

## Preface

The Supply Chain View on companies, industries, as well as on political economies as a whole is getting more and more common these days. Having one strong root in logistics, this specific view characterizes economic phenomena as a networked sequence of materials suppliers, original equipment manufacturers (OEM), distribution services and customers which are interconnected by diverse streams of goods and related information. Against this background, the contemporary understanding of Supply Chain Management (SCM) has continuously evolved from elementary operational logistics (i.e. transport, warehousing, turnover, etc.) within a single company into an advanced strategic view reflecting an integrative and inter-organizational perspective of management. Hence, originating in logistics, in its core SCM focuses on the flows of materials and related information and aims at their systematic Design, i.e. organization and coordination, on the level of a single company, the inter-organizational level, as well as the level of the whole supply chain. In particular, modern perceptions of SCM call for an integral design of supply chain processes and structures within and between companies. As a consequence, the development of sustainable concepts for Supply Chain Design (SCD) is one of the basic and most challenging tasks of SCM, getting more and more strategic in character.

Although, on the one hand, the supply chain view suggests a rather concrete perspective on materials flows and related information, its openness as regards strategic challenges, on the other hand, implies the vast diversity of scientific topics and managerial issues. This marks the starting point and motivation of this volume which aims at revealing and illustrating this diversity in terms of scientific and theoretical fundamentals, prevailing concepts as well as current practical applications in the realm of strategic SCD. Therefore, this book is divided into three parts:

The first part of this volume deals with selected theoretical and conceptual approaches to SCM and strategic SCD indicating the vast and rich scope of the topic from a prevailing scientific and more general perspective.

In their philosophy of science inspired approach, STEFAN WALTER and JULIA WOLF take the perspective of "SCM as a Scientific Revolution" and aim at closing the gap between the broad adoption of SCM and its currently insufficient theoretical base. In their systematic analysis they develop a framework to identify SCM as a scientific paradigm. They come to the conclusion that research in SCM is rather dominated by a positivist world view. As a consequence, with

regard to the guiding power on SCD they state that there is still a gap between scientific research and implementation in practice. They nevertheless infer that SCM is more than a fashionable buzzword, it is a scientific revolution, which is just about to begin.

Subsequently, THORSTEN KLAAS-WISSING reflects on the benefits of combining organization theory and logistics. By integrating relevant streams of the organizational configuration approach and logistics he derives the conceptual model of the logistics organization, containing specific design and context variables. Furthermore, this organization model lays the foundation for the development of four generic types of logistics configurations: Tight, Agile, Modular and Individual. Those logistics configurations can eventually be used as a frame of reference for the integral exploration and design of supply chains.

WERNER DELFMANN directs our view to the general challenges of supply chain governance as a major dimension of inter-company SCD in the dynamic context of global value chains. Distinguishing between different types of supply chain governance – market, modular, relational, captive, and hierarchy – he recommends a further model, i.e. the federated model of supply chain governance in order to assemble sustainable positions for all partners in the supply chain. Federated supply chains build on the relational model and for that purpose continuously advance capabilities and competences of the related partners. As a consequence Federated supply chains reflect the character of vertical alliances, based on voluntary cooperation of equal partners.

Also referring to an inter-company level, TAGE SKJØTT-LARSEN presents an eclectic framework for explaining and designing business relationships within a supply chain. Since we cannot rely on one theoretical explanation alone when exploring and designing real supply chains, his framework combines elements of Transaction Cost Economics with the Network Perspective, and the Resource Based View. By analyzing and comparing these different but complementing approaches, he emphasizes the complexity of the supply chain phenomenon in reality and the main challenges for deriving theoretical implications. He finally concludes that there is no such thing as a unified theory of SCM.

PETER HANS VOSS and CARL MARCUS WALLENBURG close the first part of this volume by focusing on horizontal relationships and analyzing their effects on SCD. Based on cost benefit calculus they pinpoint the possible horizontal effects in a supply network in terms of five layers, which they perceive as the main areas of horizontal relationships and cooperation: i.e. market power and pricing, facility utilization and efficiency, information asymmetry and efficiency, mutual dependence and adaptation of agreements, as well as knowledge and technical

innovation. Their approach illustrates that horizontal relationships can have substantial influence within a supply network and should therefore be considered in any approach for strategic SCD.

Getting more concrete and stepwise more focused, the second part of this volume deals with prevailing concepts, which address specific challenges of SCD from a pragmatic but also partly from a scientific point of view.

We start by looking back on – what we would name – the "classics of strategic SCD". The HBR-Reprints of "Get Leverage from Logistics" by ROY D. SHAPIRO (first published in 1984) and "What is the right Supply Chain for your Product?" by MARSHALL L. FISHER (first published in 1997) certainly rank among the most quoted papers on supply chain strategy. Since both contributions give valuable insights to SCD from the specific perspective of competitive strategy, thereby serving as foundation and motivation for countless follow up papers (take the contribution of KLAAS-WISSING in Chapter 2 as an example for further development), we found it worthwhile to reissue those papers in the present volume. In particular, SHAPIRO distinguishes into three strategic modes of competition – Innovation, Customer Service, and Cost Leadership – each of which correspond to a specific set of context variables (e.g. product range, product innovation) and design variables (e.g. postponement, centralization of stock), which eventually shape the character of a logistics system. Subsequently, FISHER outlines a simple framework to determine the strategic fit between efficient / responsive supply chains and functional/innovative products, respectively. Both approaches show, that the solutions to SCD have to fit competitive strategy and/or the type of product(s) (which are typically aligned to a specific competitive strategy). Their message reflects the meanwhile acknowledged understanding that a "one-size-fits-all solution" to SCD will not work out to be successful at all.

Compared to the classics of strategic SCD, ERIK HOFMANN then introduces into a more specific and rather innovative area of SCD, what he calls the 'financial side' of SCD. Since the entire material and information flows throughout a supply chain are ultimately reflected by financial flows, supply chain managers basically need to consider the arrangement of the flow of financial resources, too. Against this background, HOFMANN provides an introduction into the new field of cash flow organization in supply chains by presenting a collaborative payment model.

ERIC SUCKY addresses an institutional challenge by examining the domain of strategic supplier selection as a specific field of SCD. Since the selection of strategic suppliers determines the network structure, the resulting design of the supply chain will be influenced and determined over a long period of time, hav-

ing high supply risk and profit impact. Therefore, SUCKY presents a stochastic dynamic model for strategic supplier selection based on a hierarchical planning approach. The approach describes the structure of this specific institutional problem of SCD and points out the interdependent relationships between the decisions on different planning levels.

Time is the dominant subject of SCD presented by MICHAEL SCHRÖDER. Since competition is nowadays increasingly seen as competition in time, he shows the meaning of time as a central parameter in logistics, determining supply chain processes and structures. Savings in time as a result of acceleration or efficient time setting do not only reduce cash effective as well as opportunity costs, but furthermore enable a demand effective market differentiation. As a consequence SCHRÖDER states that geographical distance is losing its claim of being a condition sine qua non in favor of a time-wise distance.

AIMO INKILÄINEN closes the second part of this volume with an analysis on how customer requirements in the electronic business (e-business) shape fulfillment structures in supply chains. For this purpose he identifies five generic structures of distribution which are based on three characteristics: i.e. number of stock holding echelons, the degree of geographical centralization, and the degree of postponement. The analysis indicates that e-business will shorten the information and time based distances between producers and customers, leading to shorter distribution channels exhibiting higher degrees of postponement and centralization.

Getting even more concrete and further focused, part three finally presents contributions concentrating on practical concepts and applications to SCD in specific industries.

In his analysis of major possibilities to integrate supply relationships between companies EDWIN FISCHER identifies four different supply models which range from low to high level integration: i.e. traditional purchase order, vendor managed inventory (VMI), just-in-time (JIT), and just-in-sequence (JIS). Especially VMI is seen as the first major step of an ongoing supplier integration towards integrated supply chains. Based on a list of supply chain factors FISHER then discusses how companies can practically evaluate the best applicable supply model for different types of products. The possible outcome is illustrated by an example of the automotive industry.

The contribution of HARALD GERKING, ROBERT KENDZIA and ANDREAS FRIES describes the specific situation and supply chain design of a German cost-oriented low price retailer: The Deutsche Woolworth GmbH & Co. OHG. First, the primal supply chain setting with its major weaknesses is presented. Then, based

on the basic ideas of the lean and agile supply chain paradigm, a hybrid solution to a new supply chain design is developed, which basically builds on a lean design, selectively complemented by agile elements. As a result, the new supply chain design reduced out-of-stock quotas, increased punctuality of delivery and lowered transportation and warehousing costs significantly.

Focusing on the specificity of the automotive industry DIETMAR BUFKA and MICHAEL C. HADAMITZKY demonstrate that a differentiated approach to SCD is logical and meaningful based on typological order-to-delivery processes. By presenting empirical case studies they reveal that a product- and market-specific juxtaposition of an array of different supply chain strategies is applied in the automotive industry.

Since the developments of the worldwide manufacturing and trade structures with their increasing interrelations and interdependencies have led to an ever growing importance, BENJAMIN KOCH and ANDREAS KRAUS present the particular facets of SCD in the air cargo business. To cope with the global challenges air cargo airlines have set up specific dynamic networks and logistics structures, bundling the knowledge and competences of their own organizations with those of airports and other market players. Some of the major challenges for SCD in this specific industry are discussed in their paper.

BENJAMIN LÜPSCHEN and KOUROSH BAHRAMI complete the third and last part of this volume by a specific focus on cost economies in transportation and their application in the fast moving consumer goods' (FMCG) industry. They develop a conceptual framework of definitions of cost economies by recurring to their theoretical foundations and by considering the flexible nature of transportation network structures. The framework is applied within a case study on supply chain design in the FMCG industry.

The preceding overview about the overall 16 contributions indicates that by bringing together genuine expertise from practitioners and scholars on Logistics and SCM, the present volume is able to reflect the variety of topics and challenges prevalent in strategic SCD. All contributions jointly amalgamate into a comprehensive and complementing overview about – what we would call – the state of the art in strategic SCD. But as we can further conclude from the implications made by the authors in this book, many interesting questions could be answered but even more new relevant questions arise. Therefore, time goes on and practical experiences will continuously accumulate as well as research necessarily has to and surely will differentiate further on this dynamic, complex but nevertheless exceptionally interesting area.

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