

Supply chain finance: solutions for financial sustainability, risk management and resilience in the supply chain

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Abstract

There are currently two ends of the spectrum when it comes to managing finance across the supply chain. The first is more short-term, concentrated on accounts payables and receivables, and often is focused on getting the best results for the focal firm, not the supply chain. The other end is more holistic – which may or may not involve a financial institution, focused on working capital optimization in terms of accounts payable, receivable, inventory, asset management, often across the supply chain (Gelsomino *et al*, 2016). This edited book is a compilation of 11 chapters that were written to help define and illustrate practical applications of SCF, and addresses the planning, management and monitoring of all processes and transactions associated with financial flows along the entire supply chain. The idea for this book came about because of the need for both managers and practitioners to understand the theory and practice involved in the developing field of SCF. The text delves into SCF history, SCF in action, some real-life cases, and addresses future research opportunities.

Introduction: supply chain finance (SCF) in theory and practice

The management of financial flows in the supply chain is an area that needs further definition and conceptual foundation. Recent economic downturns fostered research in this topic, particularly concerning

bankruptcy or over-leveraging of debt. Also, continued growth of outsourced spend has further increased the need for and spread of solutions and programmes that help to mitigate and better manage financial flows within and across the supply chain.

One approach being used to examine this issue is termed supply chain finance (SCF) (Gelsomino *et al*, 2016; Pfohl and Gomm, 2009; Wuttke *et al*, 2013). SCF is an approach for two or more organizations in a supply chain, including external service providers, to jointly create value on an inter-organizational level through means of planning, steering, and controlling the flow of financial resources (Hofmann, 2005; Wuttke, Blome and Henke, 2013). It involves taking an inter-company view of financial flows with customers, suppliers and service providers to better share the risks and value of financial flows among the supply chain members (Pfohl and Gomm, 2009). Supply chain financial processes, methods and solutions are designed to improve financial supply chain effectiveness by preventing detrimental cost shifting and improving the visibility, availability, delivery and cost of cash for all global value chain partners (Lamoureaux and Evans, 2011). The potential benefits of the SCF approach include reduction of working capital, access to more funding at lower costs, risk reduction, as well as increase of trust, commitment, and profitability through the chain (Randall and Farris, 2009).

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There is a need for research using the lens of SCF. Empirical evidence would prove useful for testing existing models and hypotheses, addressing the more innovative schemes and investigating the

adoption level and the state of the art of different solutions (Gelsomino *et al*, 2016). There is also a need for further theory building in SCF. Considering the plurality of solutions that shape the SCF landscape, literature should move towards the identification of approaches to select the best SCF strategy for a supply chain that meets the needs of multiple stakeholders (economic and noneconomic), considering the financial performance of the supply chain and contextual variables (eg power structures). The idea behind this edited book was to facilitate knowledge and learning in SCF. Calls for contributions and ultimate submissions and acceptance resulted in 11 chapters broken into four different categories: SCF History and Perspectives, SCF in Action, SCF in Practice with a presentation of actual case studies, and SCF in research.

SCF history and perspectives

This book opens with various authors providing definitions for SCF and establishing some of its basic tenets with the goal of contributing to knowledge for both managers and academics. The initial chapters in this book provide a foundation. Chapter 2, 'Supply Chain Finance (SCF): History and Future Directions' by Ellram, Tate and Fernandez sets the stage by providing a definition and brief history of the rise of SCF. The chapter looks at the supply chain perspective of SCF, showing the options available to firms to increase cash flow and improve the cash-to-cash cycle and working capital. Financial statements of global firms are used in the chapter to demonstrate the impact on individual company costs and total supply chain costs when SCF is viewed from the firm versus the supply chain perspective. The authors indicate that there are numerous problems associated with focusing only on the organization's cash, rather than supply chain cash impacts. Competition is now supply chain to supply chain and it is an advantage for organizations to look at the supply chain cash implications more broadly from risk management, supplier goodwill and loyalty, and total cost perspectives.

Following this, in 'Suppliers, Customers, and Firms' Financial Decisions' by Boulton and Kuchania (Chapter 3) the supply chain is examined from the perspective of finance, accounting and economics.

Their contention is that historically, finance research has tended to view topics from the perspective of a single firm. This firm optimizes its outcomes given market conditions, without much concern for the implications of its actions on the rest of the supply chain. However, an economy consists of a network of industries connected through customer and supplier trade flows. The recognition of the interconnectedness of a firm and its environment creates the need for researchers in finance and related disciplines to study the impact of the supply chain on topics such as firms' financial policies and returns to shareholders. In their chapter, the link between the supply chain and firms' financing decisions is discussed, including examples of research that provide a broader perspective, beyond the firm, within finance. This is followed by the financial managers' response to increasing incidence of supply chain disruptions over time. The conclusion relates to the influence of major customers and their effects on firms' financial decisions, suggesting a perspective beyond the immediate firm is needed in finance.

Vousinas (Chapter 4) then explains more about SCF in 'Supply Chain Finance: Definition, Modern Aspects and Research Challenges Ahead' by looking at the research that connects SCF to SCM, corporate value and financial performance. This perspective moves away from the myopic perspective of solely managing the cost when studying financial aspects of SCM. This chapter aims to redefine the term SCF by shedding light on theoretical ambiguities, provide an up-to-date systematic literature review of the SCF concept, and identify research gaps. This chapter also highlights some emerging areas like the 'Supply Chain Financial Bullwhip Effect' and Blockchain Technology, which provides a foundation for the next section, SCF in action.

SCF in action

This section delves into chapters that look at specific improvement opportunities using some of the key aspects of SCF: managing payable discounts, optimizing cash flows and mapping the financial supply chain. These authors provide evidence that there are key opportunities using the tools available in SCF to optimize supply chain outcomes.

Chapter 5, ‘Optimizing Cash Flows for a Retail Supply Chain Coordinator’ is written by Gopalan and looks at a new role that has developed in the retail industry related to SCF: the Retail Supply Chain Coordinator (RSCC). The RSCC serves as an intermediary between retail customers on the one hand and contract manufacturers and logistics service providers on the other. The RSCC may not own plant capacity or raw material, but merely finance and coordinate contract manufacturing on behalf of various retailers. The RSCC may also coordinate other value-adding services on behalf of the retailer, such as product customization at manufacturing plants and disposing of excess inventory if the retailers’ realized demand falls short of forecasts. The RSCC optimizes the cash-to-cash cycle and must actively manage supply chain contracts with both retailers and contracted service providers. The authors provide a mathematical programming model that helps optimize the timing of fulfillment of accounts payable obligations, as well as optimize the timing of receipts of receivables from retailers. The framework and models presented in this chapter can also be adapted by the RSCC for managing exchange rate risks in the supply chain.

In ‘Supply Chain Finance Opportunities by Managing Payables Discounts’ (Chapter 6) Farris and Hightower indicate that SCM has traditionally emphasized managing the physical flow of parts and finished goods with limited attention given to financial flows. They show that the next evolutionary step of SCM is developing the management of supply chain finance across multiple trading partners. This chapter considers the opportunities of managing payment discounts throughout the financial supply chain. Since one trading partner’s payables are another trading partner’s receivables and each trading partner has inherent advantages (such as different weighted cost of capital or accessibility to funds), joint effort considering the financial linkages between trading partners offers opportunities to tap into the strengths of each trading partner for the benefit of the supply chain. The final chapter in this section (Chapter 7), ‘Mapping and Managing the Financial Supply Chain’ by Farris and Ahmad, builds on this notion of the importance of understanding financial flows and discusses the capability of mapping and managing SCF and the benefits of doing so.

SCF in practice – case studies

To supplement the more theoretical or research-based view of SCF, this section of the book includes several case studies to provide application and insight. These cover areas such as SCF risk and decision-making challenges that arise because of a lack of a holistic perspective on SCF implications.

The opening chapter in this section, ‘Supply Chain Finance and Cyber Risk: An Illustrative Case Study’ by Gaudenzi, Siciliano, Zsidisin (Chapter 8) examines the increasingly important topic of cybersecurity. While most people understand that cyber breaches can create interruptions and disruptions in operations, and threaten an organization’s reputation, they do not realize that they could also threaten an organization’s cash-to-cash cycle. Based on a case study of Paul Hartmann SpA (Italian division), this chapter provides insight into how one firm views and manages cyber risk and its effects on SCF. The company suffered a cryptolocker attack (where data/systems are hijacked by ransomware in order to extort money from the firm) more than two years ago but was prepared as the updated backup systems facilitated recovery from the attack within two hours. Its concerns around cybersecurity and SCF relate to a possible degradation of its credit rating, visibility of firm and customer financial data, and tampering with such data. The chapter discusses these and other strategic threats and safeguards.

Chapter 9, ‘Commodity Risk Management at BMW: Price Indices and Contracts’ by Markou, Corsten, Carduck and Koblbauer provides insight into BMW’s (Bayerische Motoren Werke) Raw Material Management Department’s innovative processes for centralizing and mitigating financial and operational risks related to procurement. In recognizing that financial and operational risks are often managed by different functions and business units with different goals, BMW developed a framework to align priorities through incentives contracting and risk management based on price indices and index-linked contracts. The process, which uses Market Exchange Indices (MEI), Market Prices Indices (MPI) and Market Price Assessments (MPA) has contributed to improved supply chain integration, better supplier relationships and improved joint management of financial and operational risks, as explained in the chapter.

The final chapter in this case section is Chapter 10, 'A Business Partners' View on Decision-Making Challenges in the Supply Chain', contributed by Carpenter and Varey of DHL. These two financial directors often participate in DHL's major contract negotiations. As such, they have a broad perspective of some of the common misconceptions that customers have related to SCF and cost management in general. The problems that they share here are largely attributed to the way that customers approach financial aspects of negotiation, based on inappropriate or narrow incentives that do not take a holistic perspective on outcomes. This chapter provides several different examples of decisions that were driven by incomplete data and a short-term orientation, as well as suggestions for how those decisions could be improved upon, and in some cases were improved upon. The goal of this chapter is to provide understanding to help prevent others from taking similar approaches, which will achieve poor results. Examples include understanding the impact of emphasizing a short-term focus, particularly related to extended payment terms, failure to understand the true total cost of a decision, and inadvertently trading off low price for customer service levels. These examples could be useful for explaining to others within an organization when inappropriate approaches are being used, and for examples in teaching a holistic view of supply chain financial decisions.

SCF in research – trends and future research areas

In order to cover trends and stimulate innovative research areas, Chapters 11 and 12 provide two complementary perspectives on SCF. The first takes a different context, ie natural ecosystems, as inspiration for SCF's further trajectory of evolution. The latter takes up a new technological opportunity, blockchain, in order to show how it can be leveraged within the exemplary area of trade finance.

Chapter 11, 'Exploring Fragmentation in the SCF Ecosystem' by Bals and Bals takes a biomimicry perspective to explore the status of SCF's evolution. This chapter argues that increased connectivity and intensified information flows, enabled through information technology, is the innovation at the centre of the evolution of the SCF ecosystem. However, hindering further evolution and transparent

information flow, is the current fragmentation within the current SCF ecosystem, and as a result is likely to limit its broader adoption. The chapter derives principles from natural and business ecosystems, developing propositions for future research on how SCF ecosystem fragmentation might be addressed.

The final chapter in this section and in the book (Chapter 12), is 'Foundational Premises and Value Drivers of Block-Chain-Driven Supply Chains: The Trade Finance Experience' by Hofmann, Heines and Omran. Taking up the recent hype about blockchain technology, these authors highlight its potential based on a distributed ledger for efficient transaction processing, interaction and automation in the context of supply chain operations and trade finance. They highlight that by aligning all relevant data streams on a digital scale, it is not only possible to make trading processes significantly more functional, but also to improve regulatory control through elimination of redundant practices.

Concluding outlook

Where do we go from here? These 11 chapters provide a starting point for better understanding how financial flows in the supply chain are defined and managed. Recent economic downturns fostered research on this topic because of the increasing bankruptcy and over-leveraging of debt across the supply chain putting the flow of goods and services at risk of disruption. Also, continued growth of outsourced spend and increasing days of payables further increased the need for and spread of solutions and programmes that help to mitigate and better manage financial flows within and across the supply chain. Beginning to extend payment terms and maximize one organization's cash, proactive variations of SCF involve taking an inter-company view of financial flows with customers, suppliers and service providers to better share the risks and value of financial flows among the supply chain members (Pfohl and Gomm, 2009).

In this book, SCF is defined and described. The idea is that our organizations are only as good as our supply chains. In today's landscape competition occurs at the level of supply chain versus supply

chain. Supply chain financial processes, methods and solutions improve financial supply chain effectiveness by preventing detrimental cost shifting and improving the visibility, availability, delivery and cost of cash for all global value chain partners. The chapters in this book show various tools and real-life applications of some of these SCF tools. There are many benefits to having effective SCF programmes in place, which are also discussed in the chapters. The aspiration is for this book to generate interest in the concepts and applications of SCF so that academics and practitioners might help move the field ahead with more research and application to the betterment of the entire supply chain.

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