Strategy and Organization in Supply Chains – New Frontiers for Research

Stefan Seuring, Martin Müller

Summary:
Within supply chain management it is claimed that competition takes place between supply chains. Yet, strategic and organizational issues are rarely addressed. While there is some literature on partnerships in the supply chain, few concepts and case studies have been presented on how supply chain strategy is developed and implemented. To explore the full meaning of supply chain management, new strategies must be set into motion and new forms of organization have to be found to reach the overall objectives in a supply chain. This book brings together a set of papers on such issues. In the first section of this chapter, the focus will be on supply chain organizations, while the second section deals with supply chain strategy. The papers in the last section mainly show how such thought is transferred to instruments and applications in supply chains.

Keywords:
Supply Chain Management, Strategy, Organizational Theory
Missing Basis

In introductions on supply chain management, increased global competition is frequently mentioned as one major driver of changes taking place in the business environment of many companies. This leads to a shift in the entity that is able to compete in the marketplace from the single company to the whole supply chain.\(^1\) Next, it is claimed that this triggers the need for reorganization or reengineering of supply chains.\(^2\) Looking at such arguments, it might be expected that strategic management or organizational theories have been incorporated into supply chain management. But this is not the case. Contrastingly, there are few papers that build on such theories and extend them towards or integrate them into supply chain management. This is even more surprising when looking at definitions of supply chain management. Here, the one given by Handfield and Nichols is referred to: “The supply chain encompasses all activities associated with the flow and transformation of goods from raw materials stage (extraction), through to the end user, as well as the associated information flows. Material and information flow both up and down the supply chain. Supply chain management (SCM) is the integration of these activities through improved supply chain relationships, to achieve a sustainable competitive advantage.”\(^3\) This definition addresses both the strategic challenges and the need for partnerships in the supply chain.

Compared to the number of publications available on supply chain management which focus on operational issues (e.g. stock keeping or cycle time reduction, which are related to some kind of process optimization), one might be surprised at how few papers are deal with strategic or organizational issues in supply chains. Furthermore, even if papers are labeled “strategic,” they still might not build on any theory from this field.\(^4\) This has led Croom, Romano and Giannakis to state that supply chain management needs further theoretical and conceptual developments.\(^5\) Such developments, which later lead to the establishment of a theoretical basis and a clear link to business practice, would allow the long term establishment of supply chain management on the business agenda. Yet, taking up the argument of Hayes,\(^6\) who discussed this for the field of operations management, it is a sign of liveliness and innovation if a field questions its own basis and searches for new directions. Supply chain management is in an early state, but is nevertheless a rapidly developing field.

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4. See e.g. the classic paper by Bechtel and Jayaram (1997), which carries the word strategic in its title, but does not build on a theory from strategic management.
As many books and papers have been written on strategic management and organizational theory, it is not intended to introduce these streams of research and practice. These are taken as a theoretical basis, where a wide understanding of theory is assumed. Each chapter will introduce its basic ideas and provide references.

The remainder of this chapter will provide an overview of the papers presented in the book. They are arranged into three tracks which will be used to structure this chapter:

1. Supply Chain Organization,
2. Supply Chain Strategy,
3. Instruments and Applications.

Concerning organizational theories in supply chain management, this is a rather young and still developing area. New institutional economics, in particular transaction cost analysis, principal agent theory, or structuration theory are valid candidates to further the understanding of supply chains, which have rarely been applied so far. There are few examples of such work, but this is very often limited to a certain perspective. Furthermore, the formation or partnerships in supply chains is of crucial importance for their success, so various theories can be applied to analyze, explain and configure them.

On the supply chain strategy side, the papers in the section mainly build on operations strategy. This is not a surprise, but a limitation. Both the market- and the resource-based view of strategy are often referred to in supply chain management. The market-based view introduces the customer perspective, while the resource-based view looks at the processes and required competencies along the supply chain and within the companies forming it.

If scholarly work is to be useful to practitioners, instruments helping to operationalize theories and apply them to real world problems are of great interest. This provides the link to empirical research on supply chain management, which is not only, but specifically discussed in this section’s papers. Even stronger than the two sections on supply chain organization and strategy, this also highlights the multitude of connections supply chain management has with almost all fields of management theory and practice.

After providing an overview and graphical sorting of all papers, the subsequent paragraphs offer an overview to each of these sections and briefly mention each paper of the book.

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7 See e.g. Amundsen (1998); Wacker (1998). Both discuss this using the example of operations management, but this applies in a similar manner here.

8 For a discussion of the importance of this with the example of operations management, see Meredith et al. (1989), p. 299.
2 Links between Organization, Strategy and Instruments

All papers in this book have been grouped into one of the three sections mentioned above. This separation is justified by the theoretical content of the papers. Consequently, various links exist between the sections and even between the papers.

The rigid classification of papers into one section is not totally accurate. A better classification is shown by the graphical representation in Figure 1, where organization and strategy have been chosen as the extreme points on the theory dimension (these are not, of course, the extremities of this topic). Still, together with the second content separation into empirical and conceptual dimensions, this allows a simplified grouping of all papers. As this depicts, the assignment of the papers into a specific section is ideal, but refers to the main point addressed in the paper. Before introducing the single papers on their own, it is worthwhile to point out some links between them.
One example for such links is a common literature basis. The single most cited paper throughout this book is Fisher’s *What is the right supply chain for your product?* published in the *Harvard Business Review*. It is cited in seven papers, i.e. in almost one third of all papers.\(^9\) While reference is more often made to the supply chain dimension and the separation of responsive and efficient supply chains, the product related dimension also plays an important role.

The influence of this paper on the supply chain literature can also be seen by the number of subsequent papers that build upon it. These can be grouped into two headings. First, Chopra and Meindl\(^10\) as well as Lee\(^11\) extend the model by refining the dimensions used. An empirical test in a survey was been conducted and reported by Selldin and Olhager,\(^12\) while Li and O’Brian\(^13\) build a quantitative model to analyze the decisions taken. Many of the papers which refer to Fisher’s model also point out some weaknesses and limitations of this approach. These arise if the model (which has a high degree of apparent evidence), is assessed in detail. Still, it presents one major contribution to the field of supply chain strategy.

A further link is offered by research methodologies, especially those concerning empirical work. Three surveys are presented in this book\(^14\) providing evidence of how difficult it is to conduct empirical research on supply chain management. Only Teller and Kotzab’s paper reports on data collected at two stages of the supply chain, while the other two studies survey focal companies.

This line of thought is consistent, particularly when case studies are looked at as a second method of conducting empirical research, which a number of papers present.\(^15\) Again, the perspective of a focal company prevails. This has a great deal to do with problems in obtaining valid information as needed to conduct a rigorous case study. Starting the project based on a contact to one company, as will often be the case, researchers might find it difficult to gain access to information from, at, or about their suppliers or customers.

These are only a few issues that can be observed looking at all papers from a general point of view. The reader will find far more connections between the papers than can be discussed here.

\(^9\) The papers referring to Fisher (1997) are: (1) Albers, Gehring, Heuermann; (2) Appelqvist; (3) Done, Frohlich; (4) Drews, Wesseler; (5) Müller; (6) Reiner, Schodl; (7) Seuring. Descriptions of Fisher’s model are given in (1), (2) and (7).


\(^12\) See Selldin, Olhager (2002), p. 1305-1314.

\(^13\) See Li, O’Brian (1999); Li, O’Brian (2001).

\(^14\) The survey papers are: (1) Done, Frohlich; (2) Teller, Kotzab; (3) Windischer, Grote.

\(^15\) The case study papers are: (1) Appelqvist; (2) Goldbach; (3) Gusmão; (4) Halldórsson, Skjøtt-Larsen, Kotzab; (5) Koog; (6) Morana, Seuring; (7) Reiner, Schodl; (8) Schneidewind; (9) Spengler, Stötting. Note that the papers enumerated here contain case study information using a wider understanding of this term.
3 Supply Chain Organization

The first section of the book covers papers that build on organizational theories and transfer or apply them in supply chains. Some theories can almost be expected to be addressed in this part of the book.

One such candidate is transaction cost analysis, as it deals with the question why different institutional arrangements and companies exist.\textsuperscript{16} Hence, it is no surprise that Müller as well as Halldórsson, Skjøtt-Larsen, Kotzab present papers that build on transaction cost theory. These are valuable contributions, as transaction costs are frequently mentioned in supply chain literature, but often in a much simplified manner referring to the term, but not using the theory’s explanatory power.\textsuperscript{17}

A second candidate from a different background is presented by Goldbach, who applies structuration theory in her paper and particularly explains the use of power and trust in supply chain relations. Structuration theory has seen major popularity in business literature and has proven its analytical and explanatory power.\textsuperscript{18} The paper of Koog deals with similar questions. Both papers arise from the setup of new supply chains which were triggered by the will of focal companies to introduce green, i.e. environmentally friendly products to their customers. This made it necessary to coordinate their supply chain from raw materials to final customer. Such though is further supported by Schneidewind. One of his central arguments is the need for an interpretative comprehension of supply chains. Due to high complexity and supply chain dynamics, analytical solutions have a high risk of failure, so managers need a wider understanding of how supply chains can be managed.

Albers, Gehring and Heuermann point out that governance structures have to be designed appropriately for each supply chain. As is the case with various papers of this book, they build on Fisher’s separation of efficient and responsive supply chains\textsuperscript{19} and discuss the implications this has for governance structures. Within the next chapter, another often-cited paper on supply chain management is taken up. Assumpsao builds on the framework of Cooper, Lambert and Pagh\textsuperscript{20} and integrates this with network theory as established by Håkanson and Snehota.\textsuperscript{21} This is developed into a framework for an organisational architecture in supply chains, where four levels are distinguished. The last paper in this section discusses collaborative planning in supply chains. Windischer and Grote conducted a survey

\textsuperscript{16} See Williamson (1983).
\textsuperscript{17} See e.g. Hobbs (1996); Loader (1997).
\textsuperscript{18} See e.g. Schneidewind (1998); Sydow (1998).
\textsuperscript{20} See Cooper, Lamber, Pagh (1997); Lambert, Cooper, Pagh (1998); Lambert, Cooper (2000).
on small and medium sized companies in Switzerland to identify which practices further collaborative planning. In a second step, this is developed into a model.

<table>
<thead>
<tr>
<th>Author</th>
<th>Theoretical Basis</th>
<th>Characterization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Müller</td>
<td>Transaction Costs</td>
<td>Transaction costs analysis is taken up to analyze supply chains among uncertainty and specificity, which forms the basis for discussing the impact of information technology.</td>
</tr>
<tr>
<td>Halldórsson, Skjøtt-Larsen, Kotzab</td>
<td>Transaction Costs, Networks, Resource-Based View</td>
<td>Three different theories that are often referred to in supply chain management are compared and applied to third-party logistics as examples of theory adaptation.</td>
</tr>
<tr>
<td>Goldbach</td>
<td>Structuration Theory</td>
<td>Structuration theory is built on to analyze how interactions in supply chains are coordinated by power and trust, which is applied to an example from the textile industry.</td>
</tr>
<tr>
<td>Kogg</td>
<td>Environmental Management, Networks</td>
<td>Power and incentives are used to explain how environmental issues are taken up in supply chains, which is illustrated in two case studies.</td>
</tr>
<tr>
<td>Schneidewind</td>
<td>Interpretative Management</td>
<td>The management of supply chains is not only carried out by hard facts dealing with substances, but is also dependent on symbols that guide managers to reduce complexity.</td>
</tr>
<tr>
<td>Albers, Gehring, Heuermann</td>
<td>Interorganizational Governance</td>
<td>The distinction between unilateral and bilateral governance structures is matched with the one between efficient and market-responsive supply chains.</td>
</tr>
<tr>
<td>Assumpsao</td>
<td>Industrial Networks</td>
<td>Integrating industrial network thought into supply chain management leads to a supply chain architecture on four levels: institutional, relational, procedural and operational.</td>
</tr>
<tr>
<td>Windischer, Grote</td>
<td>Organizational Structures</td>
<td>A model for collaborative planning in supply chains is proposed and empirically tested by a survey and critical incident interviews to assess furthering and hindering issues.</td>
</tr>
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Table 1: The Papers on Supply Chain Organization

As Table 1 summarizes, the papers draw from various organizational theories. It is not expected that a uniform picture will result. Still, it is interesting to see how various arguments fit into each other and that similar bodies of literature are taken up. This continues in the next section.
4 Supply Chain Strategy

This section contains papers that provide insights on how concepts from strategic management are adopted in supply chain management. As can be expected, the two major theoretical frameworks of strategic management, i.e. the market-based view\(^{22}\) and the resource-based view\(^{23}\), form an important foundation for these papers. Yet, half of the papers draw on a narrower subset, namely operations strategy, which emphasizes the strong link between operations and supply chain management.

The first paper continues from Windischer and Grote in two ways. First, it presents a survey. Second, it draws on the example of efficient consumer response to see how this influences partnering and which success factors are related to this. Thereby, Teller and Kotzab assess competitiveness in supply chains for fast-moving consumer goods and identify techniques that help improve this.

Heusler takes up the resource-based view and integrates this with supply chain thought into a framework which allows companies to identify their core competencies in the supply chain. These are related to output, input and throughput as well as the linkages in the supply chain. In total, this leads to an architecture of supply chain competencies.

Within manufacturing strategy, various concepts have been developed that can help to further theory development in supply chain strategy. The papers of Seuring and Appelqvist contribute to this. In manufacturing strategy, the concept of the focused factory has been developed much earlier than the resource-based view, going back at least to the 1960s\(^{24}\) and is sometimes even referred to as a predecessor to much of the strategic management debate.\(^{25}\) As the wording already highlights, the focused factory deals with how factories achieve focus in their operations. Seuring briefly summarizes this concept and then points out how the decision fields can be transferred to fit supply chain management. A different approach is taken by Appelqvist, who builds on the concept of order winners and order qualifiers.\(^{26}\) This framework is used to analyze four short cases. To further link this research to supply chain management, Fisher’s model of efficient and responsive supply chains is also taken up here as a second analytical framework.\(^{27}\) This also allows a comparison of these two approaches and discusses their limitations.

\(^{22}\) See Porter (1998).
Staying within operations management, Gusmão applies the theory of constraints to supply chain management by analyzing a Brazilian wine supply chain. This shows that the theory of constraints can be expanded upon and provides an interesting case study. The paper of Aulinger concludes this section with a conceptual framework on how to build strategic alliances by using a cooperation route map. This is derived from combining a five step approach to creating strategic alliances with four competencies of cooperation.

<table>
<thead>
<tr>
<th>Author</th>
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<th>Characterization</th>
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<tbody>
<tr>
<td>Teller, Kotzab</td>
<td>Competitive Strategy</td>
<td>A survey in the fast moving consumer goods industries investigates which supply chain practices can be observed and how this relates to partnership building.</td>
</tr>
<tr>
<td>Heusler</td>
<td>Resource-Based View</td>
<td>The resource-based view of the company is applied to identify core competencies in the supply chain and achieve strategic advantages for all partners.</td>
</tr>
<tr>
<td>Seuring</td>
<td>Focused Factories</td>
<td>The concept of focused factories is modified to build a framework for supply chain strategy based on five decision areas while aiming at optimal performance.</td>
</tr>
<tr>
<td>Appelqvist</td>
<td>Order Winners and Order Qualifiers</td>
<td>Four short cases analyze whether the efficient or responsive supply chain framework yields the same results as the order qualifiers and winners concept.</td>
</tr>
<tr>
<td>Gusmão</td>
<td>Theory of Constrains</td>
<td>The theory of constraints is applied to analyze a case study as a way to identify the weakest link and suggest an optimization process.</td>
</tr>
<tr>
<td>Aulinger</td>
<td>Strategic Alliances</td>
<td>The cooperation route map introduced is based on stages and competencies of cooperation which allows companies to identify their strategic needs for cooperation management.</td>
</tr>
</tbody>
</table>

Table 2: The Papers on Supply Chain Strategy

Again, the papers span some boundaries among various theoretical backgrounds and therefore contribute to supply chain strategy (see Table 2). So far, the papers in both sections mainly stay on an analytical or conceptual level.

5 Instruments and Application

The last section takes a look at how organizational and strategic issues are operationalized to yield managerial instruments and be applied in supply chains (see Table 3). The theoretical basis taken up reflects issues discussed in supply chain management such as the management of information or the formation of virtual enterprises, but also address how performance in the supply chain is measured.

Done and Frohlich look at a specific issue of partnering in supply chains. This should lead to improved knowledge management as firms cooperate and exchange information. In their survey, they look at the sources of knowledge and whether it is advantageous to have it coming from suppliers, customers or from both.

Linked to this is the paper by Mohtashami, Deek and Im. They identify success factors in collaborative software development, which are characterized by a lack of central control and trust. Hence, communication modes, trust, culture, power, and project type and size are critical factors. Further to the application side, Drews and Wesseler identify trends in web technologies and look at how they drive supply chain integration. This is extended to supply chain strategies by assessing the three components of structure, process and relationships.

Performance measurement has gained much attention in recent years. The balanced scorecard as a strategy implementation tools is used in many companies and different contexts. Within supply chains, performance measures have to be established for interorganizational structure and processes. Ackermann takes up the discussion of modern performance measurement systems and offers a framework for a supply chain balanced scorecard which transfers the scorecard perspectives to the supply chain level. Reiner and Schodl first develop a model for supply chain design and restructuring. This is then extended to a process-oriented performance measurement system spanning the whole supply chain, and illustrated in a case study evaluating the effects of postponement.

Closely related to this is the management of risks in a supply chain. Kajüter argues that risk management has to be extended to a supply chain level. In a first step, a risk strategy is defined which provides the basis for the risk analysis of each single partner in the supply chain. This leads to a supply chain risk portfolio, which allows risk controlling, monitoring and reporting.

Third- and fourth-party logistics providers have emerged as an important development in logistics. One example of this is usually seen in the restructuring of supply chains. Yet, their own position is rarely assessed. Stemmler analyzes this for transport operators using Porter’s generic strategies of cost leadership and differentiation.

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<tbody>
<tr>
<td>Done, Frohlich</td>
<td>Knowledge Management</td>
<td>A survey of 388 manufacturers evaluates whether inflowing knowledge from suppliers, customers or both impacts manufacturer performance.</td>
</tr>
<tr>
<td>Mohtashami,</td>
<td>Virtual Enterprises</td>
<td>Critical factors in conducting complex tasks such as collaborative software development in a virtual enterprise are identified and supporting factors discussed.</td>
</tr>
<tr>
<td>Deek, Im</td>
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<tr>
<td>Drews, Wesseler</td>
<td>Information Management</td>
<td>Web technologies play an important role in managing information in supply chains and have a great influence on the implementation of supply chain strategies.</td>
</tr>
<tr>
<td>Ackermann</td>
<td>Performance Measurement, Balanced</td>
<td>The balanced scorecard as a strategy implementation tool can be applied in supply chains to identify performance measures.</td>
</tr>
<tr>
<td>Reiner,</td>
<td>Process Design, Performance</td>
<td>Starting with a supply chain design and restructuring model, a process oriented performance measurement system is developed and applied in a postponement case.</td>
</tr>
<tr>
<td>Schodl</td>
<td>Measurement</td>
<td></td>
</tr>
<tr>
<td>Kajüter</td>
<td>Risk Management</td>
<td>Supply chain risks are evaluated by assessing their potential damage and likelihood for each partner along the supply chain, allowing their monitoring and control.</td>
</tr>
<tr>
<td>Stemmler</td>
<td>Competitive Strategy</td>
<td>Competitive strategy for third- and fourth-party logistics providers leads to the integration of tasks beyond transportation to achieve cost leadership.</td>
</tr>
<tr>
<td>Spengler,</td>
<td>Information Management, Closed</td>
<td>Closed loop supply chains demand new information management tools which allow dismantling or reuse of products at the end of their life cycle.</td>
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<tr>
<td>Stölting</td>
<td>Loops</td>
<td></td>
</tr>
<tr>
<td>Morana,</td>
<td>Integrated Chain Management,</td>
<td>Three levels of analysis: The individual firm, the supply chain and the political level are used to analyze a closed loop supply chain for clothing.</td>
</tr>
<tr>
<td>Seuring</td>
<td>Closed Loops</td>
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Table 3: The Papers on Instruments and Applications

The final two papers deal with closed loop supply chains. These have gained considerable attention in recent years as they raise various management challenges. One central aspect is the management of information for product

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See e.g. Thierry et al. (1995); Handfield, Nichols (1999), p. 169.
returns in the electrical and electronic equipment industry. Spengler and Stölting discuss associated planning problems, as the product information has to be linked to the after-use phase. A recycling passport can help fulfill this aim, and also satisfies legal requirements.

The political and legal framework is also of importance in the paper by Morana and Seuring. A framework from integrated chain management distinguishes three levels of analysis: the single company, the supply chain, and the public policy level. This is used to assess a case study which deals with apparel recycling, where a specific supply chain and closed loop system were set up.

The instruments and applications section contains various examples of how supply chains are managed among companies. The frameworks developed and specific solutions discussed provide some insight on how the gap between the overall strategy and design of the supply chain and the operational level is bridged.

6 Conclusion

The 23 papers in this book cover a wide range of theories and empirical work on strategy and organization in supply chains. The broad range of issues addressed make a combined contribution to the further development of supply chain management. Without taking strategic and organizational issues into account, supply chain management will be limited to an operational approach not very much different from the many already available. Only if cooperation and partnership building is taken as a core element of supply chains will they be able to offer superior customer value with an improved performance along the chain in the long run. Still, this has also raised critical comments on supply chain integration. This would form the basis for supply chain management developing on a broad theoretical basis while simultaneously growing in importance to managers.

7 References


31 See Frohlich, Westbrook (2001); Fawcett, Magnan (2002).


Within supply chain management it is claimed that competition takes place between supply chains. Yet, strategic and organizational issues are rarely addressed. While there is some literature on partnerships in the supply chain, few concepts and case studies have been presented on how supply chain strategy is developed and implemented. To explore the full meaning of supply chain management, new strategies must be set into motion and new forms of organization have to be found to reach the overall objectives in a supply chain. This book brings together a set of papers on such issues. In APICS sought to examine the role that supply chain strategy plays in organizations, and in 2011, the APICS research department conducted a survey of more than 9,000 operations management professionals on the topic of supply chain strategy. Maturity in supply chain strategy remains relatively low: Current supply chain strategies are still fairly new. A Baseline for Maturity in Supply Chain Strategy. The majority of respondents (40 percent) indicated they usually refer to organizational or business unit supply chain strategy when making supply chain recommendations or working with supply chain partners (14 percent responded "always," 27 percent said "sometimes," and 13 percent replied "rarely").