firm Performance', *Engineering Management* 49 (3): 205-217.
Kedia, B. and Lahiri, S. (2007) International outsourcing of services: A partnership model, *Journal of International Management*, article in press
Kennedy, G. and Clark, D. (2006) Outsourcing to China – Risks and benefits**.** *Computer Law & Security Report*, 22, 3, 250-253
Kim, B. (2003) Dynamic outsourcing to contract manufacturers with different capabilities of reducing the supply cost, *International Journal of Production Economics*, 86, 63-80
King, W. (2005) Outsourcing and Offshoring: The New IS Paradigm? *Journal of Global Information Technology Management*, Vol. 8, Issue 2, pp 1-4
Kotha, S. (1995) 'Mass Customization: Implementing the Emerging Paradigm for Competitive Advantage', *Strategic Management Journal* 16 (Summer): 21-42.
Kotha, S. (1996) 'From Mass Production to Mass Customization: The Case of the National Industrial Bicycle Company of Japan', *European Management Journal* 14 (5): 442-450.
Kuwahara, S. (2006) Outsourcing to developing countries, Are you really going to save money? *Biopharm International*, November, p. 74
Lacity, M. and Willcocks, L. (2001) *Global information technology outsourcing: In search of business advantage*, West Sussex, Wiley

Lacity, M., Willcocks, L. and Feeny, D. (1995) IT outsourcing maximizes flexibility and control, *Harvard Business Review*, 73, 3, 84-93
Lamming, R. (1993) *Beyond Partnership. Strategies for innovation and lean supply*, Hemel Hempstead, Prentice Hall
Lamming, R., Johnsen, T., Zheng, J., and Harland, C. (2000) An initial classification of supply networks. *International Journal of Operations and Production Management*, 20, 6, 675-691
Lampel, J. and Mintzberg, H. (1996) 'Customizing Customization' *Sloan Management Review* Fall: 21-30.
Langlois, R. and Robertson, P. (1992) Networks and Innovation in a Modular System: Lessons from the microcomputer and stereo component industries. *Research Policy*, 21, 297-313
Lei, D. (2007) Outsourcing and China's Rising Economic Power. *Orbis*, 51, 1, 21-39
Lewin, A. and Peeters, C. (2006) Offshoring Work: Business Hype or the Onset of Fundamental Transformation. *Long Range Planning*, 39, 3, 221-239
Li, P. and Lin, B-W (2006) Building global logistics competence with Chinese OEM suppliers**.** *Technology in Society*, 28, 3, 333-348
Linder, J. (2004) Transformational outsourcing, *Supply Chain Management Review*, 8, 4, 54-61
Loasby, B. J. (1999) *Knowledge, Institutions and Evolution in Economics.* London, Routledge.
Lung, Y. (2001) The coordination of competencies and knowledge: a critical issue for regional automotive systems. *International Journal of Automotive Technology and Management*, 1, 1, 108-127.
Lynch, C. (2004) Why Outsource, *Supply Chain Management Review*, 8, 7, 44-51
Magretta, J. (1998) 'The power of vertical integration: An interview with Dell Computer's Michael Dell', *Harvard Business Review* 76 (2):72-84.
Mankiw, G. and Swagel, P. (2006) The politics and economics of offshore outsourcing, *Journal of Monetary Economics*, 53, 5, 1027-1056
Masi, C. (2006) Pros and cons of global outsourcing, *Control Engineering*, 53, 12, 14-15
Matteo, M.D. (2003) Sourcing in China. *Chinese Business Review*, September-October, pp. 30-54
McIvor, R. (2003) Outsourcing: Insights from the telecommunications industry, *Supply Chain Management: An International Journal*, 8, 380-394
Meredith, R. (2005) The Next Wave of Offshoring, *Far Eastern Economic Review*,168, 3, 19-24
Milligan, B. (1999) Buyers face new supply challenges, *Purchasing Magazine*, November 4, 63-72
Milligan, B. (2000) Harley Davidson wins by getting suppliers on board, *Purchasing Magazine*, September 21, 52-65
Momme, J. and Hvolby, H. (2000) An outsourcing framework: action research in the heavy industry sector, *European Journal of Purchasing and Supply Management*, 8, 185-196
Morgan, J. (1999) Purchasing at 100. Where it's been, where it's headed, *Purchasing Magazine*, November 18, 72-94
Mucha, S. (2003) Is your product suited for offshore manufacturing? *Circuits Assembly*, 14, 6, 28-30
Nassimbeni, G. and Sartor, G. (2007) Sourcing in China: a typology, *International Journal of Production Economics*, Article in Press
Newman, R. (1988) Single source qualification, *Journal of Purchasing and Materials Management*, Summer, 10-17
Okada, A. (2004) Skills Development and Interfirm Learning Linkages Under Globalization. *World Development*, 32, 7, 1265-1285
Overby, S. (2007) Secrets of offshoring success, *CIO*, 20, 8, 1-6
Pagh, J. and Cooper, M. (1998) 'Supply Chain Postponement and Speculation Strategies: How to Choose the Right Strategy', *Journal of Business Logistics* 19 (2): 13-33.

Partanen, J. and Haapasalo, H. (2004) 'Fast production for order fulfillment: Implementing mass customization in electronics industry', *International Journal of Production Economics* 90: 213-222.

Pedersen, A. (2004) Tread carefully into low cost countries, *Purchasing Magazine*, Issue 3, 19 February, www.purchasing.com

Pfohl, H-C and Buse, H. (2000) Inter-organizational Logistics Systems in Flexible Production Networks. *International Journal of Physical Distribution and Logistics Management*, Vol. 30, No. 5, pp 388-408

Piore, M. (1992) Fragments of a cognitive theory of technological change and organizational structure, In Nohria, N. and Eccles, R. (eds.) *Networks and organizations. Structure, form and action*, Boston, Harvard Business School Press

Quinn, J. and Hilmer, F. (1994) Strategic Outsourcing, *Sloan Management Review*, Summer, 43-55

Quinn, J. (1999) Strategic Outsourcing: Leveraging Knowledge Capabilities. *Sloan Management Review*, Summer, pp. 9-21

Quinn, J.B. (2000) Outsourcing Innovation: The New Engine of Growth. *Sloan Management Review*, Summer, pp. 13-29

Razzaque, M. and Sheng, C. (1998) Outsourcing of logistics functions: A literature survey, *International Journal of Physical Distribution and Logistics Management*, 30, 2, 112-127.

Ritter, R. and Sternfels, R. (2004) When offshore manufacturing doesn't make sense, *The McKinsey Quarterly*, 4, 124-127

Sachin, M. and Mabert, V. (2007) Supplier development: Improving supplier performance through knowledge transfer. *Journal of Operations Management*, 25, 1, 42-64

Salmi, A. (2006) Organising international supplier relations: An exploratory study of Western purchasing in China. *Journal of Purchasing and Supply Management*, 12, 4, 197-208

Sanders, N. and Locke, A. (2005) Making sense of outsourcing, *Supply Chain Management Review*, 9, 2, 38-44

Sislian, E. and Satir, A. (2000) Strategic sourcing: a framework and a case study, *Journal of Supply Chain Management*, 36, 4-12

Smyrlis, S. (2006) Can your supply chain handle the risks of sourcing from China?, *Canadian Transportation Logistics*, September, p. 6

Spekman, R., Kamauff, J. and Spear, J. (1999) Towards more effective sourcing and supplier management. *European Journal of Purchasing and Supply Management*, 5, 2, 103-116.

Stork, K. (1999) Single Sourcing Part II, *Purchasing Magazine*, November 4, 32

Su, J., Chang, Y. and Ferguson, M. (2005) 'Evaluation of postponement structures to accommodate mass customization', *Journal of Operations Management* 23 (3-4): 315-318.

Svensson, C. and Barfod, A. (2002) 'Limits and opportunities in mass customization for "build-to-order" SMEs', *Computers in Industry* 49 (1): 77-89.

Takeuchi, H. and Nonaka, I. (1986) The new new-product development game, *Harvard Business Review*, January-February, 137-146

Tompkins, J., Simonson, S., Tompkins, B. and Upchurch, B. (2005) *Logistics and Manufacturing Outsourcing: Harness Your Core Competencies*, London, Tompkins Press,

Tompkins, J., Simonson, S., Tompkins, B. and Upchurch, B. (2006) Creating an outsourcing relationship, *Supply Chain Management Review*, 10, 2, 52-58

Totty, M. (2007) Outside Chance: Why outsourcing IT often doesn't save as much as it could, *Wall Street Journal*, January 29, p.R7

Trent, R. and Monczka, R. (2005) Achieving Excellence in Global Sourcing. *MIT Sloan Management Review*, 47, 1, 24-32

Trunick, P. (2004) How to Protect Your Global Supply Chain. *Logistics Today*, 45, 8, 42-45

van Hoek, R. (2001) 'The rediscovery of postponement - a literature review and directions for research', *Journal of Operations Management* 19 (2): 161-184.

van Weele, A. (2002) *Purchasing and Supply Chain Management*, Thomson, London
Venables, M. (2005) Home, sweet home. *IEE Manufacturing Engineer*, October-November, 6-7
Venkatraman, V. (2004) Offshoring Without Guilt, *MIT Sloan Management Review*, 45, 3, 14-16
Vestring, T., Rouse, T. and Reinert, U. (2005) Hedge Your Offshoring Bets. *MIT Sloan Management Review*, 46, 3, 27-29
Vining, A. and Globerman, S. (1999) A conceptual framework for understanding the outsourcing decision, *European Management Journal*, 17, 645-665
Wagner, S. and Johnson, J. (2004) Configuring and managing strategic supplier portfolios**,** *Industrial Marketing Management*, 33, 8, 717-730
White, R. and Pearson, J. (2001) JIT, System Integration and Customer Service, *International Journal of Physical Distribution and Logistics Management*, Vol. 31, No. 5, pp. 313-333
Whitley, R. (1992) The Social Construction of Organizations and Markets: The Comparative Analysis of Business Recipes. In Reed, M. and Hughes, M. (eds) *Rethinking Organization*, pp. 184-206, Sage, London
Whitten, D. and Leidner, D. (2006) Bringing IT back: An analysis of the decision to backsource or switch vendors, *Decision Sciences*, 37, 4, 605-621
Wilkinson, B., Eberhardt, M., McLaren, J. and Millington, A. (2005) Human resource barriers to partnership sourcing in China, *International Journal of Human Resource Management*, 16, 1886-1900.
Womack, J., Jones, D. and Roos, D. (1990) *The machine that changed the world*, New York, McMillan Publishing
Wynstra, F. (1998) Purchasing involvement in product development, Doctoral dissertation, Eindhoven Centre for Innovation Studies, Eindhoven University
Yang, D., Kim, S., Nam, C. and Min, J. (2007) Developing a decision model for business process outsourcing, *Computers and Operations Research*, Article in press