Abstract:

Alternative forms of integration of knowledge is shown to have important effect on the strategic intent of the focal organization, where the gains of offshore sourcing of manufacturing activities is discussed regarding the development of the present and future dynamic capabilities of companies. The paper illustrates different approaches of how to manage different knowledge dimensions within the offshore supply relations and how knowledge integration influences the development of the companies’ dynamic capabilities.

The experienced journey of 4 SME’s within the textile and wood industries is presented regarding how they change strategic intent due to challenges concerning knowledge integration within their respective supply relations. The cases will illustrate the development of sharing and integrating knowledge in the complex setting of globalised procurement, manufacturing, design and sales, where time and place become important factors influencing both strategic offshore sourcing decisions and the impact on future dynamic capabilities within the organizations.
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Theoretical background:

Sourcing decisions in companies have often been based on different motives. In recent studies of Danish SME’s both Maskell et al (2007)\(^1\) and Præst Knudsen et al (2007)\(^2\) show that cost reduction is one of the key motives. However, as both McIvor (2009)\(^3\) as well as Bengtsson and Berggren (2008)\(^4\) among others indicate, other resource based dimensions have appeared as motives for making sourcing decisions. In this paper I choose to look towards the area of knowledge integration between relations based upon the assumption that if you cannot integrate knowledge between the different relations, the possibility of improving or adjusting your dynamic capabilities through your working relationships will either disappear or be severely reduced.

Several dimensions appear in the literature regarding knowledge integration. Ferdows (2006)\(^5\) framework, relating production know-how dynamics (in terms of how codifiable it is and how fast it changes) to the transfer mechanisms, suggests that processes less fit for transfer may still be transferred by using the appropriate transfer mechanisms. According to Carlile (2004)\(^6\) the assimilation process can be divided into three increasingly complex processes: transfer, translation and transforming. As part of the initial transfer of technologies codified or codifiable knowledge is transferred. In the second process the wish is to make tacit knowledge of the sender explicit through a translation and assimilation of the knowledge at the receiving end. This process is about building capabilities for exploiting knowledge generated by the sender. The last step is concerned with the augmentation of knowledge. The demands on the absorptive capacity of the participants in the process of managing knowledge must be expected to increase when companies aim to reach the translation and transforming processes. It is, however, not all knowledge integration that include these last two steps as this will be dependent on the nature of activities transferred (Ferdows 2006).
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This evolves into questions about the substance of the transfer; what are the demands to the speed of the transfer, to what degree does dynamic capabilities need building in order to enable development and improvements, what are the dimensions of the knowledge integration, and how may we identify an appropriate rhythm of the transfer to match the absorptive capacity of the receiver? There seems to be no one-fits-all solution to these questions, as the particular circumstances of the single units regarding position, path and processes (Teece & Pisano, 1997) remain too intertwined with the historical setup and the strategic situation of the participants in the relations. The diversity of approaches is also partly related to the diverse levels of robustness and transferability pertaining to the contents and process characteristics of the activities distributed (Grant & Gregory, 1997). However, despite this diversity some tendencies can be identified. They are summarised in Figure 2. It highlights the relationship between activities bound for transfer, relations management capability and knowledge transfer, translation and transforming needs.

Figure 1. Journey of activities bound for transfer, relations management capability and knowledge integration
More complex activities, which are less robust and transferable, are offshored over time based upon cumulated experience within the focal organization and its supply relations (the changing position of the organizations). The model also suggests that over time the scope and sophistication of the activities bound for transfer increases and so does the amount of knowledge that needs to be transferred, translated or transformed across organisational and/or national borders. These processes positively correlate with demands on process capabilities regarding managing and eventually controlling the relations. Furthermore, it might be expected a certain path dependency regarding the knowledge integration over time, as one decision implies the next typically increasing the complexity of the activities assimilated. If this type of journey happens the demands towards knowledge integration between the different participants must be expected to increase, especially if the former dynamic capabilities within the focal organization have to survive and/or develop in the new setting.

Knowledge integration is a complicated process with a number of possible dimensions. In the following paragraphs a number of identified dimensions illustrated in figure 2 are presented\textsuperscript{iix}.
Considerations concerning knowledge integration might take into perspective cultural variations and the characteristics of the knowledge being transferred. Knowledge transferred between organizations has been shown to be both tacit/articulable (explicit) as well as simple/complex and independent/systemic (Garud and Nayyar, 1994). Furthermore, the knowledge might be either human, social, structured or a combination of the three depending on the type of activity being transferred (De Long and Fahey, 2000).
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Depending on the types and dimensions of knowledge that organizations need to either transfer, translate or transform cultural dimensions like individualism versus collectivism and verticalness versus horizontalness could guide towards which type of national context will be most favourable in an offshore sourcing decision involving different national cultures (Bhagat, Kedia, Harveston and Triandis, 2002)xii. Therefore, it is important to find relations that have cultural characteristics which fit between the relations concerning the dimensions individualist/collectivist and vertical/horizontal orientation of the national and/or organizational culture to create a common ground for the development of future capabilities through knowledge integration.

“Sticky” knowledge (Von Hippel, 1996)xiii, can be characterized as complex, tacit and systemic comprising a combination of mainly human and social knowledge, making it more difficult to transfer compared with for instance explicit, simple and independent knowledge, which is fairly easy to codify. The offshore sourcing operations performed are at the moment mainly made from a Western European organization to either an Eastern European or Asian organization. This adds the cultural factor to the knowledge integration process, especially regarding “sticky” knowledge. How the relations are able to handle the sticky knowledge is closely connected with the learning capacity at both ends.

Learning capacity is concerned with the firm-specific levers and resources that can be handled to recognize, apply and assimilate external knowledge (Simonin, 2004)xiv. The three components resource-based, incentive-based and cognitive-based describe an organizations learning capacity, where the incentive-based component seems to be the most important component in influencing the development of the learning capacity. The part of the learning capacity which depends upon relations
is more complex, because external partners and their learning capacity are involved in the evolution of the dynamic capabilities the knowledge being integrated within and between the organizations.

The knowledge flow between relations will be challenged, when knowledge integration moves from transfer to translation and further on to transformation. Gupta and Govindarajan (2000) suggest knowledge flow to be a function of 5 factors, where barriers or facilitators to knowledge integration can manifest themselves in any or all of the factors. They conceptualize knowledge flow by focusing especially on procedural types of knowledge (e.g. product designs, distribution know-how) indicating a more dynamic perspective of knowledge flow, where the demands to the involved organizations’ knowledge stock and motivational dispositions will increase with the more complex activities being transferred.

Resource complementarities in terms of product and process innovativeness of the individual firms are of importance to improvement of the dynamic capabilities when collaboration alliances are the chosen mode (King, Covin and Hegathy, 2003)\textsuperscript{xv}. Concerning the choice between collaboration and merger or acquisitions, Teece (1986)\textsuperscript{xvi} claim that the effective use of alliances may be precluded by, for example, market defects resulting from the existence of intellectual property protection (e.g. patents) or the tacit nature of the information involved. The gains achieved from resource complementarities in relations depends on the ability to find the complementarities in the relations and transfer, translate or transform the necessary knowledge within the relation.
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Literature review conclusion:

The sourcing literature has mainly focused upon decision view issues like cost reductions as the main driver in offshore sourcing decisions. There seems to be a gap regarding considerations of how knowledge integration and dynamic capabilities might be affected by offshore sourcing decisions and how a process view of these “decisions” might influence the future of the organizations involved. 4 case companies have been followed over a period of time to get further knowledge regarding how these strategic sourcing decisions affect the focal organizations dynamic capabilities and what role knowledge integration and knowledge dimensions play in the process.

Approach and methods of analysis:

The empirical part of the paper is based on 4 exploratory case studies, which have been visited twice with a time span of 1 year looking both at past positions, paths and processes as well as expected future strategic changes. The case companies all work in businesses characterised by strong seasonal fluctuations, and they all have at least several years of experience with running offshore operations. All 4 cases have succeeded in surviving and developing themselves within very competitive industries that have become more and more globalised in the past decades. However, it seems like they have chosen or moved along different paths to reach this competitive position in the market. All 4 cases represented are manufacturing companies and the activities which they started to offshore outsource first were manufacturing processes, where the main motive was cost reduction.

The selected cases have been chosen to facilitate the study of different journeys within very competitive and globalised industries. In order to develop the case studies, on-site observations and semi-structured interviews were carried out and secondary material was studied. The latter included:
annual reports, press releases, presentation material to customers and stakeholders, and media material. These data, combined with the summaries of the interviews, were used to build the case descriptions presented below.

Company A:

The company outsourced its knitting activities to Eastern Europe as one of the first knitting companies in the textile cluster in Central Western Denmark. It kept all other activities in Denmark and used its production managers as knowledge integrators to the offshored and recently outsourced production in Eastern Europe. This is still the case as the evaluation by the company is that they have not managed to transfer and transform the manufacturing knowledge from Denmark to Eastern Europe. Due to this failure the company is presently considering backshoring the complex knitting production part together with the original production equipment (still owned by the company and leased to the supplier), which was moved to Eastern Europe during the offshoring of the production. On the other hand is has a fairly simple production of socks placed in another Eastern European country which it plans to keep running at the present site.

The failure of knowledge integration (mainly tacit and complex knowledge) at the first site seems to be a complex combination of low learning capacity and low technological competence regarding the knitting process at the local site as well as cultural differences (the supplier is managed by an Indian management team running local Eastern European employees) at the receiving end. Furthermore, the motivational disposition for transferring and translating the knowledge from the Danish production managers is also considered low due to problems of collaboration with the local supplier management team.
Company B:

The company offshored its sewing activities to Eastern Europe as one of the first companies in the textile cluster in Central Western Denmark. After a period of outsourcing sewing activities to changing Eastern European countries the company established own production activities in the Ukraine. At the beginning it kept all other activities in Denmark and used its production managers as knowledge integrators to the offshored production in Eastern Europe. The reason for establishing own production activities in the Ukraine was based upon increasing costs at the former suppliers and the lack of local suppliers with resource complementarities at the time, when the company decided to move its sewing activities.

In an ongoing process it has chosen to move more and more activities to the Eastern European site from Denmark including first the cutting out process and lately also part of the construction and design activities. Due to problems with transferring and translating knowledge between Denmark and all the offshored activities the company chose to develop its own IT-system as a new transmission channel. This has forced the company to translate a lot of previous fairly simple tacit knowledge into explicit knowledge in the system as well as establishing a training programme for personnel both in Denmark and the Ukraine. Through this the company has increased the learning capacity and technological competences mainly at the site in the Ukraine but also in Denmark. Furthermore, the company has handled part of the cultural differences by moving key personnel forth and back between Denmark and the Ukraine for extended periods of time to increase and transform part of the tacit knowledge of the Ukrainian employees. Due to this deep involvement and high focus upon knowledge integration with the offshored production site the company is now looking for new strategic market opportunities in Eastern Europe for the offshored production site instead of as previously done moving the sewing activities to other locations with a lower cost profile like China, India or Vietnam.
Company C:

The company outsourced its sewing activities in the late 80’s to Eastern Europe as an early mover in the textile cluster in Central Western Denmark. It kept all other activities in Denmark and grew with shifting national suppliers in Eastern Europe as well as suppliers from India, China and Vietnam. Recently it has started moving all its Eastern European activities to its own newly established production facilities in Vietnam combined with continuous outsourced sewing activities in China, India and Vietnam. The establishment of own production facilities in Vietnam is driven by a wish of cost reduction as well as a desire to reduce the “time to market” of the manufactured goods. The physical location of the stock of raw material was moved as well from Denmark to Vietnam, whereas considerations regarding offshoring the stock of finished goods was rejected due to fear of failure concerning managing the complexity of a network supply chain.

The company is regarded as a European leader within its segment regarding both quality and innovation. The research and development activities are performed in two laboratories in respectively Denmark (design) and Vietnam (quality). To guide the flow of mainly tacit and systemic knowledge between Denmark and Vietnam key employees are moved forth and back between the premises for longer periods of time and a few expatriates are employed at the Vietnamese premises. Explicit knowledge is managed through a number of IT-tools as well as through different knowledge flow channels like Skype, video conferencing and simple e-mails. The learning capacity at the receiving end in Vietnam is fairly high regarding the well-educated employees whereas the unskilled sewers have low initial learning capability and are trained on location.

There is reduced knowledge transfer and translation between the offshore, outsourced production units and the company, however the control function implemented and run by the company does transfer and translate manufacturing improvements between the different sites on an ongoing basis,
and part of this knowledge is also made explicit in the company’s own IT-systems. Innovation activities considering design and development of functional details is regarded as one of the company’s core competences, and has been kept in house in Denmark at the present moment, although the company is considering to offshore the cutting out part of this activity to Vietnam, when the tacit knowledge and learning capacity of the local working force has been increased.

Company D:

Within recent years the company has changed its strategy from a focus on the production of furniture to a focus on the retail part (either full ownership or control through a franchising concept) combined with a reduction in the ownership of the production units (offshore outsourcing).

The main production of furniture is split into two categories: upholstery and flat-pack furniture. A few years back, the company chose to outsource its production of upholstery furniture, due to the fact that the required production skills are less demanding and more labour intensive in this area compared to the flat-pack area. Another reason why the flat-pack furniture department has not been outsourced is mainly due to flexibility and quality demands of the production, missing alternatives in Eastern Europe or Asia, as well as the historical path within the company (the flat-pack furniture division is a merger of the original 2 mother companies, which were merged a number of years ago).

The production unit of upholstery in Denmark was bought by the former management of the facility and moved to Lithuania to reduce labour costs. The company has today a very close relationship to this supplier regarding innovative activities, due to the fact that it is still run by the old management group from Denmark facilitating knowledge integration between the units due to the high level of tacit knowledge still present in 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 means quite a lot of physical movement by mainly the designers and product
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managers, as they join the local manufacturing staff at the different production units to discuss new designs and how to produce these at the factories due to difficulties in translating and transforming the tacit knowledge between the different actors virtually.

The other main supplier of upholstery furniture is placed in China. Because of the supplier’s lack of knowledge about and fulfilment of the company’s quality demands (low absorptive and learning capacity together with cultural differences), the decision was made to establish a control unit in China as well as position own local employees as quality controllers in each supplier’s factory (upholstery furniture and accessories as well as different furniture parts are sourced in China).

A cooperation regarding product development is established with the strategic suppliers in Southern China, where the supplier is suggesting alternative production processes and fittings, when new designs are being ramped up for production. This development has mainly been initiated by the supplier and has resulted in him 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 his survival in a currently very volatile market (a very large number of Chinese suppliers in the sector have closed down in 2008/2009 due to the world recession).

The company is now planning to outsource activities handled until now internally to the mentioned suppliers in Lithuania and China as well as sourcing more activities from the control unit in China. These activities are within service, distribution and local stock activities. They are regarded as more complex and demanding compared with the activities that have previously been offshored or outsourced overseas. The company tries to transfer and translate knowledge from the focal organization to the suppliers and the control unit in various ways based on prior experiences. Because of the higher complexity of the tasks, it 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, as well as move
Chinese employees to Denmark for short term training periods to improve their learning capacity and transform their understanding of the company’s organizational culture.

Main findings:

All 4 companies started with offshore outsourcing part of their manufacturing activities. However, their journeys have taken very different paths after the initial step of offshoring and outsourcing. Changes regarding knowledge integration take place in companies B and C as soon as the offshored manufacturing activities are insourced. A stronger focus emerges concerning how to transfer and translate knowledge to the offshored sites, as well as a wish to transform organizational cultural knowledge among the local employees at the offshored sites. In company A the knowledge integration with a major supplier has not succeeded and due to this failure the company is considering backshoring the most complex part of its manufacturing activities. In company D the success of knowledge integration with its suppliers and offshored control unit has created plans regarding offshoring more complex and knowledge demanding activities mainly to the offshored control unit.

The knowledge flow tools employed in companies B, C and D are similar including both it-tools to transfer explicit knowledge as well as the physical movement of employees, the use of expatriates as well as training of employees to reach mainly the levels of transfer and translation and in the future possibly transformation of tacit knowledge. Company A did not succeed in translating crucial manufacturing knowledge to its supplier even though it has continuously used physical movement of employees as well as training of local employees at the offshored site. Several knowledge dimensions might explain this failure, low learning capacity and technological competences at the
receiving end, large cultural differences at the site as well as between the supplier and the company indicating a low absorptive capacity at the receiving end.

Considerations regarding knowledge integration have had a rising influence on the different journeys in the later stages of movement of selected activities. All companies now acknowledge that knowledge integration is important to consider when deciding to move activities together with the more usual considerations regarding cost, delivery and quality. All companies have experienced increasing challenges concerning relations management when they moved from offshoring simple activities to more complex activities, which also increased the demands towards more complex knowledge integration. Companies B, C and D are following this path, whereas company A at the moment is considering leaving or moving backwards along its path due to the speculations regarding backshoring the complex part of the manufacturing activities. Furthermore, the decision journeys regarding offshoring or not and outsourcing or not in the companies now seem to be much more influenced by considerations concerning knowledge integration and different knowledge dimensions compared to the earlier decisions made in the companies focusing mainly upon cost, quality and delivery issues.

The initial offshore outsourcing of manufacturing activities in all companies was mainly made to reduce cost and survive in very competitive and globalised markets. In the companies A, B and C this move has also been followed by new downstream initiatives in their respective markets combined with an offshore insourcing of part of the manufacturing activities due to missing resource complementarities among local suppliers in the chosen offshore supply markets and/or problems with transferring and translating knowledge to the external suppliers. These 3 companies have been
active in offshore outsourcing for a much longer period of time compared with company D. Company D has until now followed another path, where it has established its own control unit in China to supervise quality and delivery due to problems with transferring and translating knowledge between the company and its suppliers. These changes in the composition of mainly the manufacturing activities up until now has changed the paths and processes of the companies investigated, indicating that problems/challenges with different knowledge dimensions in the knowledge integration process has strongly influenced the decisions made to maintain the companies’ dynamic capabilities.

Conclusion and future studies:

The paper has presented the journeys of 4 SME’s and how they develop and change strategic behavior due to challenges regarding knowledge integration within their respective supply chains. The cases have illustrated the importance of varying knowledge dimensions in the knowledge integration process and their influence on decisions regarding the companies’ dynamic capabilities in the complex setting of globalised procurement, manufacturing, design and sales. The paper has identified different approaches of how to combine different knowledge dimensions within the supply chain and how the dynamic capabilities are affected by the challenges of knowledge transfer, translation and transformation created by the strategic offshore sourcing decisions.

As the conclusions are based upon a limited number of cases studied within a limited time frame, further quantitative investigations to confirm the findings would be interesting, as well as more longitudinal approaches regarding the development of the dynamic capabilities of companies would be welcomed to confirm or reject the indications found in this paper regarding the dynamic influence
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of knowledge integration and different knowledge dimensions upon strategic offshore sourcing decisions.

9 Jørgensen: “Let’s go global”, The international journal of knowledge, culture and change management, 6(8), 2007, pp 167-177