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The Role of Evolving Task Interdependencies in the Offshoring Process

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THE ROLE OF EVOLVING TASK INTERDEPENDENCIES IN THE OFFSHORING PROCESS

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ABSTRACT

The purpose of this paper is to investigate the effects of task interdependence at the organisational level on the process of offshoring. To examine these effects three explorative case studies are used to illustrate the unfolding nature of task interdependencies as companies increasingly distribute their activities. Results underline the importance of diverse task interdependencies, and illustrate their evolving role in the process of offshoring and the configuration of the operations network. This paper also proposes a conceptual framework, which illustrates the effects of task interdependence. It shows how certain developments of the unfolding offshoring process may be explained by evolving task interdependencies. We close with a discussion of the implications for both theory and practice. The paper fosters better understanding of the existing theory and knowledge of task interdependencies and the offshore outsourcing process by investigating distributed tasks, which cross not only departmental, but also organisational and national boundaries. The results also can be used by managers dealing with transferring work globally to improve the analysis of the strategic sourcing options and tackling the impacts resulting from the transfer.

Key words: Task Interdependence, Offshoring Process, Case Studies

INTRODUCTION

Cyber-revolution, market liberalisation and integration, innovative production technologies among numerous other factors related to globalisation made it possible for many tasks to be performed at a distance. The powerful forces of globalisation push more and more companies towards the global deployment of work and the process of offshoring is gaining almost institutional statues. In spite of these favourable conditions many obstacles are encountered. This paper examines one aspect of this

focusing on the evolving nature of connections and dependencies between distributed entities in the operations network.

Wong et al. (2007) argue that among many other forces affecting today's organisation, geographical dispersion of production will undoubtedly increase the role task interdependence plays. Indeed, companies nowadays resemble a dynamic, complex and globally distributed webs of internal and external task interdependences, rather than static and traditional co-located systems of production. Modern manufacturing today occurs within open systems or 'extraprises' (Karlsson & Skold, 2007) leaving companies with a constant continuous need of organising and managing these open systems.

Although the offshoring phenomenon has received a lot of attention in the literature recently (e.g. Farrell, 2004; Pyndt & Pedersen, 2006), it still remains largely unexplored how task interdependence affects the offshoring process, as the past research on work design was very much focused on collocated tasks. Building on the existing task interdependence frameworks (e.g. Thompson, 1967; Van de Ven, Delbecq, & Koenig, 1976), our research objective is to investigate the role task interdependence and related to it embedded ties play in the offshoring process, and through this to shed some light on how the effects caused by the existing interdependences on the organisational level can be mitigated.

The paper is structured into three parts. The following section introduces the concepts employed in the study and the various theoretical views about them. We then proceed with the methods and the case studies used in the paper. The next section presents the analysis and discussion, which is followed by the conclusion in which major findings are summarised, directions for further research and implications for practice are presented.

THEORETICAL BACKGROUND

The Concept of Task Interdependence

The concept of task interdependence has been known for decades. It can be traced back to the 1960s when the need for linking together different organisational units to achieve collective action was addressed in works of many organisational theorists (e.g. Thompson, 1967; Blau, 1968). Here it is generally recognised that the nature of the work and the task determines the most effective methods of coordination.

Since then various levels of analysis and approaches have been taken to study interdependence. For example, Van de Ven, Delbecq, & Koenig (1976) focus on testing previously made propositions about task interdependence at the work unit or department level of organisation. They define task interdependence at the work unit level as 'the extent to which unit personnel are dependent upon one another to perform their individual jobs' (ibid., p. 324). Crowston (1997) uses coordination theory approach for analysing different ways dependencies among task and resources involved may be managed. According to Crowston (1997) interdependence between two tasks occur when tasks share common output, and/or tasks share common input (i.e. resources), and/or output of one task is input or prerequisite of the other.

Despite the existing plurality of opinions and definitions, the key argument of task interdependence theory is present in all of them, i.e. an organisation consists of interdependent parts and joint outcome of the organisation activities is determined by contributions of its individual parts. Thompson (1967) distinguishes between three types of interdependence, which are based on the nature of work flow: 1) pooled; 2) sequential; 3) reciprocal. Van de Ven at al. (1976) extend the classification by adding the team interdependence type. Since the original titles of each type may be not self evident work flow types are visualised in Figure 1.
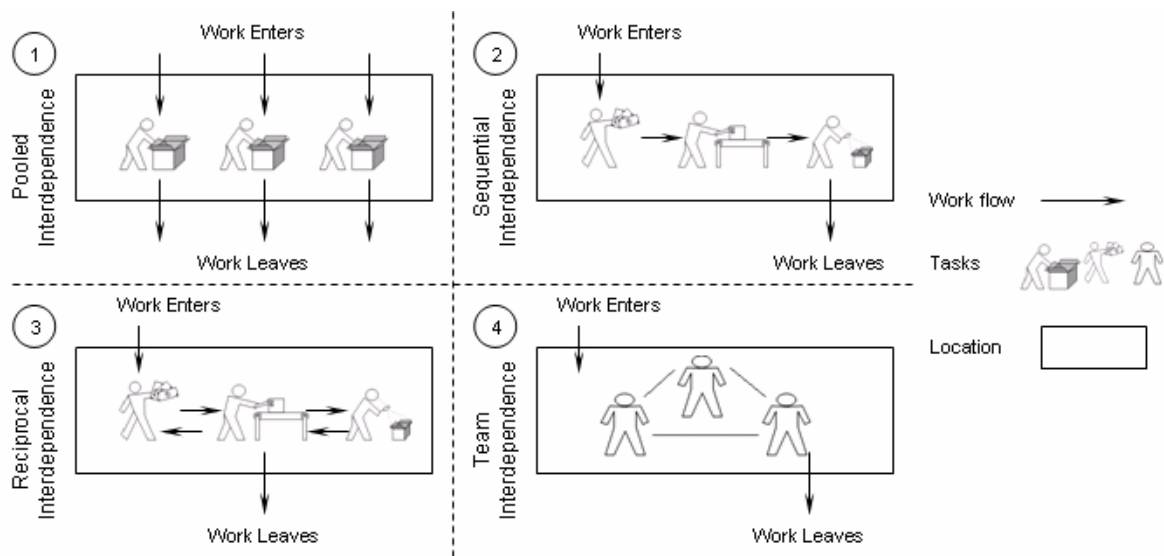
Figure 1. Types of task interdependence (based on Thompson, 1967; Van de Ven et al., 1976)

Following Thompson (1967) and Van de Ven et al. (1976) arguments, the four types can be ranked according to increasing levels of task interdependence, the pooled type having the lowest level of task interdependence, followed by sequential, reciprocal and the team types. Furthermore, Thompson (1967) points to a hierarchical link between the types of interdependence, i.e. reciprocal interdependence indicate the presence of sequential and pooled interdependence.

Supplementing this Alter & Hage (1993) argue that the role of task interdependencies in a network system cannot be fully understood without taking into account the nature of the task itself and its choice of technology. They discuss five dimensions involved in building this understanding: task scope, uncertainty, intensity, duration, and volume. Task scope is dealing with the degree to which tasks are variable and require multidimensional attention. Task uncertainty is the degree to which tasks have knowable outcomes. Task intensity is referring to the attention given to the task and the intensity of the workload involved. Task duration is referring to the length of time it takes to complete one unit of output. Task volume is the average number of units that are processed simultaneously. The impact of these basic dimensions of the task is related to the choice of coordination and integration methods, where greater complexity is likely to lead to greater integration (Lawerence & Lorsch, 1967).

Task are not the same and should be coordinated differently. However, existing interdependence also causes problems of coordination within organisations. Different types of interdependence require different means for achieving coordination (Thompson, 1967; King, 1999). According to Van de Ven et al. (1976) pooled interdependence characterised by lower relationship intensity can be coordinated by standardisation, sequential type involves planning, and in the intensive interdependence types, i.e. reciprocal and team, coordination is achieved by constant transmission of information, feedback and adjustment during the task activity. Enterprise resource planning (ERP) system and other intra-organisational information exchange mechanisms may be useful in dealing with challenges of highly interdependent settings (Bendoly et al., 2006). Yet while interdependence and the means for mitigating problems caused by it when tasks are collocated received extensive attention in the literature, surprisingly, little attention has been paid to the role task interdependence plays in the process of global distribution of work.

The Offshoring Process, Task Interdependence and Embeddedness

Over the past decades, the scene of manufacturing architecture has been seeing tremendous changes. The world has become flat, as 'flat as the screen on which a business leader can host a meeting of his whole supply chain' (Friedman, 2005:7). In these 'flat' conditions production is getting increasingly dispersed geographically as growing numbers of companies of various sizes organise their production processes and supply networks globally (Farrell, 2004). In the past, the 'Made in the World' label, although capturing what may lie ahead, seemed awkward and futuristic (Ferdows, 1997). Today, it has become a reality. The spatial changes, vertical disintegration of the value chain and production fragmentation have changed previously dominating traditional approach when companies design and manufacture most of their components domestically in-house, which currently is considered as too expensive and inflexible (e.g. Hayes et al., 2005; Mol et al., 2005) and more and more companies join a trend towards offshoring instead.

There are many connotations prescribed to the term of offshoring by academia and practitioners, and it does indeed not lend itself to one simple definition; rather it often appears to be a terminological jungle in which various definitions compete. In this paper we use a fairly broad definition of offshoring as the relocation of activities overseas to reduce costs and improve competitiveness (e.g. Pyndt & Pedersen, 2006; Farrell, 2006). When discussing offshoring, it is important to mention that its nature is more complex than the basic definition can convey. From an ownership perspective, it is possible to distinguish between at least two types of offshoring - captive offshoring and non-captive offshoring, which is often refered to as offshore outsourcing (Pyndt & Pedersen, 2006; Jagersma & van Gorp, 2007). The so called captive offshoring refers to the process of moving some of a company's activities overseas without giving up their ownership and direct control. In the case of offshore outsourcing, contractual relationships with a third party are involved and the activities are performed by external suppliers.

Both in cases of captive and non-captive offshoring, the process of relocation and global diffusion of activities pose numerous strategic and operational challenges for companies. Questions, such as what and how to offshore are well addressed in the literature (e.g. McIvor, 2005; Jenster et al., 2005; Pyndt & Pedersen, 2006). Recently, the recognition that offshoring and offshore outsourcing constitute major strategic decisions affecting the entire organisation has been growing (e.g. Heywood, 2001; Platts et al., 2002; McIvor, 2005). Several contributions from the field of general strategy (e.g. Grant, 2002) point to the importance of links between activities in choosing where to locate them. While the topic of task interdependencies has also gained much emphasis in network and organisational literature (e.g. Alter & Hage, 1993), it has not received much attention in the offshoring debate yet.

In this paper, we argue that task interdependence affects a particular trajectory and dynamics of the offshoring process. In order to understand why this happens and what the source of the salient power contained in task interdependence is, we need to take a look at the problems and challenges companies face in the process of global distribution of activities and designing work within and between organisation. What happens to task interdependencies as activities become increasingly distributed in terms of location and scope? Farrell (2004) reports of an experience based cycle where initial steps involve a disaggregating of the operations network, whereas subsequent steps point towards an increased degree of interconnectedness between distributed units. Sinha & Van de Ven (2005) distinguishes between three sets of problems: modularity, decomposition, and network. All three are inseparable elements of a joint chain of events. Firstly, a company distributing its activities globally has to deal with a challenge of business processes modularisation or dividing

work into subsystems some of which can be relocated overseas. Secondly, there is a problem of decomposition and dealing with existing interdependencies among identified subsystems. Thirdly, it goes without saying, complexity of organisation increases together with the number of countries where a company operates. A network problem emerges with managing complexity and re-establishing multiple relationships in the new setup constituting the third problem.

The role task interdependence plays in all three phases mentioned above is determined not only by economic, but also by social structures generated over time. Task interdependence here can be looked upon as a generator of embedded ties. The concept of embeddedness (e.g. Granovetter, 1985) emphasises the importance of business relationships that go beyond arm's-length state. Embeddedness is continuous and develops over time transforming arm's-length relationships to relationships based on adaptation and trust (Andersson, Forsgren, & Holm, 2002). Consequently, from this perspective the offshoring process can be seen as embedded ties dissolution and re-establishment processes, which occur when a company distributes its activity globally. In this process, task interdependence plays diverse roles which we aim to identify in the rest of the paper.

METHODOLOGY

Research Approach and Case Studies

The empirical part of the study is based on explorative case studies. The companies have been involved in the offshoring initiatives for the past several years and thus provide a valid empirical base for the analysis. The research was initiated with 20 interviews carried out over the period of August 2006 – September 2007. This number includes both formal semi-structured interview, lasting between 30 minutes and two hours, and unstructured meetings and visits to the case companies. These included retrospective interviews with companies' representatives at different managerial levels, who had been involved in activities relocation options analytical work and early stage of post-decision realisation. These interviews were supported by interviews with centrally placed managers participating in the initiative realisation. They were asked about their in process experiences and reflections. In addition, texts of varying sizes were studied, including annual reports, press releases, presentation material to customers and stakeholders, and media materials. These data, combined with the interviews transcripts, were used to build the case descriptions presented below.

The case study strategy was chosen for the inquiry for several reasons. First of all, in spite of the constantly growing scale and scope of offshoring initiatives, as well as the increasing importance of new emerging network structures, the area still remains relatively under researched, which makes the case approach particularly appropriate (Eisenhardt, 1989). Secondly, the study follows ongoing phenomena and many of their implications on various organisational processes are revealed in real time. Yin (2003) argues that case study is an appropriate strategy when the study centres on an ongoing and unfolding phenomenon, as the method does not split the phenomenon studied from its context. According to Benbasat et al. (1987), the case method allows the researcher to understand the nature and complexity of processes taking place.

However, the case approach also involves many challenges. First of all, one potential bias of this strategy can be found in the selective memory of respondents. In the current study, these were offset by triangulating the interview data, through related corporate documentation of the process and press coverage. Secondly, while providing the potential for contextual rootedness, the case study method offers limited opportunities for generalisation. The idiosyncrasy of the phenomenon may indeed undermine the level of generality of the results (Eisenhardt, 1989). However, the aim of this study is to add to a deeper understanding of the phenomena in focus, and to indicate new avenues of research.

Case A: From Manufacturing to Systems and Process Integrator

Company A is an SME offering high quality woven textiles to industrial customers. Originally it mastered a broad number of production processes in-house. In the late 1990-s, due to an accelerating velocity of competition and transformations in the external environment the company started offshore outsourcing initiatives and today it primarily manages a network of suppliers and serves as a systems integrator with close contact to customers. This involves not only managing the daily operations and logistics, but to an increasing degree monitoring and negotiating with all actors in the value chain. For example, the logistics manager maintains personal contact with the vendors of wool in New Zealand. The company buys the wool and calls on full scale spinning and weaving factories abroad to process the wool according to specifications, while it maintains control of in- and outputs.

At factories in one of the Baltic countries, weaving takes place on machinery owned by the company. The machines were previously located in Denmark. Now, the equipment is leased to the foreign supplier. High quality demands have led the Danish company to maintain and further develop production engineering competencies, when the spinning and weaving operations were outsourced overseas. The partner's plant outside Denmark was essentially an offshore full scale operation focused on costs and efficiency, while product and process development, laboratory and prototype production resided in the Danish headquarters. For quite some time after the offshoring journey of the company started, some quality sensitive operations, such as dying, softening and washing, were still carried out by the company lead factory in Denmark. However, in 2006 the decision to transfer the rest of operations abroad was made, radically shifting Danish facilities' focus and role from manufacturing to innovations, system integration and supply chain management. It meant that roles of sales, logistics and development processes, the ones closely related to control and coordination in the new set-up, increased tremendously. They emerged as new core processes replacing the actual manufacturing competence.

The subsequent processes, such as sewing and upholstery, have traditionally been carried out by customers of the company and were of their concern. But now in line with developing the new role as a system integrator, the company also offers finding suppliers for these processes. The company is not likely to undertake benchmarking production itself, but is more likely to further build up sourcing and negotiation skills, e.g. to offer prototyping and ramp-up at suppliers.

Case B: Multi-site Integration and Escalating Outsourcing Commitments

The company is a producer of products characterised by high seasonality and exposure to fashion trend fluctuations, which produces an eminent challenge of balancing its capacity to seasonal demands, while constantly updating its product line. The company had traditionally been committed to its fully owned operations in Denmark. In spite of its global market presence very few facilities were established abroad, and if so primarily for serving regional markets. However, in 2004 the perspective to global operations changed. A new management group had entered the company with the mandate to turn around the company after having suffered massive losses. An offshore outsourcing project was initiated to bring down variable cost, to cut fixed costs and to reduce complexity in the production set-up, which through the company's long history had grown due to a large number of small development initiatives, which had been connected to the company as add-ons.

The project started with the pilot phase. It included moving one product line, which made up to 15% of the company's total turnover, to an external production company in Eastern Europe. The company's previous experiences with outsourcing were limited to two areas: firstly, low volume complex speciality tasks and components for which the company had no internal resources, and

secondly, high volume capacity tasks. Now the company was turning its focus to areas which had been traditionally kept in-house. A relative success of this initial stage escalated further development of the initiative. However, the success of the test case proved to be more difficult to replicate than expected. A specific nature of the test case provided limited insight into the effects of task interdependencies in a distributed production network. The test case was based on a single site production setup while the other product lines to be transferred are formed from components produced in multiple locations.

The transition from the single to multi-site set-up also revealed that documentation of products, processes and technology was not sufficiently developed to make a clean shift. The documentation had been adequate for internal single site relationships and within the scope of the existing problem fixing culture which had always characterised the company. However, it was insufficient for the effective use by external vendors. This meant that initial tasks became documentation, process mapping and data structuring. This process included members of production staff, who at this point knew that most jobs would have to go, and it included the boundary functions, such as sales, product development, production preparation and planning and purchasing. All of which had very limited participation in the initial decision process.

A high volatility in demand due to season and trends prevented the company from building sufficient buffer stock for the transition period. It posed a serious challenge of maintaining on-going production while transferring production to external partner sites and coordinating their activities. The focus on managing the process was increased though the introduction of a sales and operations planning process, a dedicated monthly process responsible for coordinating and developing the production network. The process introduced procedural constraints on the network through instituting an increased formalisation of coordination.

The next step, which is going to be implemented over the coming years, is the outsourcing of most product lines. The idea is to maintain a ramp-up and the most complex production in Denmark, which enables the company to sustain and develop core production competencies and to maintain a close link to product development.

CaseC: The Offshoring Cycles - from Production to Competence Centre

Company C develops and produces components to the mobile telephone industry. It is known for its high quality standards and is on the forefront of innovation in the industry. The company has approximately 3000 employees, of which 75 are based at the headquarters in Denmark. In the span of 5 years the company has gone from lead production in Denmark to lead production in China through a number of intermediate steps to be outlined below.

In 1999 a customer service centre was established in China to serve the rising Asian market. As a consequence of the IT crisis in 2000 it was decided to move full scale production from Denmark to China, while all product and process development activities were retained in Denmark, along with some ramp up activities. This initial move was based on cost consideration mainly, the market was in a slump at the time, and the company believed that this would lead to an increased focus on cost. A secondary driver, but increasingly important, was the emergence of a local market in China, consisting of strong competitive players not only in China, but also on the world market. By 2006 all production activities were relocated to China, after realising that the drivers for production development in China were different from the accumulated experience in Denmark. In particular production processes in China are based more on manual work, while only quality sensitive processes are automated. This decision was reached after realising the difficulty of transferring Danish production technology and knowledge to China, but also based on the need for increased flexibility in the production.

In 2005 a small R&D department was established in Shanghai to support ramp-up activities and initial indigenous development activities in China, primarily to serve Asian customers. Proximity to the customer is still a key issue for product development and key customers still have their development activities in Europe, which supports an extension of the R&D mandate in Denmark. In 2006 it was decided to give the Chinese production site the role as competence centre for production, thus recognising that production competence was no longer primarily based in Denmark. The proximity to suppliers of key components played an important role in this decision, which has instigated the setup of a Chinese sourcing department, while only strategic sourcing remains in Denmark. By the end of 2006 a new production site in Vietnam was open, primarily because of lower wages. It was made possible with a strong support from the Chinese technical department. The production at the new site will primarily complement production at the Chinese facilities where lead production will continue take place. The delicate balance between value activities in the company has shifted, and China is now the focal centre of operations activities, and both R&D activities and ramp-up competencies are being established in China, thus expanding the strategic roles of production.

DISCUSSION

The case descriptions above show that there are some important contextual differences between the three case companies, such as the industries they operate in, the location of facilities, the complexity of their products and tasks to mention just a few. However, despite these differences in context, some overarching similarities can be extracted from the companies' experiences and approaches to transferring in-house activities to partners overseas. It points to the existence of common patterns in how the offshoring process evolves and helps to identify the roles task interdependence plays in it.

Geographical dispersion of production in all cases meant greater complexity. As one vice president in case B notes:

'It is taking a lot more effort than we anticipated. There are many complexity adds to the equation, because now we have a more intense flow of components and a more complex set up'.

The tasks which were previously collocated within a single site (as illustrated in Figure 1, p. 3) due to the offshoring initiative have to be performed at a distance (Figure 2).
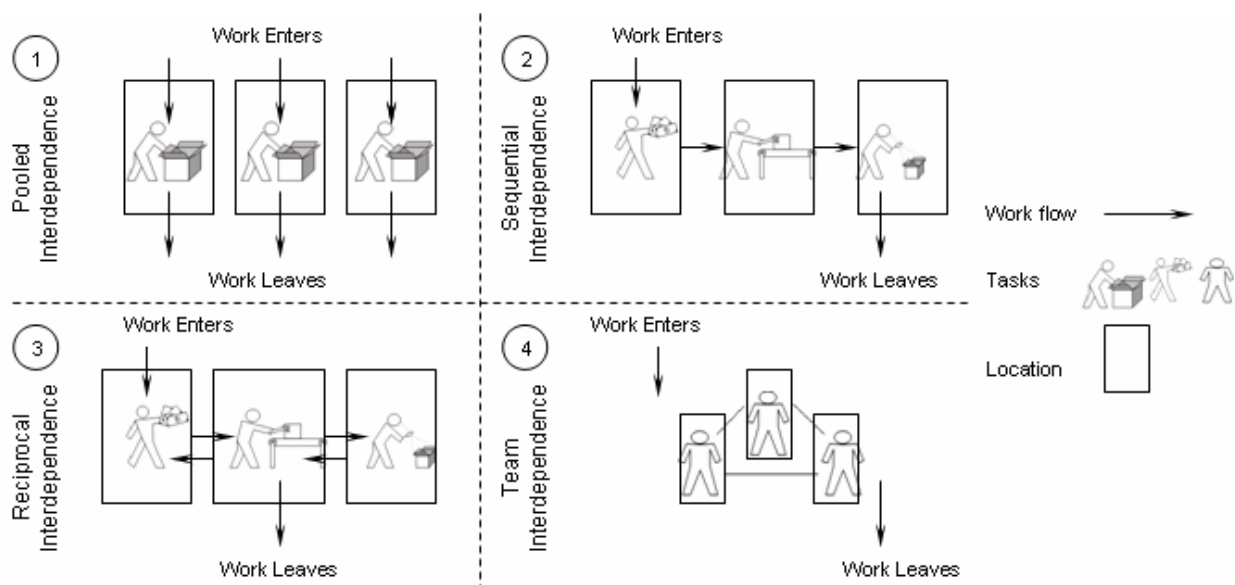

Figure 2. Types of task interdependence in a globally distributed network

Here the question arises whether offshoring really lead to increased complexity or is it just the experience of complexity that increases, due to increased uncertainty of the situation and due to the new configuration of embedded ties. We argue it is to a larger extent the latter. The conclusion of that may be drawn from all three cases. The necessity to deal with multiple locations, a number of cognitively distant partners, and the occurring communication gap sharpen the perception of uncertainty. As a result it makes complexity seen from this perspective more visible in this new situation, which the companies struggle to approach through known means. According to Heywood et al. (2007) institutional complexity as such should not be seen as a problem to be eradicated, due to a number of reasons. First of all, complexity is associated with new opportunities potentially benefiting the organisation. Secondly, battling complexity through adjusting organisational systems may prove to be counter productive and generate even more complexity. Hence, the question is how to manage effectively the uncertainty resulting from offshoring process dynamics.

The choice of coordination and management mechanism is influenced by the level of uncertainty experienced in the task itself and in the environment. Some tasks lend themselves readily to specification and can to a large extend be programmed, while others are characterised by a large number of alternatives, fast changing production know-how and an underlying ambiguity, which does not lend themselves to the control of simple rules. Ferdows (2006) suggests that to capture this dynamism in addition to the level of codification of tasks and procedural knowledge, the pace of change in the production process must be taken into account.

The rate of change obviously makes the codifying process more challenging, while the need and level of feedback of information increases with the increasing complexity, but it also means that it becomes more difficult to get that information feedback. We have seen how case B has addressed this issue, through the establishing of a sales and operations planning process, which takes feedback into account on a monthly basis, but which also creates a relational lock-in that provides a much needed stability between meetings.

Structuring and decomposition of individual tasks and processes prior to the commencement of the offshoring process is another measure helping to reduce uncertainty. Case A approach entailed splitting the business into individual modules and organising in units that are independently managed as individual companies. Individual tasks were also structured as much as possible. However, there are certain challenges involved in the process. Senior manager in case A explains:

'It's always been a struggle from what I have experienced – when we are buying from our units the documentation is 'too weak' and the processes are not described properly. And from here you get the problems when you want someone else to do it'.

Another lesson that can be learned is that the increased distribution of production introduces sensemaking inconsistencies between previously integrated organisational units. While these units were previously able to rely on problem solving on site, this activity needed to be replaced by common standards and formal specifications, which puts more pressure on the standardisation of boundary relations. The units need to bridge these inconsistencies in order to establish a functional operations network. A senior director in case B explains:

'We have a big team of people working on updating specifications. It is known internally in the company what is the standard and there are lots of things you don't need to describe. Now we have to describe that and we also have to translate them from an internally understood language to something that is broadly understood'.

However, even when composite tasks are described, structured and are ready for being offshored problems related to how interdependent these tasks with other sub-tasks arise. After transferring the pilot production line to an external partner, case B experienced unexpected difficulties with moving

the rest of production, as interdependence related outcomes started to emerge. A senior director in case B notes:

'In the process we realised that there is an impact on some of the very traditional line functions when we are outsourcing… But we realised the implications fairly late in the process and if we should do it all over again we would have looked into those implications a lot earlier'.

Hence, it shows that although production is generally perceived as having a high degree of transferability and is often perceived as having limited strategic importance (Wheelwright & Hayes 1985), the production offshoring and offshore outsourcing process may have much wider implications for the organisation than was initially anticipated. The explanation of this may lie in the boundary relations that production holds to other units in the operations network and to external partners. Links once affected resonate beyond the initial scope of the project. As illustrated in Figure 3 'stickiness' of one offshore task lifts up the whole web.
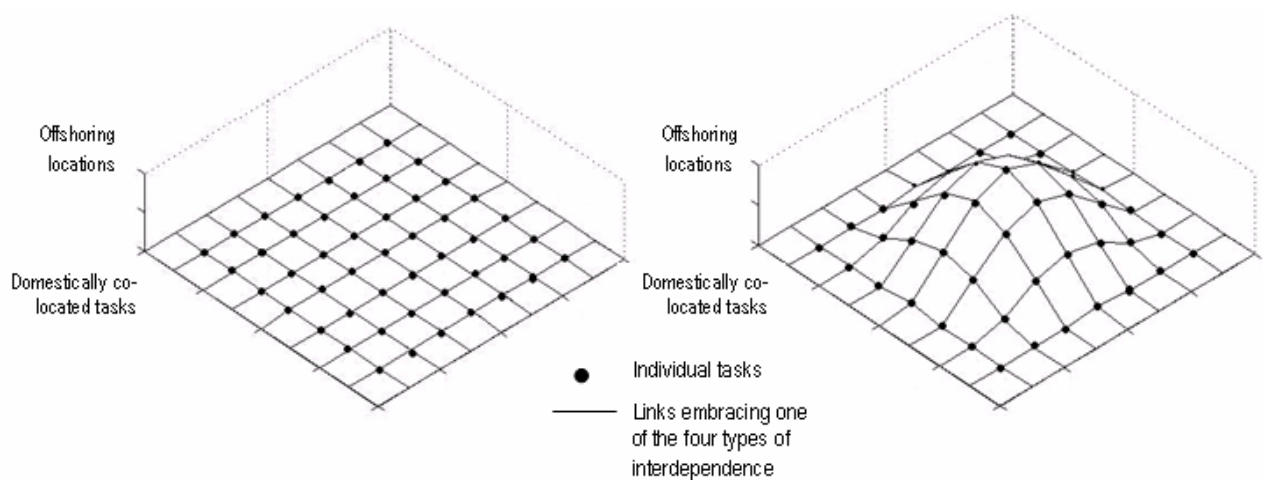

Figure 3. Tasks' web in cases of co-located and globally distributed activities

In practice some links are more important than others and they often receive intensive attention prior and during the offshoring process. In the case companies the links which attracted the most attention were related to quality controls, sales and operations coordination, and new product ramp-up. The more subtle and often informal in nature ties were the most difficult to manage as they were often overlooked on the preparation stage and consequently received little attention during the transition process. This points towards a related implication for practice. Especially in the case of tightly integrated tasks there is a need for mapping all possible links and interfaces that may be affected by the offshoring initiative.

Reflecting on the pattern the interdependencies evolve, it resembles the 'rings in the water' mode where a company moves from desegregation of old internal interdependencies to establishment of new interconnectedness between distributed units. As case C illustrates quite well these developments may occur in several cycles.

In terms of reintegration and the coordination mechanisms used, several lessons may be learned from the analysed cases. First of all, in the new setup not all links that were eliminated to reduce interdependence need to be re-established. It is also important to look at the basic nature of the network as a governance form and to try to use its strengths. Secondly, the salient power of task

interdependence comes into play helping to utilise self governance mechanisms. Over time relationships between units in the new set up may institutionalise through experience from running daily activity, strengthening interdependence and embeddedness . In other words, companies build a basis for coordination through contracts and procedures (whether internal or external) detailing key issues such as regime of activity, quality, etc.

Figure 4 summarises the discussion by bringing together the three problems identified in Sinha & Van de Ven (2005)(i.e. modularisation, decomposition, and network), changing nature of business relationships and roles of task interdependence in relation to them.
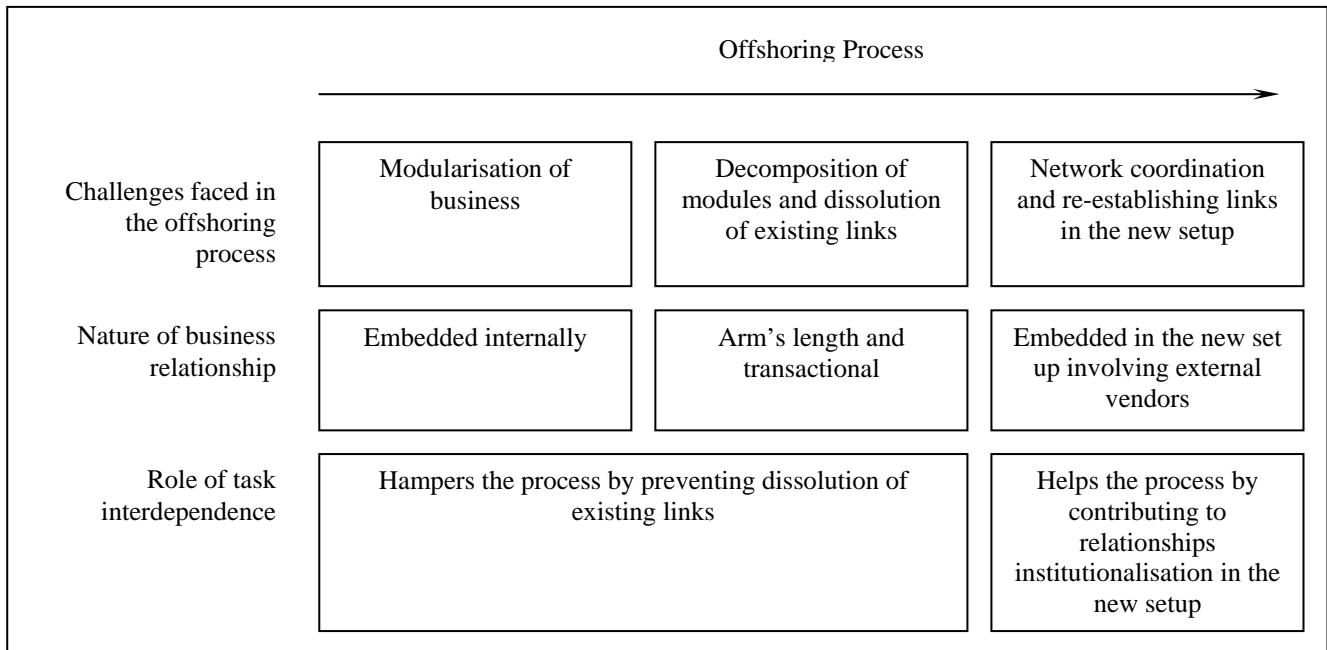
	Offshoring Process		
Challenges faced in the offshoring process	Modularisation of business	Decomposition of modules and dissolution of existing links	Network coordination and re-establishing links in the new setup
Nature of business relationship	Embedded internally	Arm's length and transactional	Embedded in the new set up involving external vendors
Role of task interdependence	Hampers the process by preventing dissolution of existing links		Helps the process by contributing to relationships institutionalisation in the new setup

Figure 4. Offshoring process challenges, changing business relations and roles of task interdependence

The offshoring process can be seen as the shift in the actors performing activities, the resources used for that and the activities themselves. According to Karlsson & Skold (2007) all three elements can be combined differently in different situations. The untangling and re-establishing of interdependencies has effects on all three of them and the process as a whole.

CONCLUSION

The main findings of the paper are conceptualised visually in a framework, which is based on task interdependence theory and show how certain developments of the unfolding offshoring process may be explained by task interdependence and previously existing tacit linkages between the units of the organisation. Based on the result of the investigation, we argue that the salient power contained in task interdependence and related embedded ties may help to explain a particular trajectory of the offshoring process.

The empirical examination highlights the implications of the relationship between various globally distributed tasks and how problems associated with that may be mitigated. We believe that incorporation of the task interdependence analysis into the offshoring process management frameworks may allow for better understanding of the offshoring process and may assist managers of companies embarking on the offshoring path in organising the process successfully. With the

evolution of interdependencies also follow an evolution in means for managing the operations network. One key implication, therefore, seems to be that management practices that work well in one phase may bring on a crisis in another.

The findings indicate that on the one hand historically generated embedded linkages between organisational units or tasks are very difficult to dissolve. On the other hand, if dissolved in order to transfer activities overseas, re-establishment of once embedded linkages in a new context is a very complex task. Thus, on the offshoring initiative planning stage mapping of the existing interdependencies and ties is crucial. The awareness of the type of interdependence and strength of ties, the company deals with, increases preparedness of organisational units for potential new roles they may get. It also helps to preserve crucial for the survival of the organisation ties, as well as helps in the process of re-establishing ties in new transformed set-up.

The findings of the paper foster a better understanding of the process of offshoring and task interdependence as one of the factors which affects it. They also can be used by managers dealing with transferring work globally, and help improving the analysis of the strategic sourcing options and tackling volatility resulting from the transfer of work overseas. The paper points toward the transition between different types of interdependencies as a fertile domain for future research. The limitations of the study are related to its exploratory nature. We have seen how companies pass though various cycles that may resemble "rings in the water", but so far we know little about what happen in these transitions and how companies may start to deal with these.

REFERENCES

Alter, C. & Hage, J. (1993). *Organizations Working Together*. Newbury Park, CA: Sage Publications.

Andersson, U., Forsgren, M., & Holm, U. (2002). The Strategic Impact of External Networks: Subsidiary Performance and Competence Development in the Multinational Corporation. *Strategic Management Journal*, vol. 23, pp. 979-996.

Bendoly, E., Bachrach, D. G., Wang, H., & Zhang, S. (2006). ERP in the Minds of Supervisors: Joint Roles of Task Interdependence and Cultural Norms. *International journal of operations & production management*, vol. 26, no. 5, pp. 558-578.

Blau, P. M. (1968). The Hierarchy of Authority in Organizations. *The American Journal of Sociology*, vol. 73, pp. 453-467.

Crowston, K. (1997). A Coordination Theory Approach to Organizational Process Design. *Organization Science*, vol. 8, no. 2, pp. 157-175.

Farrell, D. (2004). Beyond Offshoring: Assess Your Companies Global Potential. *Harvard Business Review*, vol. 82, no. 12, pp. 82-90.

Farrell, D. (2006). *Offshoring: Understanding the Emerging Global Labor Market*. Boston: Harvard Business School Press.

Ferdows, K. (1997). Made in the World: The Global Spread of Production. *Production and Operations Management*, vol. 6, no. 2, pp. 102-109.

Ferdows, K. (2006). Transfer of Changing Production Know-How. *Production and Operations Management*, vol. 15, no. 1, pp. 1-9.

Friedman, T. (2005). *The World is Flat: A Brief History of the Twenty-First Century*. New York: Allen Lane.

Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, vol. 78, no. 6, pp. 1360-1380.

Grant, R. M. (2002). *Contemporary Strategy Analysis: Concepts, Techniques, Applications*. Oxford: Blackwell.

Heywood, B. J. (2001). *The Outsourcing Dilemma: the Search for Competitiveness*, London: Prentice Hall.

Heywood, S., Spungin, J., & Turnbull, D. (2007). Cracking the Complexity Code. *The McKinsey Quaterly*, vol. 2, pp. 86-95.

Jagersma, P. K. & van Gorp, D. M. (2007). Redefining the Paradigm of Global Competition: Offshoring of Service Firms. *Business Strategy Series*, vol. 8, no. 1, pp. 35-42.

Jenster, P., Pedersen, H. S., Plackett, P., & Hussey, D. (2005). *Outsourcing - Insourcing: Can Vendors Make Money from the New Relationship Opportunities?* Chichester: John Wiley&Sons Ltd.

Karlsson, C. & Skold, M. (2007). The Manufacturing Extraprise: An Emerging Production Network Paradigm. *Journal of Manufacturing Technology Management*, vol. 18, no. 8, pp. 912-932.

King, A. (1999). Retrieving and Transferring Embodied Data: Implications for the Management of Interdependence within Organizations. *Management Science*, vol. 45, no. 7, pp. 918-935.

Lawerence, P. R. & Lorsch, J. W. (1967). *Organization and Environment*. Boston: Harvard University Press.

McIvor, R. (2005). *The Outsourcing Process: Strategies for Evaluation and Management*. Cambridge: Cambridge University Press.

Mol, M. J., Rob, J. M., van Tulder, & Beije, P. R. (2005). Antecedents and Performance Consequences of International Outsourcing. *International Business Review*, vol. 14, pp. 599-617.

Platts, K. W., Probert, D. R., & Canez, L. (2002), "Make vs. Buy Decisions: A Process Incorporating Multi-attribute Decision-making", *International Journal of Production Economics*, vol. 77, pp. 247-257.

Pyndt, J. & Pedersen, T. (2006). *Managing Global Offshoring Strategies*. Copenhagen: CBS Press.

Sinha, K. K. & Van de Ven, A. H. (2005). Designing Work Within and Between Organizations. *Organization Science*, vol. 16, no. 4, pp. 389-408.

Thompson, J. D. (1967). *Organizations in Action*. New York: McGraw Hill.

Van de Ven, A. H., Delbecq, A. L., & Koenig, R. Jr. (1976). Determinants of Coordination Modes within Organizations. *American Sociological Review*, vol. 41, no. 2, pp. 322-338.

Wheelwright, S. C. & Hayes, P. H. (1985). Competing Through Manufacturing. *Harvard Business Review*, vol. 63, no. 1, pp. 99-109.

Wong, S., DeSanctis, G., & Staudenmayer, N. (2007). The Relationship Between Task Interdependency and Role Stress: A Revisit of the Job Demands-Control Model. *Journal of Management Studies*, vol. 44, no. 284, p. 303.