Learning across firm boundaries: Implications of an industrial network approach

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Abstract

The purpose of this paper is to develop a conceptual framework for how to understand and investigate learning across firm boundaries. The interest in inter-organisational learning has evolved simultaneously with the increasing attention given to inter-organisational issues in general (Holmqvist 2003). The inter-organisational learning literature has concentrated primarily on formal learning collaborations (e.g. Hamel 1991; Lane and Lubatkin 1998; Larsson et al. 1998; Powell 1998; Holmqvist 1999; 2003, 2004), and on conditions for such learning. However, some have noticed that research on inter-organisational learning should also include learning in regular exchange business relationships, as these may contribute just as much to knowledge development as more formal co-operations (Håkansson and Johanson 2001). As Araujo (1998) remarks, knowing and learning are involved in the daily interaction practises between firms, rather than a special practise associated with discontinuous innovation processes. According to Håkansson et al. (1999), learning in existing relationships between customers and suppliers is as yet rather unspecified in the literature.

The paper offers a theoretical discussion about the possibilities of and problems in combining insights from the industrial network approach and organisational learning literature for investigating learning across firm boundaries. A key question is what implications an industrial network approach to business markets has for the understanding of such learning. It is argued that though the two traditions differ in some respects, especially in terms of the view of the context in which learning takes place together they illuminate important aspects of the inter-organisational learning phenomenon. While the organisational learning literature, represented by an adaptive and routine-based perspective of learning (e.g. Cyert and March 1963; Levitt and March 1988; March 1991; Holmqvist 2004) help describing how such learning actually takes place, the industrial network approach (e.g. Håkansson and Snehota 1995; Håkansson and Waluszewski 2002), help identifying impacts on and of such learning. Based on these theoretical insights, a conceptual framework for how to understand learning across firm boundaries is provided. The framework concentrates on three main concepts, learning, business relationships and routines, and the connection between them.

The paper contributes to extend our understanding of learning across firm boundaries, by concentrating on learning in regular exchange customer-supplier relationships in industrial settings. As such it reaches beyond the traditional focus on formal learning collaborations. The framework may also be used to investigate learning in empirical settings, and further help both researchers and managers to understand inter-organisational learning processes.

Keywords: Learning, business relationships, routines

Introduction

In this paper, a conceptual framework for how to understand learning across firm boundaries is developed. The interest in inter-organisational learning has evolved simultaneously with the increasing attention given to inter-organisational issues in general (Holmqvist 2003). Inter-organisational interactions have been considered as a unique learning entity in its own right, which is different from learning within organisations. The inter-organisational learning literature has concentrated primarily on formal learning collaborations (e.g. Hamel 1991; Lane and Lubatkin 1998; Larsson et al. 1998; Powell 1998; Holmqvist 1999, 2003, 2004). The learning process involved in these settings has often been described as a *learning race* (Hamel 1991; Larsson et al. 1998; Powell 1998), where each of the parties seeks to out-learn the other by learning as much as possible from each other.

In the literature on inter-organisational learning, much attention has been given to the pre-conditions for such learning. For example, the firms' ability to actually gain and use external knowledge, that is, their absorptive capacity has been emphasised as an important precondition of learning (Cohen and Levinthal 1990). Recent research has acknowledged that alliances and collaborations involve collective learning processes, where the alliance parties create new and shared knowledge, materialised in among others rules and routines (Larsson et al. 1998; Holmqvist 1999). Inter-organisational learning processes hence involve both learning *from* and *with* other actors. The latter means that partner-specific knowledge is created. Hence, in order to learn, companies must be transparent in addition to receptive.

Similar to recent literature on organisational learning, the inter-organisational learning literature is also characterised by what Huysman (1996) refers to as biases in the literature. These biases involve among others a focus on learning as planned and the equation of learning with improvement. In the inter-organisational learning literature this is reflected in the emphasis on formalised alliances and collaborations set up with the explicit purpose of learning. Inter-organisational learning is considered as highly innovative and explorative, leading to new knowledge from which the involved parties can benefit and gain competitive advantages. Hence, this learning is considered to result in positive outcomes and can and should be planned for.

Although the above notion of inter-organisational learning is typical in the literature, some authors have argued that regular relationships between buying and selling companies may contribute just as much to knowledge development as more formal co-operations (Håkansson et al. 1999; Håkansson and Johanson 2001; Selnes and Sallis 2003). All organisational work draws on knowledge, and knowing and learning are normal processes in organisational life (Tsoukas and Vladimirou 2001). Since interaction between companies is a key feature of organisational life, learning in business relationships is accordingly a natural process (Knight 2002). Business relationships are established through learning processes, and learning is further accumulated through repeated interaction. This learning results in routines that co-ordinate the transaction and production activities between parties in relationships (Håkansson and Johanson 2001). Hence, as Araujo (1998) remarks, rather than being a special practise associated with large changes or discontinuous innovation processes, learning is involved in the day-to-day interaction practises between firms. Similarly, Lundvall (1992) notices that learning and innovation are interactive processes, which take place in connection to routine activities in production, distribution, and consumption. Despite this recognition, however, Håkansson et al. (1999) argue that such learning is as yet rather unspecified in the literature.

Aim, scope and structure of paper

The aim of the paper is to fill the gap identified in Håkansson et al. (1999) referred to above, by developing a conceptual framework for how to understand and investigate learning in such relationships. The paper contributes as such to extend our understanding of learning across firm boundaries, by concentrating on learning in regular exchange customer-supplier relationships in industrial settings. Hence, it reaches beyond the traditional focus on formal learning collaborations.

In this paper, two main concepts, constituting the learning across firm boundaries phenomenon, are focused: learning and business relationships .It is further argued that the link between them can be described and investigated through the means of routines. The views of learning and business relationships are here based on insights from the adaptive perspective of organisational learning the industrial marketing and purchasing (IMP) research tradition. Routines are considered as important co-ordination mechanisms both within firms (Nelson and Winter's 1982) and between firms (Håkansson and Snehota 1995; Håkansson and Johanson 2001; Harrison and Bygballe 2006). When applying an adaptive perspective of learning, learning is related to the establishment and change of such routines. A main implication of taking an IMP approach to business markets as a starting point is that this environment is not a face-less one, which the company can choose to adapt to or not. Instead it is comprised of a network of inter-related companies and relationships. Accordingly companies' learning is directed towards specific business partners, such as suppliers and customers, and this learning affects and is affected by the network in which the company and its relationships are embedded. Hence, this paper may contribute to illuminate the implications of adaptation and learning beyond the original learning location.

The paper is structured as follows. It begins with an empirical example, which introduces the research idea of the paper. The example is then discussed, offering some arguments for why routines may be used to link the two concepts of learning and business relationships. Then each of the concepts are elaborated, followed by a more thorough theoretical discussion about the possibilities of and problems in combining insights from the IMP research tradition and the adaptive perspective of organisational learning to link these concepts. This discussion is synthesised into a conceptual framework for how to understand learning across firm boundaries based on the three concepts of learning, business relationships, and routines, and the connection between them. The paper ends with a concluding discussion, where it is argued that the two theoretical contributions together illuminate important aspects of the inter-organisational learning phenomenon. While the organisational learning literature, represented by an adaptive and routine-based perspective of learning (e.g. Cyert and March 1963; Levitt and March 1988; March 1991; Holmqvist 2004) help describing how such learning actually takes place, the industrial network approach (e.g. Håkansson and Snehota 1995; Håkansson and Waluszewski 2002), help identifying impacts on and of such learning.

Introducing the research idea – an empirical example

In a meeting in November 2003, a customer company and their Swedish supplier of gas welding products were once again discussing the supplier's delivery performance as they often had done in the past. "The graphics still look like a roller coaster!" the customer complained. Deliveries from all of its most important suppliers were registered when booked-in at an International Distribution Centre (IDC) in Rotterdam and checked according to the agreed upon delivery times. The company had started in 2001 to evaluate the suppliers' performance more carefully. It then became evident that the Swedish supplier did not score according to expected levels. On several occasions products had been out of stock, and the company's internal network and external customers were complaining. It was obvious that the delivery routine did not work properly, and improvements were necessary. The supplier's delivery problems were a recurring topic of discussion in meetings between the two parties during the following two years. The problems and the various parts of the delivery routine were thoroughly discussed in an attempt to reach an understanding of the problems and find a workable solution. The customer company originally felt that the problems were solely those of the supplier's. However, it was eventually recognised that the problems were caused by the sub-routines of both parties. Hence, each had to check with their respective operational units to ascertain if the deliveries were in effect handled according to the agreed upon overall routine.

In the following years several problems relating to the delivery routine were identified and improved upon. It turned out to be a continuous problem solving process. One reason for the delivery problems was attributed to the poor communication between the supplier and its sister company, producing the goods for the customer. The production had been moved to an East European country towards the end of the 1990s. Following this move, the two sister *companies had not managed to establish sufficient routines for information sharing and for the physical flow of goods. For example, the production company was responsible for replenishing the stock at its sister company's warehouse, but was unable to do this properly. The customer company urged the supplier to improve these routines, as the problems affected its own deliveries to customers. The supplier took these requests very seriously and worked hard to improve its routines. An important means was to assign a specific person at the warehouse to handle these specific goods, ensuring that the respective stock would be replenished in time. These improvement efforts continued for some time, and as time went by, other problems were identified.*

One problem area turned out to be a personnel problem. The person originally assigned by the supplier to handle these specific orders, went on leave in 2003, requiring a new and inexperienced person to take over her duties. Due to this new staff member's inexperience, communication with the customer's operational staff in Rotterdam did not work very well. Misunderstandings occurred, which resulted in late deliveries. In addition to new personnel, the supplier also implemented a new Enterprise Resource Planning (ERP) system in the middle of 2003. It took a few months to get the system working properly. During this period the supplier had problems with handling the orders and consequently the deliveries were negatively influenced. Both these problems were nevertheless temporary problems. The contact person originally assigned to these orders, eventually came back and the system worked properly after a while.

Another reason for the delivery problems turned out to be a misunderstanding about delivery dates. Discussing the overall routine, the customer and the supplier found that they were actually operating with different dates. While the customer used the date of arrival of the goods as the basis for the evaluations, the supplier used the date of the goods being shipped from the central warehouse. This resulted in the supplier always being late. It was finally agreed that both companies would use the date of arrival of the goods as to ensure comparability. A final reason for the delivery problems was inconsistency in the reception routine at the customer's IDC in Rotterdam. Goods would at times be left in the reception area for several days after arrival, without being booked into the system. The customer went through the reception routine thoroughly as it was urgent that the operational warehouse staff understood the importance of being consistent in booking in the goods immediately. However, the reception staff members complained that the shipments from the supplier were too large and difficult to handle. As a consequence, the two parties agreed that instead of shipping goods once every week, the supplier would ship twice a week. The shipments were now easier to handle for the reception staff. After two years of continuous problem searching and solving with regards to the delivery routine, the supplier's delivery performance finally reached the expected level on a continuous basis in 2004. However, by the end of the year some low scores appeared again, calling for further problem solving and adjustments.

What do the above empirical example illustrate? In this paper it is argued that the example illustrates learning across firm boundaries. The example shows how WWD and the supplier together learn how to improve the delivery routine. The problems are discussed, and potential ways to solve them exchanged. This process continues for years. When various sub-routines are improved upon, the overall inter-organisational delivery routine seems to work better. However, it is a continuous problem solving process, as the performance of the routine is dependent on several sub-routines working properly.

In this paper, two main concepts are considered as being important when looking at learning across firm boundaries: learning and business relationships. These may be related in various ways. Here the link between them will be described and investigated through the means of routines. As the above empirical example shows, routines seem to play an important role in this type of learning. Hence, though learning and relationships are the two main concepts in order to study and understand learning across firm boundaries, the concept of routines seems as a useful way to link them, as illustrated in the figure below.

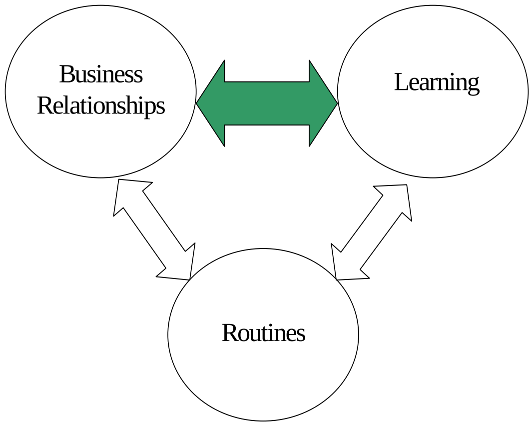

Figure 1.1 Approach to learning across firm boundaries

The aim of this thesis is to fill the gap identified by Håkansson et al. (1999). As noted, the above perspective of learning is in line with the empirical examples presented in the introduction section where it was argued that these examples illustrate learning across firm boundaries. When comparing the examples with more traditional notions of inter-organisational learning, we see that they offer a different approach. The example illustrates the mutual learning between WWD and the supplier as they seek to improve the overall delivery routine and their subsequent parts of it as to fit to each other. This shows that learning in relationships also involves companies learning together, resulting in mutual adjustments of inter-organisational routines. The example demonstrates that learning across firm boundaries may be related to how customers and suppliers in industrial settings seek to create stable and efficient exchange flows through the establishment of new and modification of existing routines.

Accordingly, looking at the role of organisational routines seems to be one possible way to describe and investigate the day-to-day interaction and learning practices between business firms, and hence to provide a further understanding of learning across firm boundaries. We saw earlier that routines have been connected to both business relationships and organisational learning. Routines, or more precisely cognitive rules, have also been used to investigate inter-organisational learning in formal collaborations in previous literature (Holmqvist 1999; 2003; 2004). In this thesis we are interested in using routines to investigate learning in vertical and regular relationships between customers and suppliers in industrial settings. In the following sections, each of these three concepts is further examined. Firstly, the concept of routines is elaborated upon, looking at how routines are defined and what function they play. Further the two concepts of business relationships and learning are addressed.

Organisational routines

Routines have been considered in organisational research for decades, first as programs and standard operating procedures in decision making ((March and Olsen 1958; Cyert and March 1963), and furthermore to explain the evolution of firms and industries (Nelson and Winter 1981). Following these early notions, the literature has evolved in a number of directions. Routines have been defined as ”multi-actor, interlocking, reciprocally-triggered sequences of skilled actions” (Cohen and Bacdayan 1996:554), and as “an executable capability…that has been learned.” (Cohen et al. 1996). Taken together the literature reveals three main dimensions of routines: the co-ordinating, the cognitive and the motivational dimension (Cohendet and Llerena 2003).

Routines are co-ordinating mechanisms that structure much organisational functioning (Nelson and Winter 1982). Co-ordination is essential for firms to be productive, as it allows for human and physical resources to be combined. Routines enable co-ordination of different organisational performances, providing a smooth flow of actions. Narduzzo, et al. (2000) remark that in addition to each routine being a co-ordination of individual behaviours, the co-ordinating dimension also relates to how single routines are linked to each other. Hence the interdependence between routines is important. This idea is also recognised by Nelson and Winter (1982), arguing that the performance of a routine means integration and co-ordination of different sub-routines constituting the overall routine.

The co-ordinating dimension of organisational routines is closely linked to the cognitive dimension. This dimension relates to the idea that routines contribute to economising on limited cognitive resources (Nelson and Winter 1982). Because of routines, firms can concentrate their efforts on novel situations, whereas recurring events can be handled more semi-consciously. Similar to individuals, organisations preserve their skills by repeating them - they remember by doing. In this way routines constitute the memory of organisational knowledge for what to do and when to do it (Nelson and Winter 1982). When members in an organisation learn how to co-ordinate and use resources, these lessons are made collective, maintained and accumulated within routines (e.g. Cyert and March 1963; Nelson and Winter 1982; Levitt and March 1988; Cohen and Bacdayan 1996; Cohen et al. 1996; Feldman 2000; Edmondson et al. 2001). One important implication of this notion is that because people are involved, routines provide both stability and possibilities for change (Feldman 2000).
The final dimension of routines is the motivational dimension. This dimension refers to the role routines have as truces among organisational members seeking their own interests (Nelson and Winter 1982; Cohendet and Llerena 2003). Routines contribute to controlling political tensions in an organisation, as they work as devices for who is to do what, when and how. As such, routines provide knowledge and expectations to each member about other members' behaviour, and change efforts may disturb this balance.

These three dimensions together describe the main functions of routines. In summary, organisational routines refer to an organisation's recurrent cognitive and behavioural patterns, which provide it with some kind of stability, predictability and efficiency (Becker 2004). Routines have been primarily studied in research on processes within the single firm. However, according to Håkansson and Snehota (1995), routinisation is a feature of exchange relationships in industrial settings. Routines are certain types of activities used to co-ordinate the resource collections of the parties involved in a relationship. Similar to activities in general (see for example Dubois 1994), routines can be further characterised according to degree of adaptation. While some routines are standard and generic, used for handling multiple situations and relationships, others are more adapted to a specific situation and specific relationship partners.

Business relationships and industrial networks

During the past decades, the relationship and network aspect of organisational behaviour has received much attention from both researchers and practitioners (Håkansson and Ford 2002). However, there exist different views of the way companies relate to each other and the implications of this relatedness. In the marketing literature, exchange relationships have been put on the agenda by researchers from a variety of different perspectives.[1]. In strategy, attention is given to strategic alliances and joint ventures. In purchasing, supply chains and networks represent the new mantra.

In this paper we are interested in vertical and regular exchange relationships between buying and selling firms in industrial settings. One stance of research that has contributed to the understanding of such relationships is the IMP (Industrial Marketing and Purchasing) tradition (see Håkansson 1982; Ford 1990; Axelsson and Easton 1992; Håkansson and Snehota 1995). Researchers within this tradition advocate an industrial network approach to business markets, viewing industrial markets as networks of connected inter-firm relationships. The IMP group was established in 1976, as a result of a growing dissatisfaction of the traditional micro-economic view of industrial exchange. Contrary to the traditional view, the industrial

[1] The notion of relationships between firms has been considered and studied in transaction cost economics, resource-dependence theory, relational contracting, agency theory and the industrial network approach, to mention a few

network approach views economic systems and exchange processes in the following way: ”Instead of free moving units within free moving markets we have companies tied together in a close structure with very little freedom to move” (Håkansson 1982:394). Hence, a basic assumption within the industrial network approach is that ”no business is an island” (Håkansson and Snehota 1990, 1995).

Findings from nearly 30 years of IMP research suggest that industrial markets are characterised by long-lasting and inter-connected relationships between companies engaged in buying and selling activities rather than by discrete business transactions between independent companies. Because companies in industrial settings need access to external resources as well as they need to sell their own products and services, exchange relationships are established (Johanson and Mattson 1987; Håkansson and Snehota 1995). In that sense, relationships are both necessary and valuable. The industrial network approach holds that companies operate in an ”interactive” environment (Ford et al. 1986). This notion builds on Weick’s (1979) recognition of the active role companies play in creating their own environments. This enacting process involves action bracketing and active intervention in the environment. However, in the industrial network’s view, the enacting process is rather one of *interacting,* i.e. companies create their own environments by interacting with other companies.

Companies are hence connected to each other through relationships and through a broader network of relationships. Business relationships are comprised by technical, economical and social dimensions, in which exchanges between the parties occur (Håkansson 1982). Within each of these dimensions, bonds may arise creating interdependencies between the parties that provide both possibilities and constraints (Johanson and Mattson 1987). Another way of describing business relationships is by the way they connect the activities and resources of the involved actors, and how these connections affect each of the parties, the dyad and the network in which they are embedded (Håkansson and Snehota 1995). The strength and width of these connections vary among different relationships. The bonds and connections arise through learning and adaptation, and provide continuity and relative stability to the relationship. The stability dimension of relationships may be seen as the very reason why relationships exist. As such relationships are necessary for firms to deal with the complexities and ambiguities they are facing in a market.

Certain connections and bonds in a business relationship can become embodied as routines, endowing the relationship with further stability (Håkansson and Snehota 1995). Routines, both within each company and across firm boundaries, aid the complex needs to co-ordinate activities in which particular resources are used and combined within the relationship. It is important to notice in this respect that despite the stability feature of business relationships enabled by among other things routinisation, It is important not to confuse stability with stagnation. A striking feature of business relationships is the interplay between stability and change. Sometimes stability is required or used to create change and vice versa. As long as the relationships entail interaction processes, learning and change will always exist. The changes are, however, more often evolutionary and incremental than radical. An important implication of the assumption about connectedness is that changes will not only be local to a dyadic relationship. Instead, changes will often propagate to other relationships in the network, and hence create dynamics on the network level. This has been referred to as connected change and network effects (Halinen et al. 1999).

Organisational learning

Organisational learning has traditionally been referred to as the process by which organisations adjust to their environments (see for example Cyert and March 1963; March and Olsen 1975; Argyris and Schon 1978; Fiol and Lyles 1985; Levitt and March 1988). Though learning has probably been acknowledged as an important aspect of organisational life for as long as organisations have been studied (Huysman 1996), the interest in organisational learning and knowledge exploded throughout the 1990s. As a result, the concept has been incorporated into disciplines not traditionally concerned with this issue. Organisational learning is now an established field of study (Easterby-Smith et al. 2000), including the extension of level of analysis to studies of learning in relationships and networks. However, as different disciplines have come to appreciate the learning concept, a diversification of the field has developed, emphasising different dimensions of learning.[2]

In this thesis, we are interested in learning that takes place in the type of business relationships described earlier within the IMP tradition. One perspective that seems useful in order to investigate such learning is the adaptive perspective (Huysman 1996), or what may also be called an experiential or routine-based perspective of learning.[3] The adaptive perspective is based on the behavioural theory of the firm as advocated by March and Simon (1958) and Cyert and March (1963). These authors argue that organisations are adaptive institutions, which learn by experience. According to Cyert and March (1963), learning is a key feature of organisational processes, such as decision-making. Organisations adapt their goals and aspiration levels as well as their attention rules. Adaptation is in other words related to the selective attention that the organisation pays to the various parts of the environment. Finally, the organisation also adapts its search rules, based on experiences with previously tried solutions. One thing is that search is problem oriented, but the search rules themselves also change. Search procedures that are perceived successful will be repeated, while those associated with failure will be changed. In addition, the code for communicating information about alternatives and their implications also changes through experience.

Since these first notions of organisational learning, March and various colleagues of him have continued to elaborate on and refine the notion of such learning (see for example March and Olsen 1975; Levitt and March 1988; March 1991; Levinthal and March 1993). The adaptive perspective contrasts in various respects to other contemporary perspectives of learning. The increasing attention given to learning and knowledge in the past decades has resulted in a focus on learning as a means to enhance firms' competitiveness. In the resource-based perspective for example, knowledge is viewed as a firm's most important resource (see for example Prahalad and Hamel 1990; Barney 1991; Conner and Prahalad 1996). Companies' ability to survive is seen as depending on their ability to learn and create new knowledge and appropriate organisational capabilities (Grant 1996). In many of these recent views of learning, learning is equated with effectiveness and improvement. It further follows that by applying appropriate means planned, learning objectives can be reached. Hence, focus is put on the outcomes of learning and on how to reach these desired objectives. The adaptive perspective of learning on the other hand argues that learning takes place, whether or not it is planned or leading to efficiency. This perspective has directed the attention towards the complicated, problematic and less-efficient side of learning (Huysman 1996). Especially the notion of learning from experiences has been thoroughly discussed (March and Olsen 1975; Levitt and March 1988; Levinthal and March 1991).

In summary, the adaptive perspective of organisational learning views learning as the process where organisations adapt to changes in their environments (Huysman 1996). The environment includes among others competitors, customers and suppliers. Hence, the adaptive perspective on learning seems useful for the purpose of this paper. Although this perspective has been criticised for emphasising too much external triggers to learning and neglecting internal triggers, it has been influential on much contemporary organisational learning theories (Huysman 1996). One key issue in the extended notions of the adaptive perspective is the emphasis on organisational experiences captured in routines. As described in an earlier section, the notion of routinisation based on past experiences and learning was recognised by March and Olsen (1958) in their concept of action programs and by Cyert and March (1963) in their concept of standard operating procedures. Furthermore, Levitt and March (1988) argue that learning is encoded in routines, meaning that knowledge and learning are maintained and further accumulated in routines. Routines are seen as a result of past experiences and learning, as well as a frame for future experiences and interpretations of them. This perspective of learning includes as such both an adaptive and experiential as well as an evolutionary perspective of learning.

[2] For an extended review, see Fiol and Lyles (1985), Cohen and Sproull, (1996) and Easterby-Smith et al (2000)

[3] In the following, we will use the term adaptive perspective

Theoretical discussion

The following section will present a more thorough discussion of business relationships and learning based on insights from the IMP research tradition and the adaptive perspective of organisational learning. The discussion focuses on the possibilities of and problems in connecting these two concepts through the means of routines from a theoretical point of view. The review provides as such a theoretical basis for understanding learning across firm boundaries, which can aid the development of the conceptual framework. It is important to notice that this discussion considers principal types of issues and processes of relationships and learning, by using what are considered typical contributions within the chosen literature.

Learning in business relationships and industrial networks

Learning and knowledge have been recognised as central aspects of the interaction processes between firms in business relationships within the IMP research tradition. Ford et al (1986) note that interaction can be perceived as a learning process and it is through learning that business relationships arise (Håkansson and Johanson 2001). Through mutual learning the parties in a relationship are directed towards each other (Johanson and Mattson 1987), and the routines of the two parties are modified and become interdependent (Håkansson and Johanson 2001). One central aspect when considering learning in an interactive perspective is that this process also includes teaching (Håkansson et al. 2001; Håkansson and Waluszewski 2002). Companies are not free to decide what, from whom and when to learn. Instead, their ability to learn is influenced by other companies to which they relate. Hence, in the interface between companies, both learning and teaching take place. In the IMP research it is highly recognised that relationships differ according to various characteristics. In the following we shall briefly consider the implications of one such characteristics, *type of relationship*, for learning.

Type of relationship and learning

One way of describing the substance of business relationships is in terms of the involved actors, activities and resources and the connections between them (Håkansson and Snehota 1995). Furthermore, several researchers within the IMP tradition have recognised that business relationships differ in terms of how closely connected these three layers of substance are. Gadde and Snehota (2000) argue that the differences between high-and low involvement relationships are reflected by the existence of strong activity links, resource ties and actor bonds, comprised by processes of co-ordination, adaptation, and interaction. While low-involvement relationships require little of these three processes, high-involvement relationships imply a high degree of these processes. We may assume that learning is a key feature of high-involvement relationships. Such relationships are developed through the three processes of co-ordination, adaptation and interaction, which all are tightly linked to learning. Thus, it is likely that in those relationships where such connections exist, learning has occurred. It is also likely that learning will continue to occur in such relationships, as such connections are likely facilitate further learning (Bångens and Araujo 2002).

Araujo, et al. (1999) also use the concept of involvement in order to define the closeness of a business relationship. Involvement here refers to how companies access resources from their suppliers. Four different ways are identified, comprising interfaces between the parties. These interfaces comprise a continuum of how close the parties interact in order to fulfil the exchange of resources, ranging from standardised interfaces, translation interfaces, specified interfaces, and finally interactive interfaces. Learning exists on all levels, but to a varying degree and in different ways. The various interfaces can be described in terms of the productivity and innovativeness they provide. Innovativeness is here related to both direct and indirect learning. Direct learning is joint learning that takes place between the relationship partners, while indirect learning means that the customer benefits from the supplier’s learning in other relationships. According to Araujo, et al. (1999), both types of learning are likely in an interactive interface, while in the other interfaces direct learning is unlikely. However, both in the standardised interfaces and the translation interfaces, indirect learning benefits may be achieved, as the supplier may use its knowledge for several customers. In the specified interface, however, the possibilities for both direct and indirect learning are limited. Hence, different types of learning, i.e. relating to either productivity or innovativity, is likely to take place in different types of relationships, i.e. high-or low-involvement relationships.

Learning and resource development

According to the above, learning is related to the establishment of connections between actors, activities, and resources. However, although learning is an important aspect of both connecting activities and actors, learning has most of all been related to resources in the industrial network approach (see for example Håkansson 1993; Håkansson and Snehota 1995; Wedin 2001; Holmen 2001). A central topic within the industrial network approach is technological development and the role of resources in this process (Håkansson and Waluszewski 2002), and learning is considered a critical issue in such processes. For example, Håkansson (1987) argues that technical development processes constituted by investments in real capital, day-to-day rationalisations or product development, may be considered as a learning or evolutionary process. Furthermore, Håkansson (1993) argues that learning with respect to the use and combination of resources, concerns learning about the specific resource elements involved and how to combine them. Such learning can be accomplished in three different ways: (1) through the direct experimentation of a single actor, (2) through the use of the other companies' knowledge and experiences, and (3) through joint learning based on several actors' knowledge and experimentation. Collective learning is facilitated as relationships and networks make more resources and knowledge available. Through combining the knowledge bases of the involved parties, the possibilities for creating new knowledge increase.

Two central features of resources are heterogeneity and embeddedness, and these have important implications for learning. Because resources are heterogeneous, they gain value through their combination with other resources. However, since the number of combinations in which a resource can be used is infinite, their potential use can never be fully known. There are always things to learn about a resource and new combinations to experiment with (Håkansson 1993). When heterogeneous resources are combined, the performance of this specific combination increases due to experiential learning and adaptation. The combination further enables new knowledge to develop, creating possibilities for new and improved resource combinations. Such new knowledge often implies that activity cycles are changed or replaced. Hence it provides the possibility for development and changes. According to Araujo, et al. (1999) the productivity of firms is determined by the efficiency in the utilisation of a given resource combination at any one time, whereas innovativeness is related to the development of new resource combinations over time.

When heterogeneous resources are combined, the increased performance of this specific combination relies on the dependence and adaptation of the involved resources. This implies that the resources get embedded in each other (Wedin 2001) and that the specific combination becomes routinisied (Holmen 2001; Harrison and Bygballe 2006). This embeddedness implies that changes in a particular resource or resource combination both affect and are affected by other resources. Because of investments, i.e. adaptations developed through past learning, resources become *cemented* into each other creating a certain resource structure (or what Holmen 2001 terms a combination and use routine). The greater the investments and the importance of one resource in relation to the other, the *heavier* the resource interface is. Such a structure may put constraints on attempts to make changes. Håkansson and Waluszewski (2002) relate this to the concept of *path dependence*, which implies that "solutions that are historically built into an industrial structure, inhibit the development of new paths that break with the existing structure" (*ibid*: 139). Companies are not free to learn and change whatever they like, because the results of this learning may not fit into the existing structure. While path dependence may hinder learning and development of resources, Håkansson and Waluszewski (2002) notice that it may also enhance the development of resources. This happens as different paths are crossed and combined in new ways.

Håkansson and Waluszewski (2002) note that some times resources seem easy to change, while at other times changing them is apparently impossible. This fact is central in order to understand development processes. To explain how the embedded nature of resources affects their possibilities for change, Håkansson and Waluszewski use the concept of *friction.* On one hand, friction is a stabilising force, which makes it difficult to change resources because of past learning and embeddedness. Friction will always lead a change towards compatibility with existing solutions. On the other hand, friction will also produce change. Through friction, any force directed towards an embedded resource, will be distributed to other resource elements to which the focal resource has interfaces. Friction may then create tensions in related resource interfaces and reveal possibilities for change. In this way friction has both a stabilising and a de-stabilising effect.

The role of routines in business relationships and networks

Learning in the IMP research tradition has been related to the establishment of routines (Håkansson and Johanson 2001). However, with a few exceptions (see for example Araujo and Mota 2004; Harrison and Huemer 2005; Harrison and Bygballe 2006), the IMP research has not been specifically concerned with routines. Nevertheless, routinisation of exchange processes is considered as a feature of business relationships (Håkansson and Snehota 1995; Håkansson and Johanson 2001). In the following we shall look at how routines have been treated in the IMP literature.

Routines and industrial networks

A basic assumption in the IMP research tradition is that of connectedness, which means that parties in a relationship get connected with each other through the establishment of actor bonds, resource ties and activity links, and that relationships are further connected in networks of relationships. Relationship partners establish routines in order to co-ordinate their respective activities and resources (Håkansson and Snehota 1995; Holmen 2001; Håkansson and Johanson 2001; Araujo and Mota 2004; Harrison and Bygballe 2006). Routinisation is accomplished through codification of activities and the embodiment of procedures in human and physical resources (Araujo and Mota 2004). Harrison and Bygballe (2006) argue that three types of routines can be identified in a business relationship. Two types are the respective intra-organisational routines at each of the parties used for handling the counterpart. The third type is the inter-organisational routines, connecting the two parties more directly. As such, routinisation of activities, in which resources are combined and used, takes place both within and between companies. Similarly, Araujo and Mota (2004) note that routines intersect and interact across firm boundaries, and enable cross-relationship co-ordination (Håkansson and Johanson 2001).

It is important to notice that routines may be standard, meaning that they are used in a similar way for many counterparts, or they may be adapted for a specific counterpart. It is often emphasised that adaptation of the routines is often necessary to achieve their assumed benefits (Johanson and Matsson 1987). A potential problem is, however, that as adaptation of routines is often important for the cost efficiency of the single relationship, it is not necessarily beneficial for the single party’s activity structure as a whole. Major adaptations in one relationship may require the reallocation of activities, involving the breaking up of certain routines. This may have implications for the party’s other relationships. It is hence a balance between what can be achieved by adaptations in one relationship, and what can be achieved by standardisation of processes in an overall perspective. In Harrison and Bygballe (2006), this dilemma is well illustrated by a case study of a selling company changing its customer-handling routine from having local offices experienced with the handling of specific customers to introducing a customer-service centre (CSC), aimed at standardising the service. While the standardisation provided benefits in terms of availability of the service, the former relationship-specific knowledge enabling adapted service to the specific customers was lost.

Håkansson and Snehota (1995) argue that business relationships tend to become institutionalised over time, and routines are considered as important means in this respect. Routines are here defined as both explicit and implicit rules of behaviour and rituals of conduct (Håkansson and Snehota 1995). Routinisation of exchange episodes over time provides both predictability and stability to a relationship. Firstly, it results in clear expectations of roles and responsibilities of both actors. It provides as such a resolution of possible conflicts in a relationship. Furthermore, it contributes to stabilising the exchange processes between relationship partners, and so the possibility for increased cost efficiency. However, Ford, et al. (2003) remark, institutionalisation may result in existing routines not being questioned, and finally becoming inappropriate in fulfilling either party's needs or requirements. This is the problem of institutionalisation (Håkansson and Snehota 1995).

Routines and resource interaction

Håkansson and Waluszewski (2002) argue that companies establish certain activity structures, where resources are used in a certain way. These structures of activated resources may become routinised. Routines represent as such methods in combining and activating resources. Some resources are used in multiple activity chains. However, the use of a resource, in particular if it is specifically adapted to this use, affects its potential use in other activities and routines. Resource embeddedness has also implications for routines. Changes in routines and the way resources are used and combined within them, will affect other resources and routines to which they are connected. As we shall see later, Håkansson and Waluszewski (2002) use the concept of friction to illustrate this point.

Holmen (2001) introduces the concept of *combination and use routine,* when investigating resource development. She differentiates this concept from the more generic term *activity.* While the concept of *activity* as used in other IMP research, (i.e. Dubois 1994), refers to a more general type of activity, the concept of *combination and use routine* refers to the more specific and qualitative way in which an activity is performed, that is to say, which resources that are involved and how. Furthermore, this implies that one single activity can be composed of many *combination- and use routines*. Holmen (2001) uses this insight to investigate technical development, considered in terms of changes in combination and use of routines.

In a similar vein to Holmen, Harrison and Bygballe (2006) argue that resources are combined and used through routines. Routines connect organisational and physical resources both within and between companies. In their study of the introduction of new business unit resources, they show how changes in existing resource interfaces affect the routines that are embedded within them. They further relate this to implications for learning. Changes in routines between business partners, represented by changed business unit resource interfaces, will change the knowledge connection between the parties, and hence the possibilities of learning.

In the above sections we have considered the role of routines in business relationships from an IMP perspective. With a few exceptions, the role of routines has not been studied extensively within this tradition. However, routines and routinisation are considered as one feature of business relationships, leading to institutionalisation. Routines are types of activities, in which resources are used and combined in specific ways. Routines become as such a method for using and activating resources. The way routines are developed is based on experience and learning.

The role of routines in organisational learning

It was argued earlier that in order to understand learning across firm boundaries, an adaptive perspective of organisational learning would be useful. Within this perspective, routines are considered to play an important role in the learning process, both as a result and as a further vehicle. In this section this perspective will be further elaborated. As we shall it has primarily focused on learning within organisations. However, in recent studies, it has also been applied to learning in inter-organisational research.

In the adaptive perspective of organisational learning, learning and knowledge are seen as being maintained and accumulated within routines (Levitt and March 1988). Much of what has been written about changes in routines, associates changes with the origins of routines, and states that after a while equilibrium is established (Feldman 2000). Some have attributed this to the procedural feature of organisational routines (Cohen and Bacdayan 1996), while others have emphasised that because routines are embedded in existing technologies, they are difficult to alter (Edmondson et al. 2001). Changes in routines are however, observed. In evolutionary theories, changes are seen as results from evolutionary processes, through the variation, selection and retention (Cyert and March, 1963, Nelson and Winter, 1982), or mismatches between current routines and environmental conditions and aspiration levels (Levitt and March, 1988). Often exogenous sources to variation and change have been emphasised. Howver, Recent studies have recognised the dynamic dimension of routines, and that variety and change are intrinsic features of organisational routines (Pentland and Reuter 1994; Feldman 2000; Narduzzo et al. 2000; Feldman and Rafaeli 2002; Tsoukas and Chia 2002; Lillrank 2003; Feldman and Pentland 2003). As Feldman (2000) remarks, it is a question of how routines are viewed. If they are studied on a macro level, they seem rather stable and static. However, if micro studies are conducted, we will find that routines continuously alter through smaller or larger incremental changes.

In these studies it is emphasised that routines are not mindless behaviour, but involve complex patterns of interpretation and learning. For example, Pentland and Reuter (1994) describe routines as ongoing and effortful accomplishments. Routines are seen as grammar guiding organisational behaviour, and just as grammars allow for producing a variety of sentences, routines allow for producing a variety of performances. Routinised behaviour is on one hand constrained and enabled by the cognitive structures of individuals, and on the other hand the physical and social structures of the organisation. Hence, stability exists. However, at the same time individual effort and agency are important features of these routinised patterns. Narduzzo et al. (2000) found in their study of a newly formed cellular phone company that the behavioural view of routines was insufficient to explain what actually happened in the field since it is a complex interplay between interpretive activity and the resulting behaviour.

Routines as triggers of learning

Feldman (2000) argues that routines possess an inherent capability to generate change by being performed. Other researchers have also recognised that routines are important sources of flexibility and learning. These emphasise the routinised efforts of companies in deliberately evoking change and innovation. Routines that are directed towards changing other routines have been termed search and high-level routines (Nelson and Winter 1982), higher order routines (Nelson 1991), meta-routines (Adler et al. 1999), and dynamic capabilities (Zollo and Winter 2002; Teece et al. 2000). In a similar vein, Nelson (1991) refers to the idea of different levels of routines as the hierarchy of routines. While lower order routines are necessary to accomplish certain tasks, higher order routines are necessary to invoke them in the particular combination needed to carry out the task. Together these routines define what the organisation is capable of doing, and hence comprise its core capabilities. Following the notion of capabilities, Zollo and Winter (2002) describe higher order routines as constituting a firm’s dynamic capabilities. These are defined as ”a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operational routines in pursuit of improved effectiveness” (Zollo and Winter 2002:340). [4] As such dynamic capabilities describe the rather stable activity through which a firm modifies its operational routines, as well as the relatively predictable and stable way of handling specific projects, developed through past experience. Zollo and Winter (2002) argue that the development and changes in both operational routines and dynamic capabilities are a result of learning. Routines evolve and change in a cyclical learning process triggered by either external stimuli

[4] The concept of ”dynamic capabilities” has derived from extended versions of the resource based view (see for example Teece et al. 2000; Eisenhardt and Martin 2000; Grant 1996). Within these notions capabilities refer to an organisation’s ability to develop, integrate and combine resources, in particular knowledge. Organisational routines are proposed as important means in this respect. Though the understanding of dynamic capabilities have primarily been concerned with the single firm, it is increasingly recognised that the capabilities of the firm are closely related to those of other firms (Bångens and Araujo 2002) .

or internally due to problems faced in the performance of existing routines. We see that the latter compares to Nelson and Winter's (1982) idea of the connection between existing routines and innovation. These variations are further object to selection, replication, and retention mechanisms. This cyclical learning process proceeds from an exploration phase aimed at generating and evaluating new ideas (variation and selection) to an exploitive phase, where the new ideas are replicated in diverse contexts and absorbed into existing routines (replication and retention), returning to a new exploration phase.

As we have seen, Levitt and March (1988) claim that learning is encoded in routines, that is, experiential learning by individuals on behalf of an organisation is maintained *and* accumulated within routines. Though emphasis is put on knowledge accumulation and learning by doing when considering changes in routines and innovation, other learning processes are also involved. Nelson (2003), for example, refers to ”off-line” learning as being an important aspect. Contrary to ”on-line” learning, this type of learning often refers to what is going on in R&D departments, or other places outside the immediate task performance setting. One type of off-line learning can, for example, be the appliance of high-level routines. Nelson states that while many of the problems and opportunities are recognised on-line, much of the solving is done off-line. Thus changes in routines and innovation may involve several types of learning processes, ranging from hands on experience when the routines are performed, to more deliberate aims of developing knowledge outside actual practice.

Different modes of learning and changes in routines

The connection between routines and organisational learning also relates to the recognition that learning may lead to both incremental and transformational changes (Easterby-Smith et al. 2000). While the former learning is related to the refinement of existing routines, the latter is related to the establishment of new ones. Various labels have been used to describe these different modes or types of learning.[5] For example March (1991) uses the terms exploitation and exploration to refer to the distinction between incremental and radical learning. He argues that organisations have to divide their attention and resources between these two activities. Hence, exploitation and exploration compete for scarce resources. When it concerns exploitation, this involves learning that refines and extends existing competences, technologies, and paradigms, and hence creates reliability. It includes refinement, choice, production, efficiency, selection, implementation, and execution. Exploration on the other hand involves learning and experimentation with new alternatives, and is associated with search, variations, risk taking, experimentation, play, flexibility, discovery, and innovation. It creates as such a variety of experiences. March (1991) notices that organisations have to maintain a balance between these two processes in order to survive and prosper. An organisation that only engages in explorations will end up paying the costs without benefiting from the experimentation. If, however, the organisation engages in exploitation only, it will stagnate and be left with sub-optimal solutions, described as competency traps (Levinthal and March 1993).

It has been argued that the distinction between the different modes or types of learning is blurred, and that in practice there is no real difference between single-loop and double-loop learning (Huber 1991). As Easterby-Smith, et al. (2000) remark, what appears as an incremental change at one level of analysis, for example the individual, may be considered as a transformational change at another level, for example at the organisational. It is also time dependent, that is to say, what is considered an incremental change at one point in time, may in the long run be considered as a transformational change. Contributing to this discussion, Huysman (1996) suggests that we should instead talk about a continuum, where learning should be considered as a many-sided phenomenon. The various types of learning are here considered as continuous and as being positioned along a continuum, ranging from learning, which reinforces things already known, to learning new things.

[5] Different modes of learning has for example been referred to as lower-level and higher-level learning (Fiol and Lyles 1985) and single-loop and double-loop learning (Argyris and Schon 1978)

Inter-organisational learning and routines

In research on inter-organisational arrangements, little attention has been given to routines, except from routines that are purposefully established to facilitate learning between companies. This is in line with the inter-organisational learning literature, which focuses on conditions of learning. Such routines have been termed knowledge-sharing and learning routines (Dyer and Singh 1998; Dyer and Nobeoka 2000). However, in some recent studies of inter-organisational learning, routines have been related to the result of learning rather than as a learning facilitator. Inter-organisational learning is here considered as the process in which mutual knowledge represented by inter-organisational routines and rules are produced and changed (Larsson et al. 1998; Holmqvist 1999; 2003; 2004; Zollo et al. 2002) . The knowledge generated, is shared among the parties through these routines. In the following section, we shall take a closer look at this connection between learning and routines in inter-organisational settings.

Holmqvist (1999; 2003; 2004) notices that the process in which inter-organisational learning actually occurs, is unspecified in the literature. He, therefore, offers a way of understanding such learning. Holmqvist (2004) argues that learning both within and between organisations can be defined in terms of experiential learning processes, leading to the production and re-production of rules. Two main learning processes are identified. Firstly, dissatisfaction with exploitive behaviour triggers an *opening-up* process, which involves a more explorative process of experimenting and trials, creating variety in experience. If the exploration does not provide any returns, *focusing* will be needed, meaning that routinisation is generated from processes of experimenting and trials. The connection between intra-organisational and inter-organisational learning is also described through two *translation* processes. The first one relates to how intra-organisational learning generates inter-organisational learning, which further involves two processes of *extension*. The first of the processes relates to how the experiences of one party in a business relationship, are extended to the other party, thus exploiting each other's experiences. As we remember from the introductory chapter, this is the process that has been most emphasised in the literature. However, the other process implies that the parties extend their experiences to engage in collective explorative learning. Thus it is not only a matter of exploiting the other party's knowledge, but also of producing new experiences. The other main translation process refers to how inter-organisational learning generates intra-organisational learning, called *internalisation.* This means that an organisation has to internalise the experiences that has developed inter-organisationally. Based on these arguments, Holmqvist (2004) develops a model of organisational learning which includes four main processes: *Opening-up extension, focusing internalisation, opening-up internalisation,* and *focusing extension.* Together these processes explain how intra-and inter-organisational rules are developed and changed.

Combining the concepts: A conceptual framework

It was stated earlier that the aim of this paper was to develop a conceptual framework for how to investigate and understand learning across firm boundaries by linking the three concepts of learning, business relationships, and routines. The question was how to go about this in the triangle of concepts. In this paper we have looked at two theoretical traditions, the IMP research tradition and the adaptive perspective of organisational learning, and how the three concepts have been treated within them. What are the possibilities and problems in using insights from these traditions to link business relationships and learning, through the means of routines? As we have seen, the two traditions include some notions of how learning and business relationships relate to each other, in addition to assumptions about routines. In the following section we shall recapitulate how these concepts have been approached within the two traditions and how these respective applications relate to each other. Furthermore, the possibilities of linking the notions from these two traditions are discussed, and a conceptual framework for how to investigate learning across firm boundaries is proposed.

Business relationships

The two traditions have quite different views of business relationships. The IMP tradition focuses on exchange relationships between customers and suppliers in industrial settings, where the main purpose of relationships is technical, economic, and social exchange. It is argued that no company is self-contained with the resources it needs, and hence companies establish relationships with other companies. Relationships are as such resources in themselves as they facilitate access to a broader variety of resources. Such relationships have been characterised and described in various ways, such as closeness of actor bonds, activity links, and resource ties. Connections in these layers are necessary in order to co-ordinate the exchange flows and create interdependencies between the parties. But the connections of the layers are different in various relationships, illustrating whether there are high or low involvement relationships. A central feature of business relationships is, therefore, connectedness. This also relates to the assumption that relationships are connected to other relationships, that is to say, what happens in the relationship between A and B may have impact on the relationship between A and C.

In the adaptive perspective on learning, research on inter-organisational settings have with a few exceptions focused on formal collaborations, such as strategic alliances between firms. These relationships are often set up with an explicit learning objective, for example new product development in relationships between bio-technical and pharmaceutical firms. Though this literature is primarily based on the dyadic relationships, some have studied so-called learning networks, where multiple firms are involved in the learning process.

As we see, the two traditions focus their attention on quite different types of relationships. It seems reasonable to say that more regular customer-supplier relationships have been neglected in the organisational learning literature. A key reason for this is that learning is viewed as something, which increases performance and competitiveness. As such, deliberate and planned learning is studied to provide knowledge about how such learning can be facilitated and how to overcome impediments to such learning.

Routines

In the IMP literature, routines are seen as co-ordinating the activities and resources in a business relationship. Routinised activity patterns are established around a certain resource structure to provide stability and efficiency in the exchange process between the partners. Routines can be seen as embedded in the use and combination of various resources, and as such can be considered as a certain kind of activities. In this literature, activities have been studied, by Dubois (1994) among others, who emphasises the generic versus specific dimension of activities. By viewing routines as embedded in resources and resource interfaces, a key dimension of this connection is the generic versus specific dimension. In the IMP literature, much emphasis has been put on what is specific in a relationship and adaptations made. This may be one explanation why routines have not been a central theme. In the organisational learning literature, organisational knowledge and learning are seen as maintained and accumulated within routines (Levitt and March 1988). Routines co-ordinate individuals and their knowledge, and provide stability and efficiency in organisational performance. Both perspectives view routines as a result of a learning process. However, while the IMP tradition focuses on how routines are embedded in physical resources, the adaptive perspective of organisational learning focuses more on how routines co-ordinate soft resources, such as knowledge.

A key feature of business relationships according to the IMP research tradition is that of connectedness. One implication of this is that changes propagate, or in other words, their effects are not only local. When it concerns resources, these can be shared among various activities both within and across firm boundaries (Dubois 1994). This is important when it comes to degree of adaptation. If we transfer this to the notion of routines, it means that various routines make use of specific resources, and that the same resource will (probably) be involved in various routines. Hence changes in a routine leaving imprints in resources, may transmit themselves to other routines. As such, changes in one routine in terms of adaptation of the resource, may impact on the other routines that use the same resource. This can concern both different routines within a relationship and different routines in different relationships. As we shall see below, this has some important implications for learning.

Learning

Based on the literature review, it seems reasonable to argue that the two traditions have some common views of learning, but that there are some important differences as well. With some important exceptions (see for example Håkansson 1993; Håkansson et al. 1999; Håkansson and Johanson 2001; Harrison and Bygballe 2006), the IMP tradition has not been extensively occupied with the learning issue. Nevertheless, learning is seen as an important aspect of the interaction processes between firms. Similar to the adaptive perspective of organisational learning, the IMP tradition is also based on behavioural and evolutionary perspectives of organisations. Hence, learning is also here considered as an experiential-based adaptive process. The IMP tradition focuses in particular on learning as adaptation in resources in relationships and networks. Of course, the IMP tradition recognises that learning and adaptations are also involved in creating actor bonds and activities links. However, resource development is in particular related to learning. Learning is embodied in resources, which are deployed in routines. An important issue is to gain value from the development and adaptation of the resource in one relationship and use it in other relationships. It is the transfer, i.e. how learning is affecting and being affected by others outside the focal relationship, that is of crucial importance. The IMP has to some extent adopted a similar perspective of learning. Though learning relates to the way relationship partners make the relationship and the resources involved more specific, it is the effects of this learning on other relationships and the network that is interesting. Learning, which only stays in the dyad, is not very interesting.

In the adaptive perspective of organisational learning, learning is related to adaptation of behaviour and knowledge based on experiences. Nelson and Winter (1982) recognise that physical resources are also co-ordinated and involved in the learning process. However, the main focus is on routines. The adaptive perspective is based on the behavioural theory of the firm and an evolutionary perspective. The latter means that adaptation in routines is seen as framed within past learning. In other words, past learning and experiences guide future learning, and hence influence what is learned. This implies that though learning takes place, it is not always appropriate. Both external and internal sources of variation are suggested to trigger the learning process. Organisations learn and adapt, based on feedback of their actions from the environment. Internal triggers are also important. Organisations judge their performance based on perceived success and failure, and tend to change their behaviour if the performance is below aspiration levels. These judgement and change processes may themselves be routinised, in the form of high-level routines, recognising that learning may take place both on-line and off-line. The learning process has been described in terms of being an exploitative or explorative kind of learning. This notion of learning has influenced recent studies on inter-organisational learning For example Holmqvist (2004) proposes a framework for understanding inter-organisational learning, based on the assumption that inter-organisational and intra-organisational processes are tightly coupled. The same is evident for exploitive and explorative learning behaviour. Triggers to learning can be initiated by one of the parties in a relationship, as well as from joint efforts in the relationship itself. Changes in rules and routines often stem from dissatisfaction with the existing performance of the routines, and is thus an experiential learning process.

In summary we may say that the main differences between the two perspectives are as follows: In the adaptive perspective, learning is considered in terms of changes in individual routines, while the IMP perspective focuses on how learning affects the use of physical resources deployed in routines, and how this affects other resources and routines within and across firms. The two traditions provide different starting points for approaching learning. The starting point for the adaptive perspective of learning is the learning dimension of the triangle. It thus looks at the link between business relationships and learning by investigating the relationship between learning and routines. The starting point for the IMP view on the other hand, is the business relationship dimension of the triangle and the link between business relationships and learning, which looks at the link between business relationships and routines. Figure 2 illustrates the different starting points in the two perspectives.

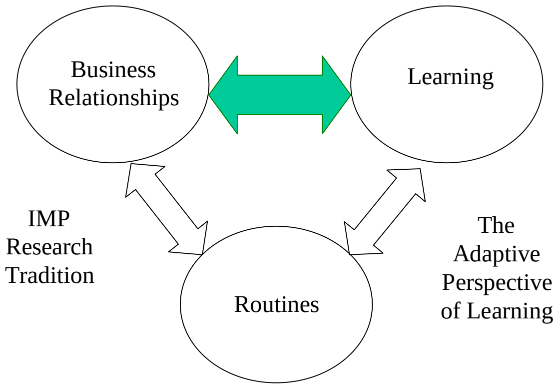

Figure 2 Approaches to learning across firm boundaries

Together the two traditions provide insights into how we may understand and investigate learning across firm boundaries. The IMP tradition contributes to our understanding of the implications of relationship characteristics for learning and what is actually co-ordinated in routines and hence learned about, as well as where this learning is embodied. The adaptive perspective contributes to our understanding of how these processes actually take place, including whether they entail explorative or exploitive learning, where they take place, triggers to such learning and finally, imprints of learning. Hence, a framework based on this discussion will contain the following research themes:

Learning across firm boundaries

Relationship characteristics
- Type of relationship
- Routines and resources deployed within them
- Connections and degree of adaptation

Learning characteristics
- Exploitative versus explorative learning
- Locations of learning
- Triggers of learning
- Imprints of learning

Concluding remarks

This paper set out with the aim of developing a conceptual framework for how to understand and investigate learning across firm boundaries. It was argued that although inter-organisational learning has been given much attention during the past decade, there is a gap in this stream of research. While the contemporary literature on such learning focuses primarily on learning collaborations between relatively autonomous parties, little attention has been given to learning in vertical and on-going exchange relationships. The previous discussions revealed that a framework for understanding such learning could be centred on three main concepts: learning, business relationships, and the connection between them. By using insights from the IMP research tradition and the adaptive perspective of organisational learning, important aspects of learning in business relationships were revealed and further synthesised into a conceptual framework. In summary, we may say that while the IMP research tradition reveals the context in which learning in business relationships takes place and the imprints and implications of this learning, adaptive perspective of learning can explain how this learning actually takes place. This framework may be used in order to understand implications of learning efforts as well as in future empirical investigations of such learning.

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