Outsourcing, Supplier Relations, and the External Span of Control

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Abstract

The outsourcing and supplier relations literature focuses primarily on initial designs while ignoring how superior implementation skills can drive competitive advantage. The concept of external span of control, defined as a firm's overall capability to manage multiple and varying relations with outside suppliers, is put forward to capture implementation differences. Its antecedents are described and strategies are provided for improving it involving growth, alignment, internal development, and inter-firm learning.

The common theme in the literature on outsourcing and supplier relations is how many and which activities firms should outsource and what subsequently makes for an effective governance design of buyer-supplier relations. As an empirical phenomenon outsourcing has become an important strategy for firms to alter their cost base and potentially obtain new competitive advantage. Conceptually it has also drawn substantial attention. The make-or-buy decision is a standard area of application for transaction cost economics (Williamson, 1991). Under conditions of low asset specificity and low uncertainty, it pays off to outsource components or services (Gilley and Rasheed, 2000; Leiblein, Reuer and D'Alsace, 2002). In addition, recent work from the resource-based perspective suggests that firm capabilities also influence the make-or-buy decision in that having capabilities in a certain area promotes internalization of the underlying activities (Poppo and Zenger, 1998; Barney, 1999; Leiblein and Miller, 2003). It is now generally recognized that quasi-integrated or partnering relations with external suppliers can sometimes be a useful alternative to vertical integration even in conditions of high asset specificity (Nooteboom, 1999) or high uncertainty (Gulati, 1995). Asset specificity may not create problems of opportunism when constructions can be found that create mutual commitment (like the keiretsu structure, see Dyer, 1996) and joint investment occurs (Dyer and Singh, 1998). Similarly the trust mechanism can act as a substitute to certainty in cases of high uncertainty (Luhmann, 1968) as it allows decision makers to replace actual knowledge about future events with a very strong belief that presumed knowledge about future events is correct. Under conditions of strong technological innovation and when highly specific technologies are developed, there are incentives for firms to outsource to single-source suppliers (Barney, 1999; Brusoni, Prencipe and Pavitt, 2001). Thus it makes sense that we see much outsourcing, sometimes even in areas crucial to the firm's future competitive advantage because partnership relations with external suppliers can become an effective substitute for vertical integration. I will loosely refer to this area of

existing literature as the outsourcing design approach, a term that is not intended to reflect a specific theoretical angle but rather its focus.

While I do not wish to contend that the outsourcing design approach as such is faulty, it fails to shed light on the question why there is inter-firm performance heterogeneity when firms operating under similar circumstances have chosen a similar design. Apparently the eventual effectiveness of a design is not merely determined by its characteristics but also by the characteristics of the adopter of the design. Toyota's supplier network is perhaps the most widely publicized of any firm. As such its design is fairly well understood. Through intensive relations with suppliers Toyota manages to create new knowledge and to distribute that knowledge throughout the value chain (Dyer and Nobeoka, 2000; Lincoln, Ahmadjian, and Mason, 1998). There are various micro level mechanisms in place for joint learning (Dyer and Nobeoka, 2000). In addition its supplier network is flexible and robust enough to deal with calamities should these arise (Nishiguchi and Beaudet, 1998). When Chrysler, however, tried to emanate Toyota's practices it encountered various obstacles, including the difficulty of creating equity ties with suppliers and the lack of job rotation between itself and supplier companies (Dyer, 1996). Even other Japanese carmakers, like Nissan, are not able to create exact copies of the Toyota system, for instance because they cannot establish ties with suppliers that already produce exclusively for Toyota (Lincoln et al., 1998). Thus while firms may have knowledge of an effective design and are willing to implement it, they may eventually not be equally effective in using it.

There are various potential explanations for this phenomenon. One that seems to by-and-large have been overlooked is that the implementation phase that lies between a design and its eventual effectiveness outcomes, may also be a variance creating source. In other words, some firms are better at implementing a given design under given circumstances than others. In view of these observations the central research question that motivates this paper is *What are the causes*

of inter-firm differences in sourcing effectiveness that emerge during the implementation of similar governance designs?

To derive an answer to this question the next section is used to analyze outsourcing and supplier relations as they have been discussed in recent literature. This review proves the point that implementation issues have mostly been neglected. In an effort to fill this gap the term external span of control is then introduced to capture inter-firm differences in the implementation of designs. I subsequently review three approaches that may help us understand how these differences emerge. Building upon that overview the next section discusses how the external span of control is influenced by various intra-firm and inter-firm mechanisms and how differences in implementation ability eventually lead to differences in sourcing effectiveness. In the concluding section I discuss issues of measurement and point out several interesting avenues for future research.

OUTSOURCING AND SUPPLIER RELATIONS

Delineating the Topic

Before extending the discussion on outsourcing and supplier relations, it is important to clarify what these terms encompass. By outsourcing I will refer to any service or good that is procured from independent legal entities, henceforth referred to as suppliers. Other definitions in use focus on the process of outsourcing goods or services that were previously produced in-house, on specific types of outsourcing (like IT outsourcing), or on goods or services that are procured on specification from external suppliers but could equally well be produced in-house. While these definitions have their own merits, the broadest available definition has been chosen, primarily in order to be able to include and discuss all types of supplier relations. Supplier relations then, refer

to the whole range of potential relations from arm's length through to strongly cooperative or partnership relations. In this context it is useful to note that the entirety of a firm's supplier relations can be conceived of as a portfolio (Dyer, Chu and Cho, 1998) in which a mix of relations exists. While some supplier relations in a portfolio will be of the partnership type, a firm will simultaneously have a set of arm's length relations.

Over the 1980s and 1990s and into the new millennium much has changed in the supply chain management of firms. Three major changes stand out above anything else. First, firms in the U.S. and elsewhere have increasingly outsourced components, services and entire business processes to third parties in an effort to benefit from increased focus on core activities and to lower production costs (Domberger, 1998; Quinn, 1999). As outsourcing increases, so does its potential to contribute to a firm's sustainable competitive advantage. Hence outsourcing has drawn substantial attention in the literature, though by far not as much as in practice (Doig, Ritter, Speckhals and Woolson, 2001). Among practitioners it is now sometimes suggested firms may have been outsourcing more than they should or at least more than they can practically manage (Doig et al., 2001). Second, the relations with these outside suppliers have in many instances changed towards more long-term, single source relations, often based on trust, to replace price-driven adversarial relations (Helper and Sako, 1995). This has been accompanied by an increasing rationalization of the supply base through single-source relations in an effort to increase the scale of purchased volumes from a particular supplier and promote standardization. In effect firms have to some extent been trading a large number of and a wide choice between suppliers for dedicated relations with a much smaller number of suppliers. Finally, an increasing tendency has been documented to replace domestic outsourcing with international outsourcing (Swamidass and Kotabe, 1994). The use of foreign suppliers on the one hand opens up a wider potential supply base with the associated lower production costs, yet also induces cultural and

institutional differences that raise the costs of coordinating transactions. Thus international outsourcing poses firms with new dilemmas.

Outsourcing has been a prominent business strategy in many areas but recently perhaps the most important areas of change are manufacturing (Kotabe, 1998) and IT services (Poppo and Zenger, 1998), now extending into business processes and offshoring. Former manufacturing firms like Nike now have very limited manufacturing operations and rely heavily on a network of outside suppliers. One potential drawback of such a strategy is that a lack of manufacturing and engineering knowledge may pose limits to innovation and hence a competitive disadvantage in the long run (Kotabe, 1998). Other firms have focused on reducing supplier numbers while increasing coordination of activities with the remaining suppliers. Ford Motor Company, for instance, reduced its number of suppliers for a single model from over 700 to 227 during its World Car project while simultaneously increasing collaborative engineering efforts. Such supply base rationalization has lowered the costs of coordinating supplier relations. In IT services firms like EDS have benefited from the outsourcing of entire IT departments by banks, manufacturing firms, and other service firms. While the changed nature of relations with these IT vendors involves more cooperation, it has also induced more detailed contracts, for instance in the form of Service Level Agreements (Poppo and Zenger, 1998). As such, trust and cooperation are perhaps best seen as complements to contracts, rather than their substitutes.

In some discussions on outsourcing and supplier relations the important links between them tend to be overlooked, even though outsourcing and management of supplier relations are mutually dependent issues (Takeishi, 2001). When firms outsource additional activities this obviously automatically induces a new or expanded supplier relation. Vice versa the insourcing, which implies taking in-house, of an activity involves the termination or shrinking of an existing supplier relation. Both can be lengthy and painstaking processes with severe implications for

organizations and their constituents. Whether or not to outsource an activity and how to design a relation with a supplier once it is decided to outsource an activity are simultaneous decisions and should preferably be treated as such. A conceptual separation of the two topics is therefore unwarranted and I will discuss them in conjunction.

As a final point of clarification the term governance design as it was used in the research question will here be taken to imply both the choice for an in-house or external provider, the outsourcing decision, and the choice for a type of relation somewhere on the continuum between arm's length and partnership, the relation design decision. A strong logic for this has been provided by Hennart's (1993) often overlooked notion that almost all (supply) relations incorporate elements of both the price mechanism and the authority mechanism. As such, insourcing features at least some price incentives while outsourcing is at least partly steered by hierarchical elements. Almost all governance designs, then, are a mix of modes in reality (Hennart, 1993). In effect then, governance design has a quantitative dimension, the number of external relations, as well as a qualitative dimension, the strength of these relations.

Stock of Knowledge

Scholarly research on outsourcing and supplier relations has focused primarily on the question what the appropriate or most effective governance design is given the nature of the transaction or situation at stake. Transaction cost economics explanations have been the most prominent vehicle in answering this question (Leiblein et al., 2002; Poppo and Zenger, 1998; Williamson, 1991). By focusing on transaction characteristics, we have been able to uncover a large part of the variance in make-or-buy decision-making. Despite its strengths there are limitations to this approach that have caused scholars to seek additional explanations. One limitation of TCE in make-or-buy decisions is its failure to incorporate firm level variables, like heterogeneity in firm resources, in

its explanation. This is particularly bothersome in dynamic industries or industries otherwise characterized by large differences in resource endowments (Barney, 1999). Resource-based explanations (Barney, 1999) take these inter-firm differences as a starting point and therefore excel at explaining heterogeneity between firms. Leiblein and Miller (2003) demonstrated in the context of semi-conductor production that firm-level explanations complement transactional characteristics. An applied version of the resource-based view, in the form of a competence-based view, has also been presented and basically argues that all non-core activities should be outsourced to best-in-world suppliers (Quinn, 1999). Other approaches for make-or-buy decisions include agency theory and measurement approaches (Poppo and Zenger, 1998), which have been particularly popular in economics (e.g. Milgrom and Roberts, 1987). Both suggest that there is an optimal outsourcing strategy given the information available to decision-makers, even though firms may regularly have to modulate between make and buy forms if they wish to reap the benefits of both (Nickerson and Zenger, 2002). On supplier relations, an even wider array of approaches has been tried, since micro-economic modeling has been complemented by (economic) sociology here. TCE suggests arm's length contracting should be used in cases of very low or negligible asset specificity, low uncertainty and low contracting frequency while the opposite circumstances call for vertical integration or relational contracting (Ring and Van de Ven, 1994). The competence-based approach has been used to argue that cooperative relations should be used in areas close to the firm's core competences (Quinn and Hilmer, 1994). Embeddedness (Uzzi, 1997) and trust (Gulati, 1995) approaches essentially argue that it is high uncertainty that calls for close and repetitive ties in networked settings. The relational rent argument (Dyer and Singh, 1998) holds that partnering firms can over the long run develop joint routines and mechanisms of a transaction cost minimizing or transaction value maximizing nature. One thing that these various approaches have in common though, is that all of them have

tended to concentrate on analysis and governance design (Nooteboom, 1999), i.e. on the most appropriate sourcing mode or supplier relation. The conclusion Ring and Van de Ven (1994: 91) drew on interorganizational relations apparently still holds for both IORs in the form of supplier relations and outsourcing decisions: "most of the research to date has been focused either on the antecedent conditions or the structural properties of interorganizational relationships in comparison with other governance forms".

Yet there is empirical evidence to suggest superior designs do not by definition lead to effective outcomes. Nissan unsuccessfully tried to emulate Toyota's outsourcing and supplier relations approach for decades. Eventually this lack of success led to the partial takeover of Nissan by Renault. Media sources attributed some of the failure to differences in the background of Nissan top management, who were lawyers from top Tokyo schools, compared to Toyota executives that invariably had some engineering knowledge and were more practical and down-to-earth, a much-needed characteristic when it comes to day-to-day exchanges with suppliers. Thus Nissan was not well-equipped to copy the Toyota strategy. Similarly, when the British national rail operator Network Rail, formerly Railtrack, was privatized, it decided to outsource maintenance activities through long-term contracts with a number of independent contractors, which were to be closely monitored. Such a scheme had been successful for other public transit systems, for instance in the US and Australia (Domberger, 1998). One of these contractors was Jarvis, a company that came under heavy scrutiny in 2002 and 2003 over its involvement in a number of railroad accidents, including one in Potter's Bar which took seven lives. Even after that particular incident additional mistakes occurred involving Jarvis, among them a derailment at London's busy Kings Cross station. British media blamed this on Railtrack's inability to manage relations with independent suppliers properly, a problem its successor Network Rail inherited. As

a consequence Network Rail decided to gradually insource maintenance activities. Jarvis transferred its rail maintenance activities to Network Rail in October of 2003.

Both examples show that outsourcing and supplier designs that work well for one organization need not be appropriate for another organization, even one operating under similar circumstances. In addition they demonstrate that a mere design by itself does not lead to success but that a successful implementation trajectory is equally important. Design-based approaches would use the header of coordination costs (Hendry, 1995; Nooteboom, 1999) to cover the investment of time and resources in control mechanisms to manage external relations. That, however, tells us little about how these coordination costs occur and even less about how they may differ from one organization to the next. This is a problem more generally with the outsourcing design approach: if we can say what the best design is under a given set of circumstances, there is no way an organization can create competitive advantage based on such designs, unless the implementation phase generates such advantages or managers decide to deviate from the best design. We have learned a great deal by focusing on governance design yet a different focus is now needed if we wish to substantially increase our understanding of the relation between outsourcing, supplier relations, and performance. The end of the learning curve may be nearing for design-based studies, particularly as they have already been extended to include services (Murray and Kotabe, 1999) and IT (Poppo and Zenger, 1998). It is hard to foresee much conceptual improvement in designs based on the stock of underlying theories currently available. One alternative is to discuss why firms decide on designs that are not optimal. Why do some firms outsource more than they ought to? The answer to this question exceeds the scope of this paper but could for instance involve issues of bandwagoning, managerial ignorance, and causal ambiguity. Another option is to discuss the process dimensions of building supplier relations, as Ring and Van de Ven (1994) chose to do, or those of outsourcing. Here, however, I

will proceed to outline more generally how implementation may affect the effectiveness of governance designs and how, in turn implementation is a consequence of various intra-firm and inter-firm mechanisms[1].

Explaining Additional Heterogeneity

If we wish to uncover additional heterogeneity I propose we have to study varying abilities of organizations to implement and manage relations with outside suppliers to their benefit. In this paper the term external span of control is used to cover such varying abilities. More precisely the external span of control is defined as *a firm's overall capability to manage multiple and varying relations with outside suppliers*. Henri Fayol (1949) first introduced the notion of a manager's span of control in 1916. He referred to it as the number of workers a single manager can usefully manage. The fact that a single manager can control multiple but not an unlimited number of workers has led to the classical, multiple-layered, pyramid-like organization structure, which we so commonly associate with the word hierarchy. For a long time this even dominated the thinking on organizational models, perhaps until the work on matrix organizations. It is now recognized that firms cannot add unlimited levels to their hierarchies since diseconomies of scale arise as a consequence of communication difficulties when crossing many levels. If one thinks of suppliers as workers and the firm as a manager of its external suppliers, the metaphor is clear. Beyond the metaphoric though, it is equally true that firms cannot manage endless numbers of suppliers. Interestingly enough, and similar to the classical organization structure, firms have also started structuring their supply relationships in a pyramid-like model in

[1] It has been suggested that academically speaking implementation is the black sheep of the strategy family (Hambrick, 2004). Hambrick (2004) even suggests this lack of attention is one of the causes underlying disintegration of the strategy field. While strategy analysis and design have received ample attention, implementation is more concerned with the human side of strategy and therefore perhaps less rational and more idiosyncratic,

what is called tiering of suppliers. The Japanese Keiretsu supply system perhaps best exemplifies this development. This raises the question to what extent sourcing managers do indeed face span of control problems in supplier relations. Practical experience shows that they are making continuous trade-offs when implementing their sourcing strategies (Hendry, 1995). A firm's managers do not have unlimited time and resources available to execute whatever design best fits their firms. Thus they face constant pressures to invest time and efforts in either this or that supplier relation. Decision-making will be of a heuristic nature because (Simon, 1998: 119):

> "Administrators (and everyone else for that matter) take into account just a few of the factors of the situation regarded as most relevant and crucial. In particular, they deal with one or a few problems at a time, because the limits on attention simply don't permit everything to be attended to at once."

Bounded rationality does not only affect whether the best possible designs can be found but also how these are effectuated. Firms cannot succeed in maximizing the transaction value of every relation. And there is a transaction cost attached to each supplier relation a firm wishes to maintain and therefore adding suppliers increases overall transaction costs and reduces the efforts spent on an individual relation. As the complexity of the supplier network increases coordination costs will increase exponentially. In addition to these firm level restrictions there are cognitive limits to the number of suppliers individual managers can deal with. Thus there is a definite upper limit to the number of supply relations a firm can maintain. The literature, however, proposes a second limit that is related not to the quantity but rather to the quality of relations. It is found in the concepts of weak and strong ties (Granovetter, 1985; Uzzi, 1996). When distinguishing between strong and weak ties, firms and individuals alike are limited in their use of strong ties.

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impeding generalized analytic conclusions. This may explain the lack of scholarly investigations on implementation and on implementation of outsourcing and supplier relations in particular.

Strong ties are distinguishable precisely because they are stronger than the average tie. In other words, not every supplier relation can be of a cooperative kind. Rather, firms will maintain portfolios of supplier relations with varying strengths (Dyer, Cho and Chu, 1998).

External span of control as discussed here is a firm level construct while Fayol's original notion involved individuals. Clearly a level of analysis issue arises here and concept stretching must be avoided. In the area of outsourcing and supplier relations it is usually the firm to which relations are attributed and we speak of a firm 'managing relations' (e.g. Dyer and Singh, 1998; Helper and Sako, 1995). In the literal sense of the word this may be incorrect since it must be managers who manage and not firms but it is the practice that has arisen and an abstraction required to usefully analyze the underlying problems. Surely there are important linkages between firm and individual level traits when it comes to dealing with outside parties (Zaheer, McEvily and Perrone, 1998). Managers make a firm's decisions and execute those. A strong mutual understanding between key individuals at the buying and supplying firms can help in developing an inter-firm relation. In that sense it is important to realize the two levels of analysis operate conjointly. But given that we generally believe it is the firm that manages relations, the concept of external span of control becomes applicable to the firm too and given that it initially referred to the number of workers, it can also be applied to the number of suppliers. A second issue is whether the type of supplier relations should be included. Follow-up discussions of Fayol's work have pointed at the influence of external circumstances on the size of the span of control. A manager's span of control depends among others on the task complexity of workers and their competence levels. Similarly there is much discrepancy amongst supplier relations. This generates differences in management requirements since managing four partnership relations will be quite different from managing four arm's length relations. Therefore it is fair to include the type of relation when defining external span of control.

Since the external span of control is defined as a firm's overall capability to manage multiple and varying relations with outside suppliers, it is interesting to see what impact heterogeneity in this capability may have on the firm's performance. In the context of inter-firm relations, heterogeneity has so far mostly been presumed to be in the relation itself (e.g. Dyer and Singh, 1998) and not in how it is managed by the firm. In the context of outsourcing, heterogeneity is seen to exist in the capabilities of the firm that influence the decision whether to make or buy (Barney, 1999) but not necessarily in whether some firms are inherently better or worse in managing outsourcing. I will now briefly discuss three streams of literature that shed more light on this matter.

Competence Perspective

Firm capabilities are thought to influence outsourcing decisions, particularly in industries where there is substantial change and ample room for strategic differentiation (Barney, 1999). Thus where there are differences between firms in terms of capabilities, this ought to be reflected across the range of outsourcing decisions they take. The extent of outsourcing will differ between firms in an industry just like it differs between industries. It has been suggested firms ought to focus on those activities in which they excel globally and outsource all other activities to suppliers who are the best providers in their respective areas (Quinn and Hilmer, 1994). Through such specialization economies of scale and scope may arise (Domberger, 1998), as suppliers will serve multiple customers and become highly effective at their particular task.

In today's knowledge economy it becomes increasingly important to properly execute functions aimed at obtaining knowledge from dispersed external sources (Doz, Santos, and Williamson, 2000). Suppliers are a potentially important source of external knowledge, especially for technical development (Lincoln et al. 1998). In general, the more firms outsource, the more

important correct information from suppliers becomes. However, the choice what particular source to pursue is often a difficult one given the abundance of potential targets all over the world (Doz et al., 2000). In fact, it is often only as managers engage in relations with suppliers that they find out which suppliers are particularly useful for this purpose, implying trial-and-error is a necessary step. In addition a trust-building process must occur, which is unpredictable in nature (Ring and Van de Ven, 1994). Thus sourcing managers will find themselves investing much time in setting up relations with suppliers that they might never actually use for knowledge accumulation purposes, similar to what Doz et al. (2000) refer to as the sensing stage. Therefore there is unpredictability over the pay-offs related to these investments.

The outsourcing design approach holds that all sourcing managers are equally well equipped for their jobs and unbiased. Both are doubtful as managers differ in their functional and educational backgrounds and training levels. More and better training should make for better decisions. Different backgrounds imply that decision-making outcomes will also differ. In the markets and hierarchies debate for instance, it has been noted (Dobbin and Baum, 2000) that economists hold more faith in the power of the market, while sociologists believe in organizations. In fact economic explanations of organization start from the notion that a market must fail for an organization to become useful (Williamson, 1991), while sociological accounts of markets (Granovetter, 1985) tend to stress how many markets really are organizations in disguise. Managers trained in either of these traditions may well become biased towards either of the two defaults through isomorphistic pressures (DiMaggio and Powell, 1984) or simply for a lack of knowing better, implying a manager's training background or experience will directly feed into outsourcing decisions. Therefore different managers will approach decisions differently and more or less competently. Heterogeneity in competence levels is directly connected to heterogeneity in both outsourcing and supplier relations.

At the firm level different imprinting conditions (Stinchcombe, 1965), both temporally and spatially, will induce heterogeneity in what firms are good at and how good they are. Firms that first emerged during the rise of mass production are likely to apply different outsourcing and supplier relations models from those that emerged during recent times when information technology had taken on much prominence. Although they may not necessarily be dinosaurs, firms with a longer tradition are not likely to immediately replace all existing relations by virtual ones or to suddenly outsource all hitherto integrated activities. Similarly there are important differences spatially, with the home country providing crucial institutional and cultural sourcing practices. The Toyota discussion can again serve as an example that firms from some countries are clearly more apt at creating cooperative relations, although that does not imply they are necessarily better at managing all relational types.

Learning Perspective

The key distinction in the learning literature is between exploration and exploitation (Levinthal and March, 1993), Despite their obvious potential for learning, supplier networks have not been studied extensively in terms of their potential for either type of learning (Lane, 2001). Lane (2001) discusses how firms can learn new technology, operational practices or competences in supply chain constellations. Yet there is another side to learning, outsourcing, and supplier relations, which is whether the firm can learn how to get more out of its outsourcing and supplier relations efforts. Internal learning on outsourcing and supplier relations can occur in multiple ways. First, there is learning about appropriate designs for certain situations. This is single loop learning (Argyris and Schon, 1978) in the sense that it is concerned with the question what design best fits what type of situation. In gathering such knowledge, learning curves can be extremely long, as the eventual effects of outsourcing and supplier relations may take one or multiple model

life cycles to come into fruition, for instance because loss of engineering knowledge does not make itself felt until the next product is constructed. Additionally, learning has to occur in compliance with the particular institutional setting. The earlier Chrysler example revealed the path dependent nature of supplier relations. It is difficult to radically turn around such long-standing relations in a pre-programmed institutional environment. Second, decision-making process and procedures themselves are repeated and such repetition may lead to improved future decision-making. This is double loop learning (Argyris and Schon, 1978), as it questions not the content of decisions but rather how they are reached. This type of learning is more directly concerned with implementation of designs.

One potential form of speeding up learning can be through knowledge spillovers between locations and units of an organization. By operating in multiple environments, firms can transfer outsourcing and supplier knowledge from these environments across borders, similar to knowledge transfer on marketing or product development. Japanese electronic firms have benefited from home-based knowledge when building transplants in the U.S. (Kenny and Florida, 1995). International knowledge exchange on the quality of suppliers can substantially reduce evaluation costs. Thus an active use of international sourcing networks can be a valuable format for learning how to outsource. A cross-functional exchange of knowledge can provide similar benefits. A firm could for instance reduce the margin of errors when making outsourcing decisions by exchanging experiences between finance and IT specialists. The outsourcing of a helpdesk function and of a treasury function may be common in some respects, for example when it comes to supplier selection procedures and negotiation processes. Both cross-functional and cross-national knowledge exchange can increase the absorptive capacity of the firm when it comes to learning how to outsource. Yet it is precisely when firms want to learn from

geographically and historically distant events that learning is most difficult (Levinthal and March, 1993).

Relational Perspective

In recent years a new relational perspective on interorganizational relations has emerged that explicitly recognizes that it is the joint activity of buyers and suppliers that leads to value-adding activities (Dyer and Singh, 1998). How effective outsourcing decisions will be, is partly going to depend on who the firm outsources to and on how well the outsourcing firm and its supplier work together. As stated before, the creation of rent-generating relations is very much a developmental process (Ring and Van de Ven, 1994). Various mechanisms have been identified that lower the cost of dyadic governance (Dyer and Singh, 1998): investing in relation-specific assets, building knowledge-sharing routines, possessing complementary resources and capabilities, and obtaining effective governance. Beyond dyadic governance, substantial attention has recently been paid to network level concepts. A single supplier relation is usually part of a larger network of relations, such that changes in one buyer-supplier relation will affect other relations. Such embeddedness on the one hand acts as a severe restriction on potential courses of action (Uzzi, 1996). It may, however, also enable new resource combinations within the network (Uzzi, 1997).

The reach of the outsourcing firm's social network and that of its manager determine the potential range of suppliers. There are costs of search and evaluation attached to setting up relations with suppliers (Webster and Wind, 1972). Evaluation costs of in particular are strongly modified by the extent of the social network of the firm and the decision-maker. For instance, IB research has demonstrated that over similar physical distances firms are much more likely to transact with suppliers within national boundaries than with suppliers across national boundaries (Rangan, 2000). Thus the extent of the firm's and the manager's actual network poses a limit on

what governance designs a firm can implement and how effective it can be at implementing a given design.

EXTERNAL SPAN OF CONTROL

The outsourcing design approach as it has been discussed provides considerable explanatory power for what designs firms ought to implement and probably substantial explanatory power for the designs they actually implement. Yet it tells us agonizingly little about how managers go about implementing such designs. Perhaps managers look for heuristics that help them avoid serious mistakes but also allow them to minimize their efforts. For instance when making a decision on the introduction of a new model, they may take into account the interests of a few key suppliers, but ignore those of other suppliers to limit the complexity of decision-making, effectively limiting the implementation of the proper design to a few relations while ignoring others. There are a few exceptions that discuss not only design but also implementation or management (e.g. Bensaou, 1999) but these do not provide a general conceptual framework for understanding inter-firm differences in the capability to implement designs. The remainder of this paper is an attempt to outline such a general concept. This concept, as alluded to earlier, will be referred to as the external span of control, although it is the definition of the term more than its name that matters here. The focus will particularly be on mechanisms that generate differences between firms' external span of control.

Three strategies exist to alleviate managerial pressures on the external span of control: decreasing the number of suppliers; decreasing the average relationship intensity; improving the external span of control. All three strategies will now be discussed in the form of propositions. When it comes to improving the external span of control, one general note is that firms can also

improve it by shifting more attention towards the outsourcing and supplier relations function through assigning a) more people to this function or b) improving the quality of the individuals assigned to it. Thus a relative shift of resources will lead to an improvement in the function. But like in a manager's span of control diseconomies of scale will arise when a firm aims to directly manage all tiers of its supplier network and talented individuals are scarce and usually deployable in alternative settings. Therefore this type of growth is limited. More generally growth of the firm or an overall improvement of employees' competences will of course result in similar improvements in the external span of control. External span of control will further be co-determined by the industry and country a firm operates in. Since, however, my interest is in differences between firms in a similar industry and country context, these determinants will not be discussed extensively.

Decreasing Number of Suppliers

Empirically speaking the trade of a large quantity of relations for a smaller number of more cooperative relations described earlier provides evidence that a firm cannot maintain too many channels simultaneously. Firms may have good reasons for limiting their number of suppliers. Having more suppliers means that more efforts must be undertaken to communicate market related information to suppliers, that smaller economies of scale in procurement can be obtained, that more information must be exchanged between suppliers, and that supply chain logistics become increasingly complicated. Presumably, firms will therefore continuously seek to get to the smallest possible number of external suppliers, in order to minimize coordination costs.

On the other hand there also appears to be a lower bound on the number of suppliers, as few firms would want to rely on one and the same supplier for all their inputs since that takes away from the value delivered by suppliers. The general issue lying behind this decision is scale

versus specialization. The eventual outcome of these opposite tensions will be some kind of compromise between large scale with few suppliers and specialization with many suppliers. Firms benefit from having large suppliers through various kinds of scale economies. Yet they also benefit from having specialized suppliers in certain areas who help them capture more value and with whom they can set up long term and mutually beneficial relations. The key dimension determining the need for specialized suppliers is the architecture of the firm's products. Complex products induce longer-term pressures to deal with a variety of inputs requiring the firm to deal with multiple actors simultaneously (Brusoni et al., 2001). Complex products require more specialized inputs and therefore more specialized suppliers rather than large-scale, universal suppliers. In addition it may be useful to set up alternative channels for key inputs through parallel sourcing, further raising the number of suppliers.

When firms start operating in multiple countries through local services or manufacturing, it will often be hard to find one global supplier. Some items, including many services and JIT deliveries, cannot be transported across large distances while others have to be adapted to local market demand. Thus MNCs will often be forced to develop multiple supply structures to deal with the complexities associated with geography. Even though there has recently been a trend among some suppliers, like first-tier car suppliers, to locate where their customers are and thus allow their customers to buy from a single firm, the customer will still have to deal with multiple supply points at the operational level. Therefore being geographically dispersed poses another natural limit to lowering the number of external suppliers.

Proposition 1: Firms can increase their sourcing effectiveness by lowering the number of suppliers in their portfolio, until the cost savings this generates are

outweighed by the need to involve multiple suppliers for reasons of product complexity and geographical dispersion.

Decreasing Average Relationship Intensity

The portfolio approach (Dyer, Cho and Chu, 1998) referred to above is an indication that there is also a limit to the number of high quality, partnership-like relations. Normally firms will face the problem of how to improve relations with suppliers to maximize transaction value (Zajac and Olsen, 1993) but there are clear limits to such attempts as building and improving a relation is costly in itself. The process of building trust between partners is often painstaking and lengthy (Ring and Van de Ven, 1994), which is problematic when expected payoffs are limited. In economics terms there will be a point at which the marginal cost of improving a relationship is greater than the marginal value that improvement delivers. Thus, paradoxically, under certain circumstances it may pay off to lower the extent of trust and co-operation in the relation with an existing supplier by reducing investments in that relation. This is for example the case when many new suppliers are added due to technological disruptions like the introduction of electronic devices in cars or airplanes and existing supply relations become less important due to reprioritizing. Another case is when increased commoditization of certain inputs occurs, due to wider-spread knowledge of technologies. This is something the airline industry has engaged in when it started outsourcing programming activities to the Bangalore region. Both the underlying technology became more explicit, allowing for geographical disconnection, and a wider range of potential suppliers arose because the technology was taught more widely (i.e. in India formal training programs for computer programmers were introduced). As such there was less need on the part of the airlines to manage these activities intensely.

Rather than naively assuming firms always seek to build the most cooperative relation possible, I therefore propose they will not want to do that, unless the circumstances are such that cooperative relations contribute to more effective operations since managers will want to preserve their precious time and other resources. Thus, if the asset specificity of required inputs is low, arm's length relations will commonly prevail just like in cases of limited uncertainty. As a general rule then, investments in intense relations will be directed to those places where they are perceived to be most useful.

> *Proposition 2*: Firms can increase their sourcing effectiveness by decreasing the average extent of cooperation with suppliers, until the cost savings this generates are outweighed by the need to use specific assets for producing inputs and the behavioral uncertainty surrounding transactions.

Competence Mechanism

Sourcing managers need to be concerned with the question whether to standardize communications with suppliers, with the disadvantage of missing richer communication opportunities, or to customize them, leading to more investment of resources like time. In addition they are the linking pins between the firm and its suppliers, which is an important link because knowledge is increasingly gathered and distributed among various partners in the supply chain. As such they need to invest time in gathering this knowledge from suppliers and disseminating it within the firm as well as gathering knowledge inside the firm and disseminating that to outside suppliers. Therefore their function, particularly in knowledge-intensive firms, is often not unlike that of account managers who act as linking pins to customers. The nature of the sourcing function is such that operational issues get tangled up with long term interests. Since

sourcing is directly concerned with the supply chain and thus with a firm's ability to deliver its products and services, any disruption must be dealt with immediately. A classic example of this is how Toyota used its long-term goodwill to cover short-term capacity problems caused by a calamity (Nishiguchi and Beaudet, 1998). Therefore it is often easy to draw up strategic plans and designs involving joint development and innovation but these may and indeed often are crossed by operational concerns. Firms that deal effectively with both are a step ahead.

Bensaou (1999) has argued that creating good designs to match internal and external conditions to appropriate supplier relations is one step of a competitive sourcing portfolio. The next step is to come up with managerial answers in terms of information sharing, the role of boundary spanners, and the appropriate climate, in line with this design (Bensaou, 1999). Bensaou (1999) found large differences between organizations in their ability to handle the different types of designs. Firms appear to be specialized in or at least geared towards certain designs rather than others and there is empirical evidence to demonstrate there are differences between firms in the same industry and country with respect to their managerial profile. In other words, not every firm performs equally well with a certain design. Bensaou (1999) coined such misalignment overdesign and underdesign. In the 1980s and 1990s, the U.S. automobile industry started to realize the potential benefits of buyer-supplier cooperation following the success of Japanese firms. Yet U.S. car makers have still not been completely successful in copying these designs (Dyer and Nobeoka, 2000) because of their inability to switch designs. Presumably, there is substantial path dependence in building capabilities to manage certain types of designs. If industry-wide change stimulates the adoption of different designs, firms will be stuck with their old managerial abilities. What types of relations a firm best manages will be co-determined by the imprinting conditions (Stinchcombe, 1965) of its founding period and location. Nishiguchi

(1994) has sketched in great detail how the Japanese subcontracting system arose and evolved and how elements of the original system are still present in today's subcontracting practices.

> *Proposition 3*: Alignment between the firm's historically shaped management capability for various types of supplier relations and its current supplier relations design positively modifies its external span of control.

Learning Mechanism

Through outsourcing, can firms learn how to outsource? There are indications this is indeed the case. Nike, as a classical example of outsourcing, is attributed a learning curve in its dealings with suppliers that allowed it to outsource ever more manufacturing activities and to outsource more effectively. Of course, even now Nike does not outsource all of its manufacturing. Thus previous experience allows a firm to make small adjustments to its outsourcing policies when implementing them and produces foresight over the outcomes of supplier relations. In short, experience produces learning and learning produces better decision-making abilities. Kale, Dyer and Singh (2002) have pointed at the importance of prior alliance experience in shaping a firm's alliance capability. But the distinction discussed earlier between content learning and process learning implies that there may be different mechanisms at work here. In the context of alliances Reuer, Zollo, and Singh (2002) discussed how technology specific experience and partner specific experience can have differential effects on the need to amend alliance agreements during the implementation phase. While technology specific experience leads to fewer amendments because of better initial agreements, partner specific experience increases the need to amend agreements because initial agreements will be less detailed.

One learning mechanism is where firms over time improve their insights into what are good and bad decisions. In other words, with increasing experience comes increasing insight into when outsourcing is appropriate and when it is not and under what conditions what particular type of supplier relation is most appropriate. Organizations that have outsourced previously may be able to better their designs over time by learning from mistakes since failure is an underutilized source of learning (Levinthal and March, 1993). Since governance mistakes tend to be costly there is an incentive to improve designs (Masten, 1993). So costly mistakes will eventually feed back into future decision-making, whether it is through an immediate response or because organizations are driven to the brink of extinction and activate their survival skills. Thus it can also be said that as firms outsource more intensely, they encounter more learning opportunities implying heavy outsourcers can become better outsourcers. Outsourcing then becomes the standard mode of operations. Additionally there may be self selection processes in place that cause firms that are particularly good at outsourcing to start outsourcing more, suggesting a reverse causality. Hence the causality of the relation between extent of outsourcing and span of control may be running in both directions. Where previous experience is concerned, such reverse causality will probably not exist. Previous experience gathered over time may be used to improve current decision-making. Managers that have erroneously outsourced in the past, are less likely to promote current and future outsourcing as it will undermine organizational performance and their own positions within the organization. Organizations that have experienced problems in executing Service Level Agreements with one IT supplier will be keener to hands-on manage an SLA with another supplier. Thus the length and frequency of the firm's and the manager's experience in dealing with make-or-buy decisions and supplier design relations will co-determine the firm's ability to implement such designs in the future. Gulati

(1995) discussed how prior ties positively influence the likelihood of dealing with the same partner again.

> *Proposition 4a*: A firm's extent of outsourcing positively modifies its external span of control.
>
> *Proposition 4b*: A firm's experience in outsourcing and supplier relations positively modifies its external span of control.

The second learning mechanism, then, is to do with learning how to make outsourcing and supplier relations decisions and implementing them. There are for instance issues of timing involved in terms of how often to make decisions, what is an appropriate time to start sharing certain information with suppliers, when do negative evaluations lead to termination of relations and a host of other possibilities to introduce formal mechanisms. As firms grow in size, so too does their supply base. Large manufacturing and service firms in particular are going to depend on a wide range of suppliers. It is now widely acknowledged (Donaldson, 2001) that with increasing size comes the need to formalize operations if a firm wishes to remain effective. Contingency theory states that sub-par performance results from an inability to fit the degree of formalization to the size of the firm and there is overwhelming evidence for this statement (Donaldson, 2001). Firms wishing to operate a wide range of suppliers will therefore need to formalize decision-making and feedback mechanisms in order to remain effective. In the literature on alliances the use of a dedicated alliance function has been shown to lead to more effective decision-making (Kale et al., 2002). Kale et al. even maintain that a dedicated alliance function has a stronger impact than alliance experience as such. In a similar vein some type of centralized sourcing center where decision-making is coordinated may help a firm improve its

ability to deal with outsourcing. A centralized sourcing center may for instance help in creating a collective memory but also by providing a symbolic presence to demonstrate the importance of outsourcing. More generally firms can use a wide variety of decision-making tools and structures to support their decision-making on outsourcing and supplier relations. One practical example of a decision-making tree that firms use when taking outsourcing decisions has been provided by Tayles and Drury (2001).

> *Proposition 5*: The use of formal decision-making and feedback tools on outsourcing and supplier selection procedures and of specialized structures positively modifies the external span of control.

Relational Mechanism

Some of the learning due to previous action may not occur at the level of the firm, however. In fact complicated supply chain structures like the Keiretsu and other firm-centered supply networks involve management at multiple levels (Lorenzoni and Baden-Fuller, 1995). The extent to which the focal firm and its first tier supplier are able to develop joint understanding of the products and services they develop will translate into the effectiveness of the supply chain. For instance when a first-tier supplier has, through building joint routines, developed a better understanding of the focal firm's requirements, it will be better able to manage its own (second-tier) suppliers. Thus a snowballing effect will develop. Additionally the development of joint routines between the firm and its suppliers, will allow for quicker and possibly more effective communications, freeing time for undertaking other activities with the same supplier or other suppliers. Inter-firm learning will allow a firm to increase its external span of control and provides the opportunity to add to the number of suppliers or increase the average relation

intensity. Yet in order to be able to replicate a previous experience with other suppliers it is necessary to develop particularly strong, iconic examples. For Toyota, its relation with Nippondenso is a well-documented icon of a partnering buyer-supplier relation that Toyota can relate to when building relations with other suppliers.

In supply networks that are more tightly knit more spillovers of knowledge and innovation occur. Embedded networks arise because of commonalities and associations between network members (Uzzi, 1996). Knowledge is bound to travel more freely and more swiftly in an embedded network (Uzzi, 1996). Where associations between network members are completely absent there is a need to set n 1:1 communication channels. Where associations are complete one 1:n channel suffices. This implies there is room for economizing when some degree of association exists. As firms seek to implement relational designs, it will be beneficial if at least some of that implementation takes on a repetitive character because if partners are similar such repetition will lower implementation costs or increase implementation effectiveness. The associational character of embedded networks further promotes implementation ability as information pertaining to one implementation will spillover to another implementation. Therefore embeddedness of networks will promote the realization of numerous and cooperative supplier relations. The need to manage strong and embedded supplier ties will therefore co-evolve with the ability to do so.

Proposition 6: The strength of a firm's supplier ties and their embeddedness positively modifies its external span of control.

CONCLUSIONS AND LIMITATIONS

In recent years many practitioners and authors have rightfully pointed at the potential benefits of both outsourcing and cooperative IORs. A substantial literature has arisen to describe the best design for outsourcing and supplier relations. However, finding the appropriate design given firm and transaction characteristics is a necessary but not a sufficient step towards an effective supply chain. The main point made in this paper is that not all firms are equally effective at managing outsourcing and supplier relations because there is variation in the external span of control among firms. Therefore the benefits some firms accrue from a given design may be small or could even be negative. I have demonstrated that firms cannot manage unlimited numbers of cooperative relations effectively. Attempts to do so will cause an overstretching of the span of control and large and rising coordination costs. Realizing there is such a limit and dealing with it accordingly will increase the effectiveness of sourcing. From a conceptual point of view the external span of control can be thought of as an additional explanation of dynamic firm behavior in outsourcing and supplier relations. For instance an under utilization of the external span of control provides slack for additional outsourcing. I discussed how limiting the number of suppliers and minimizing cooperation are two possible strategies to limit coordination costs. Both, however, are limited by the presence of moderating factors, implying that to improve the external span of control is often a more viable strategy.

I then moved on to discuss three mechanisms that help understand how the external span of control can be improved. The competence mechanism was first used to illustrate how firms specialize in certain types of relations and are therefore not equally effective in implementing designs. Effective implementation was shown to be dependent on the extent of alignment between the firm's relational profile and its relational designs. Using the learning mechanism the role of experience, outsourcing intensity, and formal feedback mechanisms was reviewed. All of these feed in to the external span of control and are potential methods of improving it. Finally, I

used the relational mechanism to investigate how embedded relations and strong ties may serve as ways to improve the external span of control.

In response to the point made by Barney (1999) that firm capabilities affect where firm boundaries will be, the issue taken up here is that a firm also has a capability in managing around these boundaries. Recent governance literature (e.g. Leiblein, 2003) has initiated integration attempts of firm level capabilities and transaction level considerations suggesting they are mutually dependent concepts. The external span of control is a natural bridge between these concepts since it is a firm level capability influencing transaction level performance outcomes. In terms of the 'past-present-future' approach forwarded by Leiblein and Miller (2003), external span of control is the historically determined ability of firms to economize on current transaction choices, while it also presents a path dependent platform for growth that co-determines future performance outcomes. Hence the costs and value of any given transaction are partly determined exogenously. Competitive advantage may arise from the degree to which firms are able to fit firm level capabilities with transaction level characteristics.

Obviously there are some limitations attached to the concept of external span of control as well as its treatment here. First, the claim is made that the external span of control provides an additional explanation to variance in sourcing effectiveness but it is unclear how much variance it actually explains. Perhaps the effect of implementation abilities is dwarfed by the effect of a governance mismatch, the effect of which is thought to be substantial (Leiblein et al., 2002; Masten, 1993). This is an issue that can ultimately only be resolved through empirical testing. What is clear though is that we cannot automatically assume mere managerial ignorance is at the heart of a failure by Nissan to match Toyota. In other words, implementation differences should not simply be ignored. Second, external span of control was defined in this paper but not operationalized to the fullest extent possible. This is an important step that should precede future

testing. The key means to empirically measure external span of control would be to identify the gap between intended and realized design since that describes a firm's ability to actually implement what it believes to be the best design. Then a firm's sourcing effectiveness could be simultaneously linked to its chosen design, including how that design measures up against the antecedents the firm operated under like asset specificity, and its implemented design, taking into account that there is a gap between the intended and realized designs. Such a procedure would allow researchers to clearly separate between various phases of the process. But perhaps it is necessary to identify multiple components to the concept that behave in different ways. Finally, there is bound to be an important interface between the design and implementation phases, which was not discussed here in order to simplify the discussion somewhat and to provide a starker contrast between the two phases. For instance, when making a design decision, smart firms probably take into account their ability to implement that design. In that sense, supposed governance mismatches could turn out to be a consequence of foresight about a firm's inability to implement the 'right' governance design. Perhaps US carmakers have never bothered to fully copy the Toyota system because they knew they would not be particularly successful in implementing it. Design and implementation could interact. Clearly this is an issue that warrants additional treatment.

The propositions forwarded in this paper are in dire need of empirical scrutiny. Such testing, I suggest, should start with small scale, qualitative work rather than large scale empirical testing. A multiple case study within one industry and country in which variance is sought in firms' external span of control could be worthwhile. Finding good or best practices is one possible step in this process, although highlighting particular best practices in one type of relation might not be the way forward. Reverting again to Toyota, it has been shown to be particularly good at cooperative relations, but like any firm it must also engage in some arm's length

relations. Is Toyota just as effective as GM in those relations or perhaps more or less effective? A threat by Toyota to abandon its supplier might be viewed with less fear than a similar action by GM because it holds less credibility. By addressing the whole set or portfolio of relationships, rather than just one type, such differences should come to the fore. Perhaps the car industry, particularly in Japan, will again prove to be a fruitful ground for empirical work. A mere re-reading of abundant existing empirical evidence from the angle of implementation rather than design might generate some interesting findings. Yet it would be equally important to extend the testing ground to less familiar industries like financial services.

As a further extension the concept of external span of control can perhaps also be used in the context of other external relations, like those with joint venture partners, although that was obviously not the goal of this paper. From a managerial point of view the external span of control is a capability to be guarded and developed further. The way in which to do that obviously depends upon the firm's future objectives. If firms seek to move away from commodity markets they need to upgrade the internal management of external relations accordingly, to ensure there is enough capacity to manage the required supplier relations. Alternatively, a firm's environment may force it to outsource more activities to cut costs, in which case the need arises to manage a large number of perhaps diverse suppliers. Under such circumstances the emphasis should be on routinization of coordination activities to minimize transaction costs. Managerial foresight can produce fit between the firm's capabilities and the characteristics of the transactions it engages in. In either case, firms can acquire competitive advantage by bettering their ability to implement their sourcing designs.

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