Some theoretical foundations of
Supply Chain Management and Supply Networks:
the role of social networks in selecting partners

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Summary

The past years have illustrated a shift in focus from transactional to relational exchange. In supply chain, this is highlighted by the fact that partnerships and alliance relationships are a prevalent topic of discussion. Focusing on integration is an important step toward a better understanding of the critical dimensions of supplier relationships. The desired outcome is a win-win relationship, where both parties benefit. Long-term strategic alliances are developed with a small group of suppliers. Successful Supply Chain Management (SCM) requires a change from managing individual functions to integrating activities into key supply chain processes. However, traditional SCM applications fall short when it comes to helping manufacturers manage one critical element, their relationships with suppliers. A firm's social connections guide its interest in new partners and provide it with opportunities. This interest is closely rooted in the processes that underlie a firm's entry into new partnership. Many opportunities for partnerships can be presented to firms through their existing sets of partners is not only economical but also technical and social.

Keywords: SCM, supply networks, partnership, social networks

1. Introduction

For more than a decade, industry experts have been advising manufacturers that judicious use of supply chain management applications would give them a competitive edge. Such business applications, which can include demand planning through warehouse management, have helped many companies improve their bottom lines by lowering the cost of doing business or improving customer service (Christopher-Jűttner 2000, Min et al. 2000, Dubois et al. 2004).

The term 'Supply Chain Management' (SCM) was introduced by consultants in the early 1980s. (Lambert-Cooper 2000) It as its origins in the logistics literature (Bowersox et al. 1999) and logistics has continued to have a significant impact on the concept. The scope of SCM has widened over time from intra-organisational focus to more inter-organisational issues (Dubois et al. 2004). According to Tan (2001) there does not seem to be much consistency in the use of it or its exact meaning. Tan also argues that although there are some shared ideas about what SCM is about, there is no universally accepted definition. The concept of SCM builds on the theories of the firm, especially transaction cost economics, Porter's value chain and the network approach, and has become established as a useful business paradigm.

It has been argued that the SCM area lacks sufficient theoretical underpinnings resulting in simplified conceptualizations of supply chains and their contexts, and furthermore, that theory may be helpful to uncover some of the complexity characterizing supply chains. A literature review made in 2000 (Croom et al.) shows a relative lack of theoretical work compared to empirical based studies. Croom et al. underline that theoretical development is critical to the establishment and development of theory on supply chain management. Without a foundation of effective supply chain organisational relationships, any effort to manage the flow of information or materials across the supply chain is likely to be unsuccessful. (Croom et al 2000) Despite the large amount of research performed in academia and management practice implemented in different industries, SCM is still in its infancy. There is an interesting an attractive future ahead for SCM to be a challenge in both academia and practise. (Svensson 2002) This paper is thus an attempt to address some of the gaps in earlier research and contribute to a critical theory debate and to the development of SCM. As Supply network theory has been influenced by SCM its concepts could be a way to develop SCM theory.

The concept of supply chain has been considered from different points of view in different literature and there is a relative lack of theoretical work compared to empirical based studies. This is reflected in the lack of conceptual frameworks for the development of theory on supply chain management. Without a foundation of effective supply chain organisational relationships, any effort to manage the flow of information or materials across the supply chain is likely to be unsuccessful. (Croom et al 2000)

Organisations have been re-appraising their value chains and out-sourcing those activities, which they consider to be non-core. Simultaneous with this growth in out-sourcing has been a move towards rationalisation of the supplier base. In other words organisations have actively sought to reduce the number of suppliers they do business with. The motivations for this move towards supplier rationalisation are based upon economics, partly upon the search for continuous quality improvement and innovation but also on a realisation that there is a limit to the extend to which multiple supplier relationships can be effectively managed. As a result of these changes in the supply chain there has emerged a growing inter-dependency amongst the parties in the chain. With this inter-dependency has come a realisation that co-operation and partnerships are essential pre-requisites for the achievement of long-term mutual benefit. (Gadde-Snehota 2000, Blomqvist 2002)

2. Supply Chain Management and Supply networks

In a competitive environment, single enterprises acting alone cannot fully achieve all management goals. As customer demands increase and become more specific firms must undertake initiatives to coordinate responsibilities across the supple chain in order to improve service and lower costs. The problem is that different firms typically operate under different management philosophies and pursue divergent goals. Successful relationships require managers to rethink the way they conduct business with suppliers and customers so that the benefits of integrated and focused supply chain strategies can be achieved.

The supply chain is not a chain of businesses with one-to-one, business-to-business relationships, but a network of multiple businesses and relationships. The Global Supply Chain Forum has a following definition:

"Supply Chain Management is ***the integration of key businesses processes***
from end user through original suppliers that provides products,
services and information that add value for customers and
other stakeholders." (Lambert-Cooper 2000, 66)

The relatively recent incorporation of the term network into supply chain management research can be seen as an attempt to make the concept wider. According to Lamming et al. (2000, 675) two distinct streams of research have been influential in the development of the concepts of supply networks:

1) the largely descriptive research on industrial networks
conducted by the Industrial Marketing and Purchasing group (IMP), and
2) the more prescriptive research on SCM,
based in the fields of strategic management, operations management and logistics

A network is

"is a structure where a number of nodes are related to each other by specific threads. "
(Ford et al. 2003, 183)

Supply networks can be defined as:

"*sets of supply chains, describing the flow of goods and services from original sources to end customers"* (Lamming et al. 2000, 676)

The business network approach assumes that the systems are open and thus, the network is embedded in and interacting with its environment. Firms in business-to-business markets are embedded in a complex network of relationships with suppliers, customers as well as a number of other stakeholders. Based on this perspective of business markets, Håkansson and Johanson (1992) created a model of business networks, in which they described a business network as three interrelated networks of activities, actors and resources (ARA-model). The starting point for the ARA-model consists of conscious actors, who perform a set of activities based on the resources they have. *Actors* consist of organisations, but other actors can also be found in networks. *An activity* occurs when one or several actors combine, develop, exchange or create resources by using other resources. *Resources* refer to anything that actor's value and can use to generate greater value for themselves and others. Such resources can be technical, personnel or capital. Resources are connected to the actors as well as the performed activities. The actors are interconnected and exchanges take place forming links, ties and bonds between actors through the combination of actors, activities and resources. (Håkansson et al. 1995)

The structural dimensions of the network are essential, especially when analysing and managing the supply chain. The supply chains in the network look different from each company's perspective. Every company sees and manages itself as the focal company. As each firm is a member of the other's supply chain, it is important to understand their interrelated roles and perspectives. The reason for this is that the whole value chain will be successful only if each company can realise the importance of this integration and management of the processes across company boundaries. (Lambert-Cooper 2000) Firms in business-to-business markets are embedded in a complex network of relationships with suppliers, customers as well as a number of other stakeholders and thus, the network is embedded in and interacting with its environment.

Opportunities and limitations for a company are related both to the resources invested in the relationships and to the companies' internal capabilities. Each company's relationships and resources can be developed and combined with others in a large number different ways. This creates major opportunities for innovation, to the benefit of both the companies that seize them. However, a change in a network always involves changes in both companies and relationships. (Blankenburg Holm et al 1999) This means that a company seeking change is always dependent on the approval and actions of others to achieve the change. But, a company can mobilise part of the network in the direction it wishes, if its action is designed appropriately and seen to be positive by those whose support it needs.

Few businesses are independent; they are part of an integrated system of suppliers and customers. Most companies are intermediaries in a chain, receiving inputs, sing these inputs to produce products or services to customers. Johnston and Lawrence (1988) called this chain as the value-added chain.

In recent years the management and coordination of the supply chain has become increasingly important, as companies need to minimize their costs and maximize their opportunities on the market. Supply chain management can be seen as an arena in which firms can find cost reduction opportunities. However, the cost saving is not the only objective of supply chain management. The final goal is the creation of customer value, satisfaction and loyalty, which lead to improved profit margins and better firm profitability. (Flint 2004)

3. Partnerships and social networks

Supply chains involve relationships among key firms, who may be in a strategic alliance or another form of relationship. Strong supply chain relationships enable firms to react to changes in the market: changes in what customers value and how competitors move (Flint 2004). Supply chains can also be seen as a more interdependent system of firms, which has lead to the development of more collaborative, partner-like relationships. (Bantham et al. 2003, Dubois et al. 2004) Several researchers have made research about business relationships. This literature does not provide researchers or practitioners sufficient direction about partnership (Bantham et al. 2003). According to Bantham et al. (2003) what is needed is more theoretical grounding to aid the development in the area: interdependence theory and dialectical theory. The interdependency theory underlines relationship satisfaction, investments and perceived quality of relational alternatives. The other theory, dialectical theory, looks at interpersonal relationships, which require constant adjustments to conflicting and interconnecting forces. The existing business partnership frameworks have recognized the need to address tensions and conflict in the partnership. As individuals play an important role in these relationships one could ask what role social networks play in the process of choosing your partners. In social networks persons or organisations are linked for example by friendship or membership with each other. (Gulati 1998)

Firms in business-to-business markets are embedded in a complex network of relationships with suppliers, customers as well as a number of other stakeholders (Håkansson-Snehota 1995). Economic actions are influenced by the social context in which they are embedded. Networks of contacts between actors can be important sources of information for the participants. Not only the identity of the members of a network but also the pattern of ties among them matter (Gulati 1998).

Structural sociologists have suggested that the most important facet of an organisation's environment is its social network of external contacts. A social network can be defined as a set of nodes linked by a set of social relationships of a specific type. Economic actions are influenced by the social context in which they are embedded and that actions can be influenced by the position of actors in the social networks (Gulati 1998).

The notion that economic action is embedded in social structure has revived debates about the positive and negative effects of social relations on economic behaviour. Granovetter's (1985) argument of embeddedness, close relationship, has been seen as a potential theory for joining economic and sociological approaches to organisation theory.

A firm's social connections guide its interest in new partners and provide it with opportunities. This interest is closely rooted in the processes that underlie a firm's entry into new partnership. Many opportunities for partnerships can be presented to firms through their existing sets of partners. Firms can first turn to their existing relationships for potential partners or seek referrals from them on potential partners. The value of partners is not only economical but also technical and social (Gadde-Snehota 2000). According to Uzzi (1998) the importance of trust, information exchange and joint problem-solving arrangements are the most important features of companies' embedded ties.
g companies develop different types of relations to different types of suppliers. Sometimes the relationship is a close interpersonal contact, other times the suppliers are kept at arm's length. (Gadde-Håkansson 2001) Although relationships are costly, different types of relationships are justified in a company since there is a need for different kinds of capabilities and resources. The higher the assets are, the more dependent the parties will be on each other, and the higher the costs of switching partners will become. As Johanson and Matsson (1987) point out personal knowledge or skills, technology, type of machinery etc. is not homogenous across the sellers.

There is a connection between extending of involvement with suppliers and the number of suppliers used. High-involvement relationships are resource demanding and costly and a company cannot handle too many of them. Traditionally when the main objective is to avoid too strong a dependence on individual suppliers, because that reduces transaction uncertainty, enhances technological flexibility and creates price competition among suppliers. In other words, arm's length relationships are the best solution. Multiple sourcing was the recommended strategy in this respect because it helped companies in dealing with the negative consequences related to dependence on suppliers. (Uzzi 1997, Gadde-Snehota 2000)

There are two main arguments in favour of multiple sourcing. One is that it reduces dependence on individual suppliers. By using alternative sources a buying company is supposed to improve the reliability in the flow of goods on the supply side. If one supplier has the problem in delivering according to plan, an alternative source may be used at short notice. The most appropriate strategy for a buying firm would be to take advantage of both approaches and at the same time trying to avoid the main disadvantages. (Gadde-Håkansson 2001)

According to Tan (2001) a traditional culture that emphasises seeking good, short-term performance appears to be in conflict with the objectives of supply chain management. The single most important prerequisite is a change in the corporate cultures of all members in the value chain to make it conductive to supply chain management.

Having defined its strategy and position, every company should evaluate both their existing as well as possible future relationships. The value of the relationship cannot be measured by its volume or revenue. In business-to-business contexts the value of the relationship is linked to other criteria. Criteria, which are often mentioned, are the substitutability of the buyer or seller, the indispensability of the goods, the savings resulting from the partner's practices and the degree of common interest (Christopher- Jüttner 2000). Common interest is for example the same kind of strategic objectives or corporate cultures. The savings a company can achieve in a long-term partnership is the so called "transaction costs" which decrease over time and result for example in lower administration costs. The more specific the products are, the lower is he substitutability of the partner.

The key to any successful SCM effort is the involvement of top-tier suppliers (according to Johnston and Lawrence (1988) from two to six). This group often accounts for a large percentage of a company's spending. It allows a company to plan on the basis of a longer lead-time, becoming more efficient by working with the best suppliers and developing a better strategic sourcing capability. Companies have also implemented vendor review programs, which promote finding suppliers with operational excellence so the company can ascertain which suppliers are serving them better. Having too many partners' means few repeat transactions and no time to close relationship to develop. At the same time partners avoid becoming over dependent to one relationship. A company can always keep potential partners on reserve. (Motwani et al. 1998)

Johnston and Lawrence (1988) were the first ones that discussed value-added partnerships. A fundamental requirement for the development of partnerships and networks is trust and common objectives amongst all parties. However, this trust and common objectives can be developed; individual companies must show their desire and commitment in the organisation. (Handfield-Bechtel 2001) In partnerships companies' form close and lasting ties with others in the value-added chain, each player in the value-added chain has a stake in the others' success. The ability to see beyond the corporate boundaries has another important advantage. It permits recognition of serious threats that lie elsewhere along the value-added chain. (Gattorna-Walters 2001)

Johnston and Lawrence (1988) defined the concept as:

"a set of independent companies that work closely together to manage the flow of goods and services along the entire value-added chain"
(Johnston-Lawrence 1988, 94)

Menzer et al. (2000) distinguish between strategic partnering and operational partnering. Strategic partnering is an on-going, long-term relationship with strategic goals. It is a way to deliver value to customers and profitability to partners. Operational partnering is an as-needed, shorter-term relationship for obtaining parity with competitors.

The current literature underlines the importance of partnerships in relationships. There is no easy answer to the question about hat makes a relationship a partnership. A common suggestion is that partnership is a close relationship. Ford et al. (2003) argue that in order to give meaning to a close relationship one has to consider the degree of integration between the buying and the selling company. Focusing on integration is an important step toward a better understanding of the critical dimensions of supplier relationships.

Ellram and Hendrick used the following definition of partner in their investigation in 1993 (van Weele 2003 165):

"As a firm with whom your company has a ongoing buyer-seller relationship, involving a commitment over an extended time-period, a mutual sharing of information and a sharing of risks and rewards resulting from the relationship"

Industrial networks are assumed to be stable in as much as the economic exchange process tends to make place within the existing framework of interorganisational relationships. In fact, ties and bonds amongst actors as well as the cost of changing a web of relationships favour the establishment of stable links. On the other hand, industrial networks can be regarded as living structures in which the way actors, activities and resources relate to each other in changing not only because of the dynamics of the economic process but also on account of movements of actors attempting to increase their control over activities, resources and actors. Each actor has a network position, consisting of its own resources and those that exist within its relationship. Technical, economic and social resources are the source of each company' strength and the basic for its growth and development in a rapidly evolving market. (Bridgewater- Egan 2002)

The formation of partnerships is motivated to gain competitive advantage. According to Woody Powell (1987) can partnerships give firms access to new technologies, new knowledge or markets. A firm can also provide a wider range of products or services. (Mohr-Spekman 1994) The major objective is to achieve improvements in logistics, quality and product development. (van Weele 2002) Brännback (2003) underlines in her study the importance of research and development collaboration between universities and business as a vital form of collaboration, especially in knowledge-intensive high-technology environments. A key element in these networks is shared knowledge creation.

4. Illustrating Supply Chain framework and ARA-model in partner selection

Gadde-Snehota (2002) distinguish three dimensions of involvement that affect outcomes in supplier relationships:

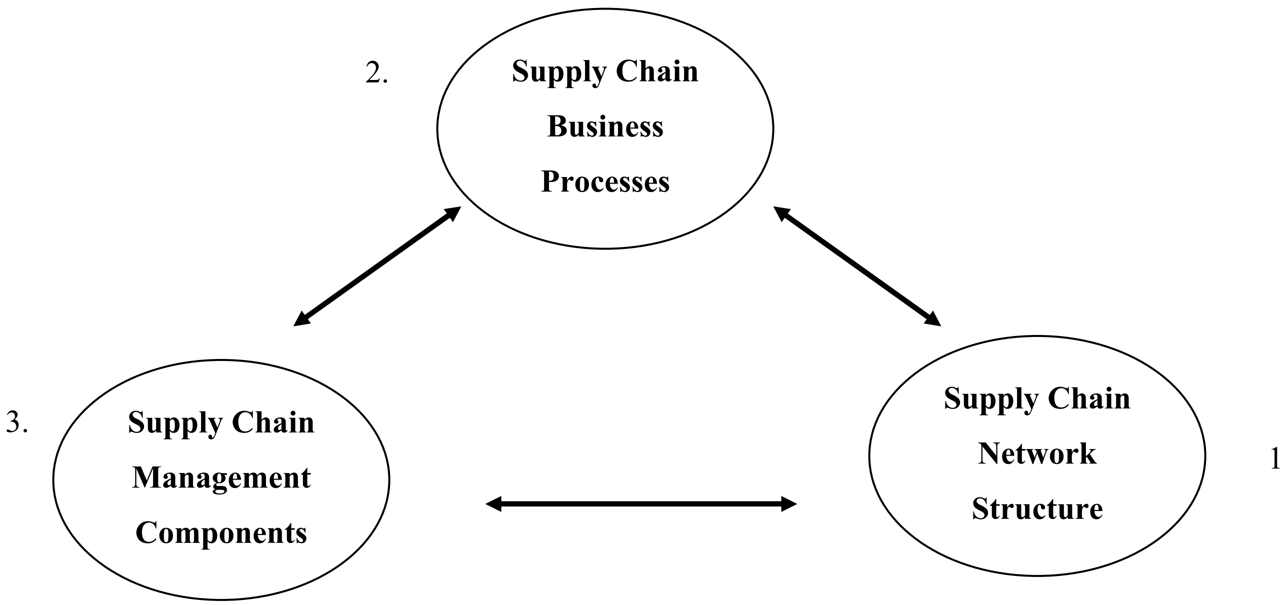
1. The activities carried out can be more or less tightly coordinated
2. The resources can be more or less adopted
3. The individuals may interact more or less intensely

In the supply chain management framework (appendix) the operational process include customer integration, internal integration and supplier integration. Within customer integration you can build up cooperation with customers of choice. Internal integration links performed work to customer requirements and finally supplier integration links external work with internal work process.

The technology and planning integration refers to information systems that support the variety of operational configurations. Measurement integration refers to measurement systems.

Finally, relationship integration refers to the ability to develop and maintain shared mental framework with customers and suppliers. (Bowersox 1999, Cross-Mollenkopf 2004)

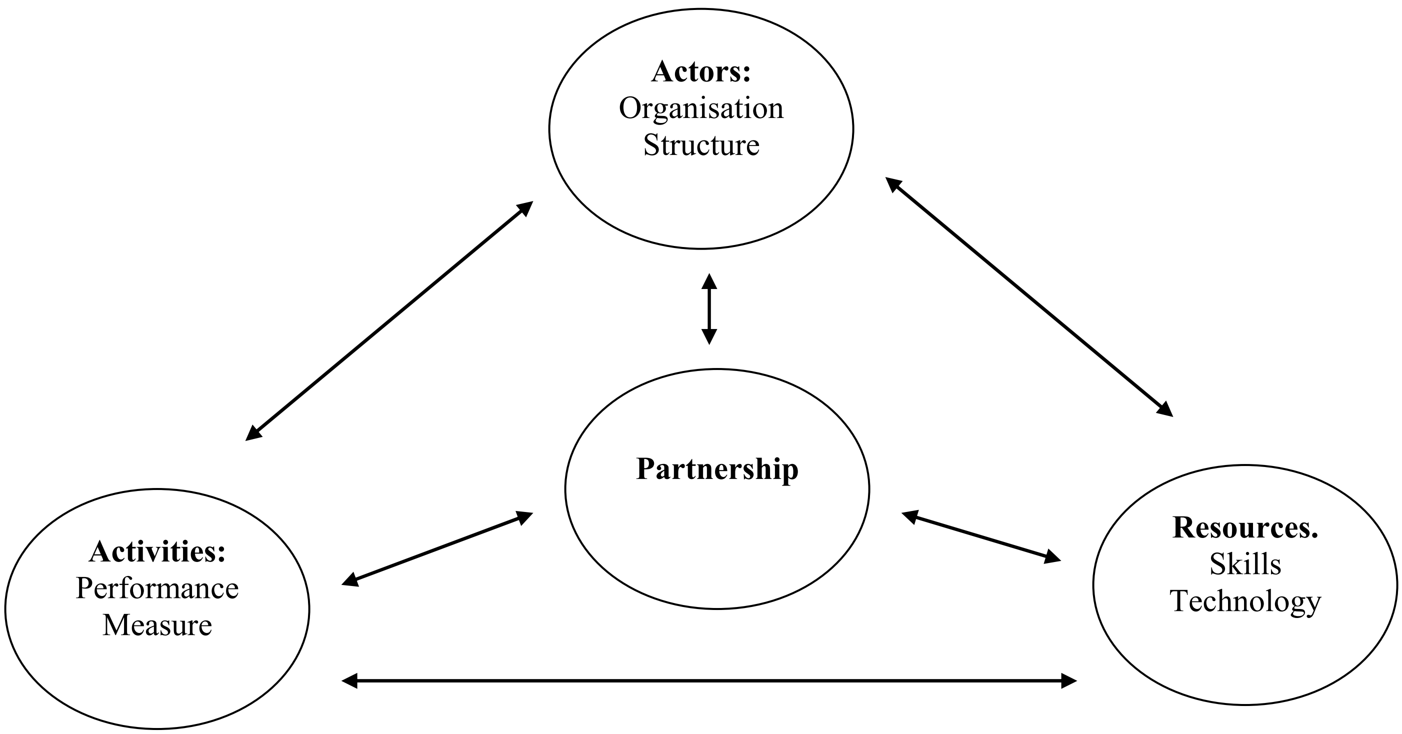
The SCM framework by Lambert & Cooper (2000 70) is interesting and challenging as it describes the interrelated nature SCM and the need to proceed through several steps in order to manage a supply chain.



1. Who are the key supply chain members with whom to link processes?
2. What processes should be linked with each of these key supply chain members?
3. What level of integration and management should be applied for each process link?

The main interest in this work lays in question 1, more precisely:
-What determines with whom to link business processes?
-What are the steps to take to determine with whom to link?
-What are the critical factors to he firm's success to link specific companies?
-What determines the process to link with these key members?

Traditional SCM (Supply Chain Management) applications fall short when it comes to helping manufacturers manage one critical element, their relationships with suppliers (Tan 2001). Previous research has indicated the most important thing is not the management of the chain, but the management in the chain (Ford 2003, Dubois et al. 2004). Figure 2 is an illustration how the ARA-model can be combined with the supply chain management framework in order to improve the cooperation of the companies' vital resources that are needed in the partner selection:



Supply Chain framework and ARA-model in partner selection

5 Conclusions

Companies are becoming more aware of that the successful integration and management of key business processes across the supply chain will determine the success of the single enterprise. The most important question is how to manage the company's supply chain network and thereby achieve the potential of SCM. One way of assembling this network of firms is developing strong relationships with key partners who can add value to the market offering. The ideal partner adds significant value to your market offering without being a high risk as a partner.

The framework of SCM created by Lambert and Cooper moves the SCM philosophy to a new stage. This involves identifying the supply chain members that are vital to the link, the processes that have to be taken into consideration and the type of integration that is needed to link the different processes and partners. The object is to create value, not only to the company but also for the whole supply chain network, not forgetting the end customers. What is required is increased process efficiency and effectiveness for the entire chain and it is critical that the benefits are equitably distributed.

Firms in business-to-business markets are embedded in a complex network of relationships with suppliers, customers as well as a number of other stakeholders. Economic actions are influenced by the social context in which they are embedded. The partnership can be structured to achieve cost rationalisation and technical development. The benefits are reduction of production, transportation and administrative costs. On the technical development the greatest benefit is the possibility of sharing the resources of suppliers and shortening the lead-times. Close relationships also increase cost and closeness imposes dependency, as handling dependencies are a crucial factor.

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APPENDIX: SUPPLY CHAIN MANAGEMENT FRAMEWORK