

# Global operations networks in motion: Managing configurations and capabilities

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**Abstract** In the past, the ‘Made in the World’ label, although capturing what may lie ahead, seemed awkward and futuristic. Today, it has become a reality. An ample array of global products are built up of numerous components and modules manufactured by global networks of differentiated partners rather than within the boundaries of one national entity. The purpose of this paper is to contribute to bridging the empirical gap in the area of global operations networks and provide insights into how they change over time. The paper is based on the cases of three Danish companies and their global operations networks. It finds a number of common patterns highlighting organizational effects and managerial challenges faced by the companies regarding rapid changes in their networks configurations and capabilities. The paper details the variables determining these changes and suggests how the on-going interplay between the focal organization, its network partners, and their varying contextual conditions can be dealt with.

**Keywords** Global operations · Network configuration · Capabilities · Case studies

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## 1 Introduction

In the current context of global economic liberalization and technological advancements, industrial companies are less likely to produce products in the traditional vertically-integrated value chain. Instead, these companies are doing it by means of elaborate cross-border and cross-organizational arrangements, which we refer to in this paper as global operations networks. The emergence of such networks represents one of the most identifiable trends in the manufacturing industry (Shi and Gregory 2005).

The shifting focus from the orientation on separated manufacturing sites to globally dispersed networks of such sites poses enormous challenges for operations management (OM) practice and theory. Achieving excellence in global operations requires that focal organizations have the expertise required for aligning internationally dispersed operations into a cohesive global network. For many companies, attempts to achieve this alignment turn into the management of a moving target. The operations network is in a constant motion as the powerful forces of globalization push companies towards the continuous re-deployment of work on a global scale. This trend no longer exclusively involves non-core or standardized tasks but increasingly also core and mission-critical activities (Lewin and Couto 2007).

To adequately address the increasing importance and magnitude of geographic dispersion of work, basic conceptualizations developed by the industrial networks scholarship (e.g. Easton 1992; Gulati et al. 2000; Håkansson and Ford 2002) ought to be developed further. There is widespread recognition of this in the professional and academic literature, which calls for further research on the phenomenon (e.g. Ferdows 1997; Shi and Gregory 1998; Farrell 2004; Pyndt and Pedersen 2006; Mudambi 2008).

This paper taps into the emerging body of literature focused on the management of constantly changing agglomerates of globally distributed sites. The purpose of the paper is to provide empirical insights into configurations of global operations networks and their evolution over time. We aim at identifying the strategic implications of such evolution for the roles and capabilities of the focal organization. We also aspire to pinpoint the key managerial demands and challenges that organizations face during intense and rapid configuration changes.

The paper has three parts. The following section introduces the theoretical background of the study. We then proceed with the methods and the case studies used in the paper. The third section presents the analysis and discussion before we conclude with key lessons learned, implications for future research, and limitations of the study.

## 2 Theoretical background

Global production networks as a research field took off in the operations management and manufacturing engineering disciplines. Over the last two decades, increasing vertical disintegration of value chain and widening collaborative manufacturing have challenged the traditional view of firms as autonomous entities and indicated the necessity of viewing them as parts of networks. Gulati et al. (2000) argue that any meaningful analysis of an industry has become impossible without considering the networks connecting firms within it. These networking features of the transforming manufacturing system raise many new theoretical questions and stimulate global production networks research (Shi and Gregory 1998; Ernst and Kim 2002).

Globally distributed network design and management issues have been discussed in a number of studies (e.g. Sturgeon 2001; Vereecke and Van Dierdonck 2002; Ferdows 2008). They address various aspects of questions concerning ‘why, where and how’ a company distributes its operations globally. These aspects include plant roles, levels of competence, and location decisions. However, much of the existing research has focused primarily on intra-organizational network and has adopted a rather static perspective (Shi 2003). Literature discussing the longer-term dynamics of the distributed structure as well as the organizational effects of its reconfiguration is mainly conceptual (Håkansson and Ford 2002; Gereffi et al. 2005), and there seems to be a clear empirical gap in this realm.

Although the first steps in examining the conceptual underpinnings of global operations networks have been made, the phenomenon is still not fully understood in terms of variety or effects. A closer examination of some debates

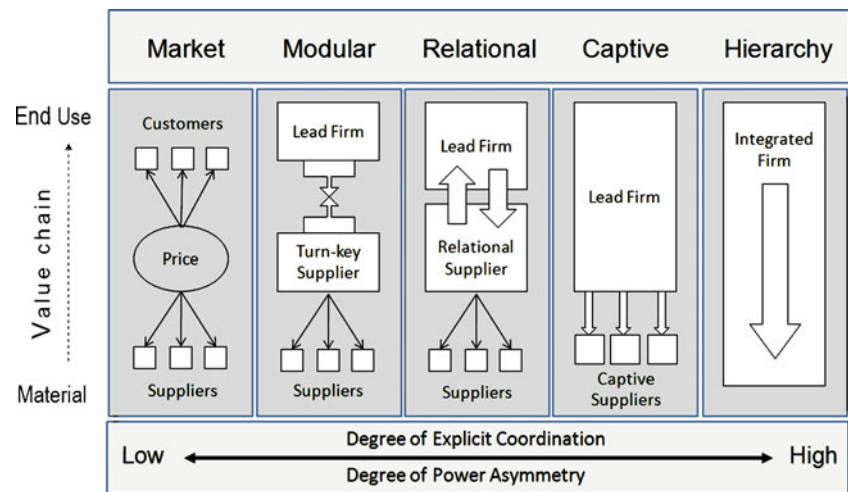
on global operations networks shows that neither a common understanding nor a consistent definition of the phenomenon exists. Hayes et al. (2005) call emerging corporate networks ‘virtual organizations’, which, due to a strong drive towards outsourcing, led to a redefinition of long accepted organizational boundaries. Sturgeon (2001) describes production networks as ‘the totality of the external linkages created by contracting relationships in larger amalgams of firms’. Ghoshal and Bartlett (1990) conceptualize the MNE as an interorganizational network that is embedded in an external network consisting of all other organizations, such as customers, suppliers, and regulators. Such a conceptualization shifts the focus away from the simple dyadic relationships between headquarters and subsidiaries to the coordination task of managing a network, certain attributes of which are related to structural properties of its external network. From the operations configuration literature perspective (e.g. Srari and Gregory 2008), four key elements constitute network configuration: network structure (location, composition, ownership, etc.), key unit operations (process steps, information and material flows, etc.), inter-relationships between units (roles, interactions, etc.), value structure of the product or service (sub-assembly, modularity, platforms, etc.).

Such global operations agglomerates are not stable. They may rather be understood through their temporality. From the outset, vendors may be given only operational roles, while the focal company keeps the responsibility for innovation, product development, design, and other strategic activities. However, such distribution of roles within a group of companies is likely to change over time. For example, Dicken (2007) points to the essential dynamism and organizational temporality of production networks. The constant ‘process of becoming’ that applies to global operation networks poses a major challenge for decision making and strategy development in the companies involved.

Gereffi et al. (2005) also highlight this dynamic nature of various types of global operations networks while acknowledging that more work is needed to fully understand the dynamic characteristics and change drivers of the phenomenon. In their work, Gereffi et al. (2005) use the term *global value chain*. In this paper *global value chains* and *global operations networks* terms are used synonymously referring to the totality of the linkages binding a bundle of firms into an economic unit. We have chosen to use the work of Gereffi et al. (2005) to create a basis for our investigation. Their study identifies five conceptualizations of network structures based on their governance type (Fig. 1).

Compared to other studies of global value chains and production networks, this typology is more complete. In addition to Market and Hierarchy types identified by the

**Fig. 1** Five types of network governance (adopted from Gereffi et al. 2005)



transaction cost economics (TCE) approach, it nuances the network category and proposes three distinct types: Captive, Relational, and Modular. These are determined by three key elements: complexity of transactions, codifiability of knowledge, and capabilities in the supply base. The three determinants are also linked with demands on the degree of explicit coordination and power asymmetry.

Although Gereffi et al. (2005) acknowledge that the five types are not ‘monolithic’ and their governance patterns are not static, the topic of transition between the archetypes does not receive much attention in their work. Paradoxically, the nature of much of the previous research dealing with the ‘mechanics’ of operations networks can be described as largely ‘aprocessual’. The literature seems to ‘lock’ the phenomenon into a number of isolated states while their interplay over time is largely neglected. In the rest of this paper, we attempt to address this gap and create a fuller account of how global operations networks evolve over time. The analytical cornerstone of this study is the perspective that research on operations networks should cover not only the content of isolated states but also their context and how they relate to each other over time. The processual perspective has the potential to elucidate the real complexity of a phenomenon (Pettigrew 1990; Van de Ven and Huber 1990). Therefore, in this investigation we focus on configuration changes occurring in global operations networks over time and thereby aim to create a more holistic understanding of the phenomenon and its implications.

### 3 Methodology and case studies

The nature of the research objectives for this study suggests an explicit aim to develop understanding and insights in a particular area rather than validate existing theory. The empirical part of the study is based on three exploratory case studies. The case study, one of several strategies of

qualitative enquiry, has been chosen for this investigation for several reasons. First, case studies can describe, enlighten and explain real-life phenomena that are too complex for other approaches requiring tightly structured designs or pre-specified data sets (Voss et al. 2002; Yin 2009). On the other hand, case studies do not have to be ethnographic or participatory action research based. They are ‘defined by interest in individual cases, not by methods of enquiry’ (Stake 2003:134). Second, the case study strategy is well equipped instrumentally for furthering understanding of particular issues or concepts which have not been deeply investigated so far (Eisenhardt 1989; Voss et al. 2002; Yin 2009). Last but not least, the choice of the case study strategy is also based on the fit between case research and OM (Lewis 1998; Voss 2009), which is acknowledged but underexplored in the literature. The OM research area deals with both the physical and ‘soft’ elements of the organization or, as Hayes and Wheelwright (1984) put it, structural and infrastructural elements. Both elements are present in the current study; the case study strategy provides very powerful research tools for capturing these elements (Voss 2009).

Case study research has several pitfalls and poses significant challenges (e.g. Flynn et al. 1990; Meredith 1998). First, there is the problem of the observer’s perceptual and cognitive limitation. Second, a high probability of overlooking some key events also constitutes a threat to the quality of case studies research. Third, case studies are exposed to the challenge of generalizability. Fourth, the accuracy of some inferences can be undermined by the reliance on intuition and subjective interpretation of an investigator.

To address these challenges and formulate a research design of high validity and reliability, we followed practical guidelines and steps discussed in qualitative methodology literature (e.g. Miles and Huberman 1994; Yin 2009; Voss 2009). The current research relied on extensive use of

triangulation and research protocol. We used multiple sources of evidence (semi-structured interviews, documents and on-site observations) as well as triangulated multiple data-points within each source of evidence (e.g. multiple respondents at top and middle management levels). These data combined with secondary material (annual reports, media material, presentation material to customers and stakeholders) were used to build the case narratives presented below.

The actual events in the cases were traced over time through a combination of retrospective and real-time analysis. All three cases were followed intensely by the authors in June 2008–June 2009. However, global dispersion of work in the companies started prior to our involvement in the cases. Therefore, some events relevant to the study had to be captured in retrospect. In collecting data, the formal protocol was followed as much as possible. The main part consisted of a set of open case study questions, which derived from the reviewed literature and other sources of theoretical sensitivity (e.g. the researchers' previous experience). However, due to the rather iterative and unfolding nature of multiple-case study research (Pettigrew 1990), it was almost impossible to routinize data collection procedures; on many occasions relevant specific information was not readily available. In these instances, adaptiveness had to be balanced with rigor, and alternative leads had to be pursued. The research concepts emerging from the study were refined through a series of deductive and inductive iterations grounded in the empirical observations as they emerged over time (Balogun et al. 2003).

This study uses multiple-case design. Multiple-case designs are generally considered to be stronger and more robust than single-case designs (e.g. Pauwels and Matthyssens 2004; Yin 2009; Miles and Huberman 1994). Although the single-case study may provide greater depth, such a design is potentially vulnerable to misjudging the representativeness of a single event. In addition to enhancing external validity, the analytic benefits of having multiple cases are significant (Voss et al. 2002). Although this study was aiming at replication, it did not seek direct or literal replication, meaning that there was a high likelihood that the cases would offer contrasting results.

The number of cases deemed sufficient for the study was decided through a discretionary judgmental process. According to Yin (2009), because sampling logic is irrelevant to the multiple-case study design, the typical criteria regarding sample size do not apply either. Instead, this matter was approached as a reflection of the number of case replications that satisfy the desired level of theoretical saturation of the study. Achieving a higher degree of certainty about the propositions of the study also played a role in deciding the number of cases.

The key criteria for the selection of the cases were: 1) companies were undergoing the process of global dispersion of operations; 2) new relationships in this process were emerging both in the intra-organizational and inter-organizational realms. Through these screening criteria and on the basis of considerations about the access to data and illustrative power of the cases, three cases were selected for this investigation. When selecting the cases, a number of controls were considered. Controls are the parameters or factors that define the population and are to be 'held constant' across the group of selected cases (Yin 2009). In this study, several dimensions were used to control for irrelevant sources of variance. First, although the selected case companies represent different industries, they all work in businesses characterized by strong seasonal and fashion trend fluctuations. Second, all three cases represented a similar setting of production companies whose operations traditionally used to be located mainly domestically. Third, the cases had to pass a baseline test of global operations strategy. In other words, they had to have contours of their operations network and ideas about managing their operations in an international setting.

All three case companies have several years of experience of running global operations networks. The basic performance indicators suggest that the companies have succeeded in surviving and successfully developing themselves within competitive industries that have become increasingly globalized in the last two decades. Despite all the similarities, the companies have moved along different paths to reach their current competitive position on the market.

### 3.1 Company A: dynamics in the vertically integrated supply network

The company is a Danish MNE working in the footwear and apparel industry. The focus on maintaining in-house operations is deeply rooted in the corporate philosophy. In-house production accounts for 80% of total production. The remaining 20% part is outsourced because some shoes models contain specific features for which the company's proprietary technology cannot be used. In an industry where the dominant logic is upstream activities outsourcing, the case distinguishes itself from its competitors. The proprietary production technology has always been perceived by the company as a core competence.

Although kept in-house, the company's value chain is distributed on a global scale. The activities of the home-based site in Denmark are limited to prototype production, technology development, and tooling. The site is also in charge of the development of children's lines, which is one of the smaller business units. The company has shifted its focus from domestic operations to sales by establishing an

international network of wholly owned retail outlets, which make demands on a wider product portfolio and continuous replenishment. These new demands hold significant implications for global operations network configuration.

In 1984, the first factory outside Denmark opened in Portugal. Currently, production activities in Portugal have been downscaled as the focus there has switched to development. Volume production has been transferred to Indonesia, Thailand, China and Slovakia. The Portuguese team has gathered relevant know-how based on years of production experience, which enabled the upgrade of the site. It has gradually taken over the role which was previously carried out exclusively by the Danish site. However, the tools, moulds and prototypes are still produced in Denmark to ensure best fit among various projects.

While the main part of new products, technologies, and prototype development as well as laboratory production are carried out at the production site in Denmark, the actual establishment of the production system, including the streamlining of processes and the specific volumes of various kinds of materials, occur in the foreign production units. Over the years the company has been working with a sharp division of tasks between Denmark and its various foreign production sites. Earlier, operations in Denmark encompassed all design, prototype, ramp-up, quality control, branding, marketing and most R&D, while the foreign plants performed volume production. Recently, this configuration has started to change and the company has started to relocate many R&D activities to its globally distributed production sites. The R&D activities conducted at the production sites evolve around support for the production process and optimization of materials while all new concepts and design decisions are made in Denmark. However, new concepts development and design activities are also getting increasingly difficult to undertake exclusively at the Danish base. This occurs due to the interdependencies these activities have with operations. In order to respond to this, the design team now spend a large part of the year travelling to the various production sites.

### 3.2 Company B: diverging from captive operations

The company 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 1990s, accelerating velocity of competition and transformations in the external environment of the company revealed the need for changes in the strategic activity. During this period, the company started outsourcing some of its activities and later also started buying finished fabrics from external suppliers as part of an effort to meet a wider set of demands from key customers. The new strategy was now to grow with the 25 largest customers in the market, a

strategy which had some clear implications for the company's operations capacity and capabilities.

Outsourcing was a major strategic decision affecting the entire organization and was vividly compared with an octopus reaching into every nook and cranny of the business. A manufacturing company in the past, today it primarily manages a network of suppliers and serves as a systems integrator with close contact to customers. This involves not only managing daily operations and logistics, but to an increasing degree also 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 in processing it to specifications it relies on full scale spinning and weaving factories abroad.

At factories in one of the Baltic States, weaving takes place on machinery owned by the company. The machines were previously located in Denmark and are, currently, leased to the foreign supplier. When the spinning and weaving operations were outsourced, high quality demands led the Danish company to maintain and further develop production engineering competencies. The partner's plants outside Denmark were essentially offshore full-scale production focused on cost and efficiency while product and process development, laboratory and prototype production remained in the Danish headquarters. After the operations network of the company crossed the national borders in 2000, some quality-sensitive operations, such as dyeing, softening and washing, were for some time carried out at the company's main factory in Denmark. However, in 2006, the decision to transfer the rest of operations abroad was made. This radically shifted the focus of the Danish facilities and their role from manufacturing to innovation, systems integration and supply chain management. Supplier relationship management has become one of the key focus areas of the company. The strategic partners of the company are not contractually bound to stay in the relationship; hence the relational approach plays the key role in how the company manages its operations network.

The subsequent downstream processes, such as sewing and upholstery, have traditionally been carried out by customers. However, since 2006, in line with developing the new role as a systems integrator, the company also offers the service of finding suppliers for these processes. The company is not likely to undertake upholstery operations itself but is more likely to further build up sourcing and negotiation capabilities.

### 3.3 Company C: combining in-house and outsourced operations

The company is a Danish SME in the furniture and accessories industry. Within recent years, the company has

changed its focus from production to retail (either wholly owned retail outlets or control through a franchising concept). The main production of furniture is split into two categories: upholstery and flat-pack furniture. A number of the company's upholstery production units have been outsourced overseas. A few years back, the company chose to outsource its production of upholstery furniture because the required production skills were less complex and more labour intensive in this area as compared to the flat-pack area. Other reasons for keeping the flat-pack furniture department in-house were mainly flexibility and quality demands on the production, a lack of alternatives in Eastern Europe or Asia, and tradition within the company (the flat-pack furniture division is a merger of the original two mother companies).

The upholstery production unit in Denmark was bought by the former management of the facility and moved to Lithuania to reduce labour costs. Currently, the company has a very close relationship with this supplier regarding product development. The supplier is still run by the old management group from Denmark whereby a high level of trust has been maintained between the company and the outsourced company. The company uses an external design company, which develops new designs together with the suppliers and the company's own product managers. This approach involves quite a lot of travelling, mainly for designers and product managers as they meet at different globally distributed production units to discuss new designs and their production technology.

The other main supplier of upholstery furniture is located in China. Due to the supplier's lack of knowledge about the company's quality demands, the decision was made to establish a control unit in China. Moreover, the company's quality controllers from Denmark are positioned in each supplier's factory (upholstery furniture and accessories as well as other types of furniture are sourced in China). Cooperation regarding product development has been established with the strategic suppliers in Southern China, where the supplier suggests alternative production processes and fittings when new designs are prepared for production. This development has mainly been initiated by the supplier and has resulted in building a new and modern factory on the request of the company. Due to this investment, the company has chosen to move activities from other Chinese suppliers to this supplier to secure its survival in a currently volatile market.

The company is planning to outsource activities now handled internally to the mentioned suppliers in Lithuania and China and move more activities to the control unit in China. These activities are within service, distribution and local stock activities and are regarded as more complex and demanding compared to the activities that have previously been offshored or outsourced overseas. Because of the

higher complexity of the tasks, the company plans to place Danish employees at the control unit in China for a longer period of time to train and co-work with the local employees and also send Chinese employees to Denmark for short-term training periods.

## 4 Discussion

The case companies represent different industries and differ in terms of parameters such as product, size, and customer base. Nevertheless, we can pinpoint a number of common configurational changes which have occurred in their operations network over time:

- Changing organizational boundaries of the focal company and expanding geographical boundaries of the network,
- Changing roles of individual sites within the supply network and resulting impact on previous positions and the centre of gravity in the network,
- Shifting capabilities and intensified need for transfer, assimilation and augmentation of activities and know-how within the network.

Although the first trend is well documented in the literature on offshoring and outsourcing strategies (e.g. Farrell 2004; Pyndt and Pedersen 2006), the other two points as well as their totality are not well covered in the literature. These changes are important when seeking to understand the dynamics and interplay between the basic archetypes of global operations networks. The three elements are closely interlinked. Co-development, therefore, takes place between them, but the transformation also occurs as a consequence of their various contextual influences. In the following, we will discuss these three elements in more detail, relating them to the cases. Next, we will conclude on how these considerations may help to advance the understanding of the evolving global operations networks and their management.

### 4.1 Strategic repositioning

In all three cases, activities become increasingly distributed in terms of location, i.e. tasks which were previously co-located within a single site now have to be performed at a distance. In cases B and C, the process of global dispersion of activities also involves externalising some or most of them. Both companies gradually increase commitment to the non-captive operating mode by increasing the scope of their outsourcing initiatives and thereby increase their capability related to offshore outsourcing as well. Case B removed itself from all production activities and is now

mainly preoccupied with facilitating the various participants in the global network. Case C is mixed in this context; it has both substantial in-house and outsourced production. The future plans to increase the share of outsourced activities suggest that the transition towards creating more business value through lower physical resource ownership will continue in case C. In contrast to this, case A's organizational boundaries have remained almost intact, i.e. it still maintains a high degree of in-house production. However, even in this case around 20% of production activities are outsourced. These recent transitions in the cases are schematically illustrated in Fig. 2, drawing on Gereffi et al. (2005) framework.

Moreover, in all three cases, the shifts illustrated in Fig. 2 are accompanied by changes in the strategic focus towards downstream positions and aim to increase the end user orientation. This tendency is driven by the need to occupy a more attractive position in the supply chain but also comes at the expense of a possible loss of performance-enabling capabilities. In each case, managerial attention and resources allocation shifted from operations to customer-oriented functions and R&D without much attention being paid to the operations capabilities lost in the process or the operations interdependencies with the emerging foci of the company. The key question remains whether this downstream position is sustainable in the long term. This is one of the underlying discussions that each of the three companies had on an ongoing basis. It also constitutes one of the core motives for taking a vested interest in maintaining at least an indirect control of the entire supply chain, which is clear even in the cases where the whole supply chain, or elements of it, has been externalized.

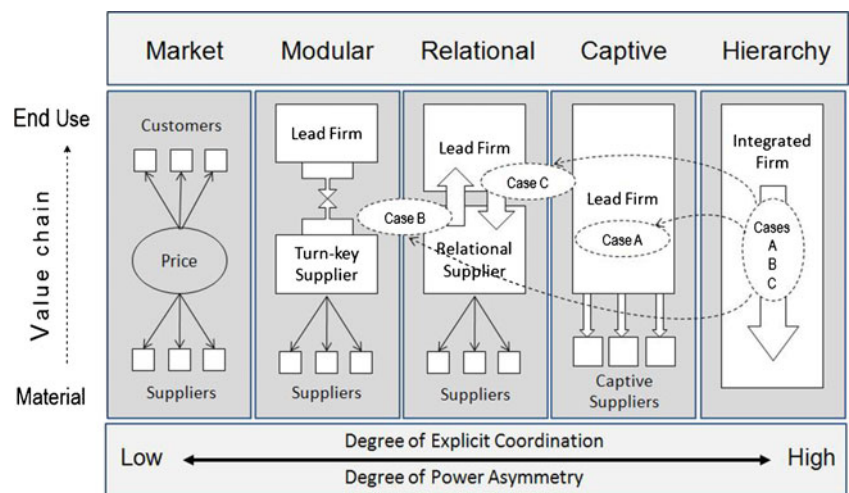
#### 4.2 Changing operations configurations

The strategic repositioning of the focal organization discussed above also results in changing roles of the

individual sites. In all three cases, the role of the home base sites in Denmark is now limited to supply network coordination and knowledge-intensive activities. In cases A and C, some production activities still take place at the domestic base, but they involve more proprietary production processes and are low in volume. We also find that the process of reshuffling the roles of individual sites gradually intensifies, increasingly affecting more complex activities in all cases and leading towards more distributed centres of gravity in the networks. In case A, the Danish site previously encompassing all product design and R&D is now experiencing a dwindling of these activities as they are moved overseas. As in case A, the developments in case B also continue to unfold. This can be exemplified by the launch of new services by company B.

As the cases illustrate, although in one of the cases network positions may appear to be more stable (case A) than the others (cases B and C), stability can hardly be seen as a property of any of them. The periods of relative stability are interrupted by frequent transitions, which demands managerial attention. This task is often given to line management, who are responsible for a particular site or a particular area within the supply chain, which means that implications to the operations strategy are often not considered. This issue is also linked to balancing the freedom of individual sites. Each site ought to have a certain level of freedom to pursue emerging opportunities. The site managers' tendency to grow the role of the site represents a key drive of development in the network, but it also represents a problem to the connectivity of the overall network. Hence, achieving concerted action requires certain restrictions, and control in the network remains a necessity. However, this also has the disadvantage of creating strategic lock-in, which blocks positive reinforcement of strategic positions within the network or the emergence of new relationships. We have seen how each of the companies puts much effort into retaining control of the supply network: in case A through maintaining captive

**Fig. 2** Transitions in the evolving operations networks



approach to its network relationships and through proprietary process technology, in case B by carefully monitoring the various stages of the supply chain and careful decomposition of this process, and in Case C through an offshore control unit.

### 4.3 Shifting capabilities

In all three cases, we see dramatic effects in terms of changing core capabilities and an increasing level of network management competence over time. Cases B and C have to a certain extent abandoned their production knowledge and replaced it with an enhanced capability of running a network. By offshoring and outsourcing of their activities, all three cases have over time created more complex and demanding production networks, which serve an increasingly heterogeneous operations demand as the companies move beyond their original scope of products and services. One tendency has been the challenges of and continuous work with increasing the absorptive capacity at both the focal organization and the various production units. The cases reveal that this is an ongoing process, in which readiness at both the buyer's and supplier's end is crucial. However, such readiness is not always present when the decisions of transfer of activities are made but rather develops during their implementation. As the production units increase their absorptive capacity, they are given more and more demanding activities. If the production units cannot comply with this demand, they have been replaced in a number of incidents in case C. In case A, there has been continuous work on improving the absorptive capacity of the production units and through this a change in the tasks performed by the unit in question (e.g. the development of the tasks performed by the Portuguese unit). Meticulous training paralleled with gradual development of its suppliers allowed case B to transfer all its production processes to the suppliers' sites.

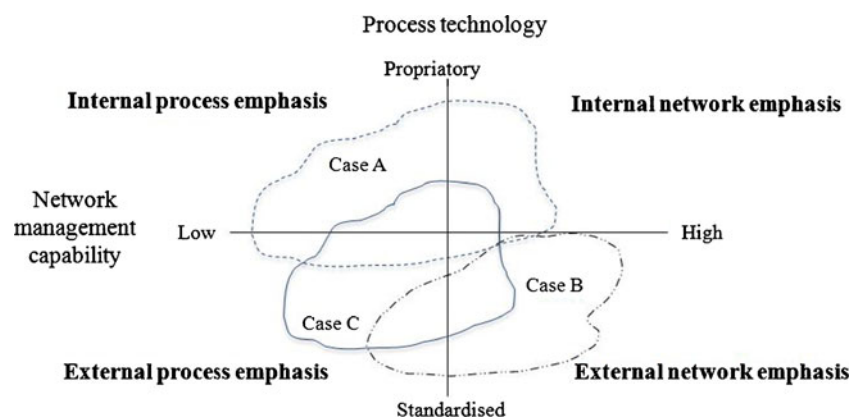
Based on these findings we can draw several lessons. First, the configurational changes and their drivers distilled

from the cases support the importance of the variables highlighted by Gereffi et al. (2005). Indeed, the nature and complexity of transactions as well as the capabilities in the supply base play an important role in how operations networks change over time. However, these variables should be complemented with the variable that we define as "network management capability", which is not static but rather evolves as the network diverges from the captive and hierarchical mode of operations. This variable, offsetting complexity of transactions and lack of capabilities in the supply base, helps to explain the downstream repositioning and its related changes to the operations configuration that we find in the cases.

Second, the proposed network management capability variable adds another dimension, helping to unveil the nature of global operations networks management approaches. Figure 3 positions cases A, B and C in relation to the variables of networks management capability and process technology (determined by the complexity and codifiability of activities), identifying the strategic emphasis areas in the cases. As the figure illustrates, Case A can largely be characterized by emphasis on internal processes and internal network while cases B and C pay much less attention to this area, focusing instead on external processes and external network. However, Case B, having outsourced all its production, has stronger emphasis on the external network than Case C.

A crucial element of network management capability is the ability of the company to transfer and absorb new knowledge (Lyles and Salk 2007; Ferdows 2006). There is, however, a clear difference between the knowledge requirements of running a process and of managing a network (cf. Fig. 3). As the companies no longer have access to hands-on knowledge of running operations (cases B & C), or when this knowledge becomes embedded in offshore sites (Case A), a key priority of the headquarters becomes the facilitation of knowledge processes in the operations network. Moreover, the headquarters also seek to establish a position in the knowledge cycle which enables it to

**Fig. 3** Key configurational dimensions and strategic emphasis of the cases





remain capable of making performance-related demands on its supply base and to build sufficient knowledge for developing new solutions and designing these for operations. A shift towards a more conceptual operations knowledge related to designing for operations can be found within each of the case companies, as they re-orient their attention and efforts towards the right-hand side of Fig. 3.

The vertical dimension in Fig. 3 addresses the nature of process technology, which also changes when the companies externalising operations capabilities are forced to further standardize their operations processes. On the one hand, this production process ‘commodization’ occurs due to the need to translate internal processes for the use of external offshore partners; on the other hand, the standardization of processes is enforced by the need to draw on the standards of the sourcing market. Seeking to increase responsiveness to their end customers’ demands, each of the three case companies shifted the focus away from proprietary operations processes towards an increased reliance on market standards. This process has been driven by the establishment of branded retail outlets (in cases A and C) and the strategy to become a full service provider to a particular customer group (in case B).

## 5 Conclusion

The empirical findings of our investigation show intense and rapid configuration changes in the cases under investigation. Positions of partners within the networks are not stable; the role of the focal organization in the network develops and changes with the strategic mandates, resources, activities, and actors.

On the basis of the cross-case analysis we identify a number of common patterns with regard to realized transitions in network configurations and capabilities. First, in all three cases a repositioning of the focal organization towards a profound downstream position has occurred. A key related question for further studies is whether this change in core capabilities will reduce companies’ competitiveness in the long term compared with the strategy of maintaining manufacturing capability and focal company presence in the upstream activities. Second, a change in the roles of the individual sites in the networks occurs over time. It points to possible managerial challenges of dealing with constant instability of the operations networks. Third, shifting capabilities of the focal organization embody another effect of the continuing reconfiguration of the operations network. Our findings suggest that the manufacturing capability of the focal organization is substituted with network management capability. This realization invites further studies focusing on the relation between configuration and capabilities and how this relation can be

managed both from the perspective of the focal organization and from the perspective of the supplying units.

The findings of the paper also show that the network management capability variable plays an important role in explaining how global operations networks change over time. In conjunction with the nature of process technology this variable can be used to define the strategic emphasis areas of the focal organization of the network.

While the results of this study are highly suggestive, the limitations of the analysis should be noted. First of all, the study is exposed to the usual limitations associated with the use of the case study methodology. We address these in the methodology section of the paper. Another limitation of the study is its geographic delineation. Since Denmark was chosen as the main empirical base of the investigation, not all results may be transferable to other countries. In spite of this, we believe some generalizable parallels may exist with companies from other countries within the traditional industrial ‘triad’ (Ohmae 1985) of North America, Western Europe and Japan. However, the best way to find out which findings are country-specific is to replicate the study elsewhere. Future research should also include studies focusing on ‘deverticalization’ or ‘back sourcing’, as cases in which a company pulls back its operations from abroad may provide rich insights into the phenomenon of operations networks. Last but not least, the main conclusions of this study are based on material about lead firms from one of the developed countries of the traditional industrial triad. Therefore, almost no insights into the world of suppliers from low-cost countries have been gained. It presents another challenging and promising future research avenue. In this study we deliberately chose to limit our scope to lead firms. Today, more than ever, there is an explicit struggle for the place of such firms in the ‘Global Age’ (Albrow 1996). There are enormous political as well as economic stakes involved in how lead firms from the industrial ‘triad’ countries configure their operations to remain competitive in the coming years.

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