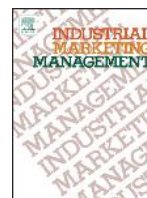




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Issues in Supply Chain Management: Progress and potential

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ABSTRACT

In a 2000 article in *Industrial Marketing Management*, "Issues in Supply Chain Management," Lambert and Cooper presented a framework for Supply Chain Management (SCM) as well as issues related to how it should be implemented and directions for future research. The framework was comprised of eight cross-functional, cross-firm business processes that could be used as a new way to manage relationships with suppliers and customers. It was based on research conducted by a team of academic researchers working with a group of executives from non-competing firms that had been meeting regularly since 1992 with the objective of improving SCM theory and practice. The research has continued for the past 16 years and now covers a total of 25 years. In this paper, we review the progress that has been made in the development and implementation of the proposed SCM framework since 2000 and identify opportunities for further research.

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1. Introduction

In this journal in 2000, a Supply Chain Management (SCM) framework was presented as a new business model and a way to create competitive advantage by strategically managing relationships with key customers and suppliers (Lambert & Cooper, 2000). It was based on the idea that organizations do not compete as solely autonomous entities but as members of a network of companies (Anderson, Hakansson, & Johanson, 1994). In fact, it is common that companies purchase from many of the same suppliers and sell to the same customers, so the organizations that win more often are those that best manage these relationships. In order to successfully manage key relationships across a network of companies, the authors proposed a framework comprised of eight cross-functional, cross-firm processes. Implementation of the processes requires the involvement of all business functions.

Sixteen years have gone by since the 2000 SCM article in *Industrial Marketing Management* and the terms supply chain and SCM have become common in the corporate world and in academic research (Varoutsas & Scapens, 2015). However, there is still not a consensus view of what SCM involves or how it should be implemented (Vallet-Bellmunt, Martínez-Fernández, & Capó-Vicedo, 2011). Given the number of university programs devoted to SCM (many with specialized research centers on the topic), it is startling there are only two cross-functional, cross-firm, process-based frameworks that can be, and have been, implemented in major corporations (Lambert, García-Dastugue, & Croxton, 2005): The Supply Chain Operations Reference (SCOR) model developed and endorsed by the Supply-Chain Council

(now part of The American Production and Inventory Control Society), and the SCM framework described by Lambert and Cooper (2000).

While many areas for research still exist, the research team led by the first author of the 2000 article has addressed many of the research questions raised in that article. The results of 16 years of research devoted to further development of the framework have been reported in a total of 30 publications including two books, one in the fourth edition. Our purpose in this article is to summarize the progress made, describe how managers can benefit from using the framework and identify opportunities for further research. In the next section, we provide a summary of the contributions to SCM made by Lambert and Cooper (2000). This is followed by a description of the research priorities that the executive members identified since the early days of the research center¹ and a timeline of the publications that resulted from the research. Then, the methodologies used to refine and extend the original SCM framework since 2000 are described. Next, we provide the research findings including: an updated definition of SCM; an evaluation of the premise that the new basis for competition is supply chain vs. supply chain; an explanation of why supply chain management is about relationship management; a description of two tools that can be used to structure key supply chain relationships; an overview of supply chain mapping; and, a summary of changes to the original supply chain framework described in the 2000 article. This is followed by a section on the SCM framework in 2016 which includes: a description of the current state of the SCM framework; revised process descriptions and figures; guidelines for implementing the SCM processes; findings on value co-

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¹ The research center involves executives from non-competing firms and academics who have been meeting regularly since 1992 with the objective of improving SCM theory and practice.

creation; an explanation of how SCM process performance affects EVA; a description of process assessment tools; and, an updated list of management components. Then, the SCM framework is compared with the Supply Chain Operating Reference (SCOR) model. The paper ends with opportunities for future research and conclusions.

2. The supply chain management framework in 2000

The original article (Lambert & Cooper, 2000) described the outcomes of empirical research conducted by a team of academics and executives who met regularly since 1992 with the goal of developing a normative SCM framework. The contributions of the article included: 1) a clarification in terminology regarding the differences between logistics (an organizational function) and SCM (the management of a network of companies); 2) a definition of SCM that focused on the integration of eight macro business processes across firms; 3) a requirement that the eight SCM processes are managed by cross-functional teams that involve all key business functions; 4) a recognition of the importance of managing business relationships within a complex network of companies; 5) a description of methods for mapping the supply chain network structure and for identifying the supply chain members with whom key business processes should be linked (i.e., customer and supplier segmentation); 6) a description of the eight key SCM processes that need to be implemented; 7) an explanation of nine management components to manage each process; 8) a list of recommendations for implementation; and, 9) a summary of directions for future research.

The predominant definitions of SCM that existed at the time the research center began in 1992 resembled the contemporary understanding of logistics management. The nature of logistics and SCM as functional silos within companies remained unchallenged, which created confusion for managers and academics. For many, this confusion continues to exist (Hingley, Lindgreen, & Grant, 2015). Also, the complexity required to manage all suppliers back to the point of origin and all intermediaries to the point of consumption by a single function made the popular definitions of SCM unrealistic and impracticable at a minimum. The following definition of SCM, developed with input from the members of the research center, changed the focus from a functional orientation to one that emphasized the management of business processes across companies to create a competitive advantage.

“Supply chain management is the integration of key business processes from end user through original suppliers that provides

products, services and information that add value for customers and other stakeholders” (Lambert & Cooper, 2000, p. 66).

The research conducted with the member companies combined with concepts from the marketing channels literature led to a “conceptual framework of supply chain management” (Lambert & Cooper, 2000, p. 69) that described three major interrelated steps that needed to be designed and implemented in order to successfully manage a supply chain. The first step consisted of identifying the key supply chain members with whom to link processes.

The second step consisted of determining what processes needed to be implemented with each of the key supply chain members. In order to successfully achieve cross-firm process integration, the development of standard supply chain processes was considered necessary because communication problems may occur when firms have different number of processes, different process definitions or different activities included within each process (Lambert & Cooper, 2000; Piercy, 2009). The eight key SCM processes identified by the research team are shown in Fig. 1, which comes from the 2000 article and provides a simplified representation of the eight key SCM processes cutting across functional and intercompany silos.

The third step was to determine the right level of integration and management to be applied to each process link. The research team identified nine management components that should be considered when implementing the processes. The level of integration of a supply chain process link could be adjusted by increasing or decreasing the number and intensity of the components implemented in that link.

Lambert and Cooper (2000, p. 65) stated that: “Thus far, there has been little guidance from academia, which in general has been following, rather than leading, business practice.” In an effort to keep the SCM framework relevant for the business community and academics, all of the elements described in this section have been improved upon or extended since its publication in *Industrial Marketing Management* in 2000. In order to reflect these changes, the definition of SCM was updated, the eight key SCM processes were developed in detail (one article was devoted to each process) and complemented with detailed implementation guidelines and tools. Also, the management components were updated. These changes are described in the following sections of this paper.

3. Supply chain management research priorities and publications, 1992 to 2016

On April 23 and 24, 1992, executives from six companies met with the lead author to begin a research center. There were a number of

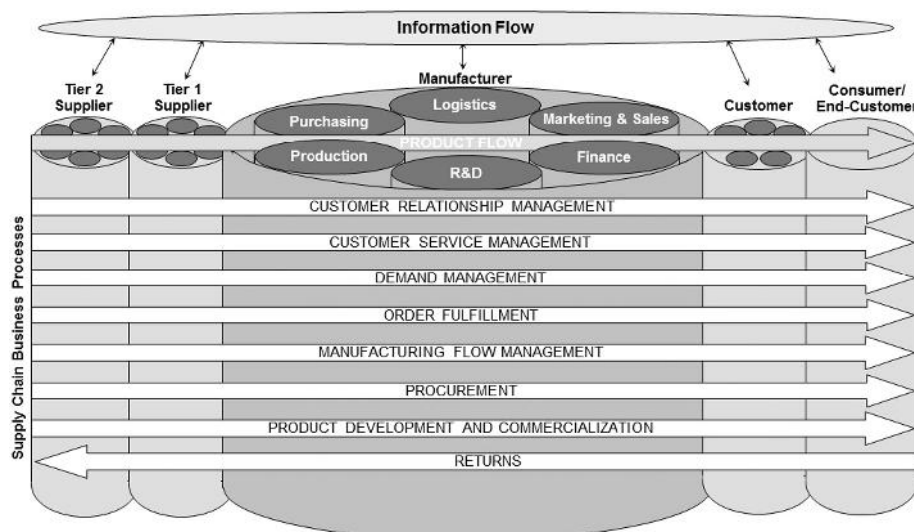


Fig. 1. The supply chain management framework in 2000 (Source: Lambert & Cooper, 2000).

things that made this research center unique at the time, but the two most significant were that the members would be executives from non-competing companies and the executives would determine the research agenda. Each company would contribute \$20,000 per year and two people from each company could attend the meetings. The mission was to provide the opportunity for leading practitioners and academics to pursue the critical issues related to achieving excellence in SCM. Membership consisted of representatives of firms recognized as industry leaders. Balance was maintained both as to the nature of the firms and the expertise of their representatives, and the membership was targeted at 12 to 15 firms in order to preserve the intimacy provided by the smaller size.

Fig. 2 provides a timeline of the topics addressed by the research team and the publications that resulted. The first research project funded by the companies was on the topic of partnerships (see Fig. 2 and Table 1). The executives were unanimous in their belief that this should be the first research project because the long-term success of their organizations would depend on the ability to collaborate with key customers and suppliers, and their companies were not good at this. They gave examples of relationships that were called partnerships and where there was a great deal of excitement in the beginning but, as one executive explained, “most of these relationships turned out to be bad marriages that ended in divorce.” The members identified 18 relationships that were considered to be good partnerships. They believed that if we studied these relationships, we would learn what made them successful so they could build more relationships like these and have fewer relationships that failed to meet expectations. Unlike previous partnership research which was based on surveys to a single informant on one side of the relationship, a multiple case study approach was used in order to increase the robustness and the managerial meaningfulness of the findings (Baba, 1988; Eisenhardt, 1989). A 45 question

interview guide was used to structure interviews with multiple individuals on each side of each relationship.

A case report was developed on each relationship and the members involved were given a copy to discuss within their organizations. It was decided that some of these relationships were not partnerships even though they were win-win business relationships. It was also recognized that when relationships were partnerships they were not all the same: there were degrees of partnering. In 1996, the Partnership Model, a tool that can be used to determine when a partnership is appropriate and to structure a relationship to meet the expectations of both parties was published (Lambert, Emmelhainz, & Gardner, 1996a, 1996b).

Since 1996, the Partnership Model has been used to structure, in a one and one-half day meeting, more than 100 relationships including complex relationships such as the one between The Coca-Cola Company and Cargill and less complex ones such as Wendy’s and Tyson Foods (Lambert & Knemeyer, 2004). An article was published describing a partnership between Whirlpool Corporation and ERX, a third-party logistics provider (Lambert, Emmelhainz, & Gardner, 1999), and another describing 20 relationships that were used to validate the model (Lambert, Knemeyer, & Gardner, 2004).

In 1995, with the partnership research coming to completion, effort was directed at identifying the next research project and two topics emerged: measuring and selling value, and SCM. The managers wanted to focus on the development of a framework to assist them in coordinating activities across corporate functions and with other key members of the supply chain. They viewed SCM as a way to achieve a competitive advantage through the implementation of cross-functional processes which would achieve the necessary coordination. In 1995, it was decided that an executive seminar as well as teaching materials needed to be developed and the first seminar was offered at the Marriott Sawgrass Resort in February of 1996. The seminar was structured based on the

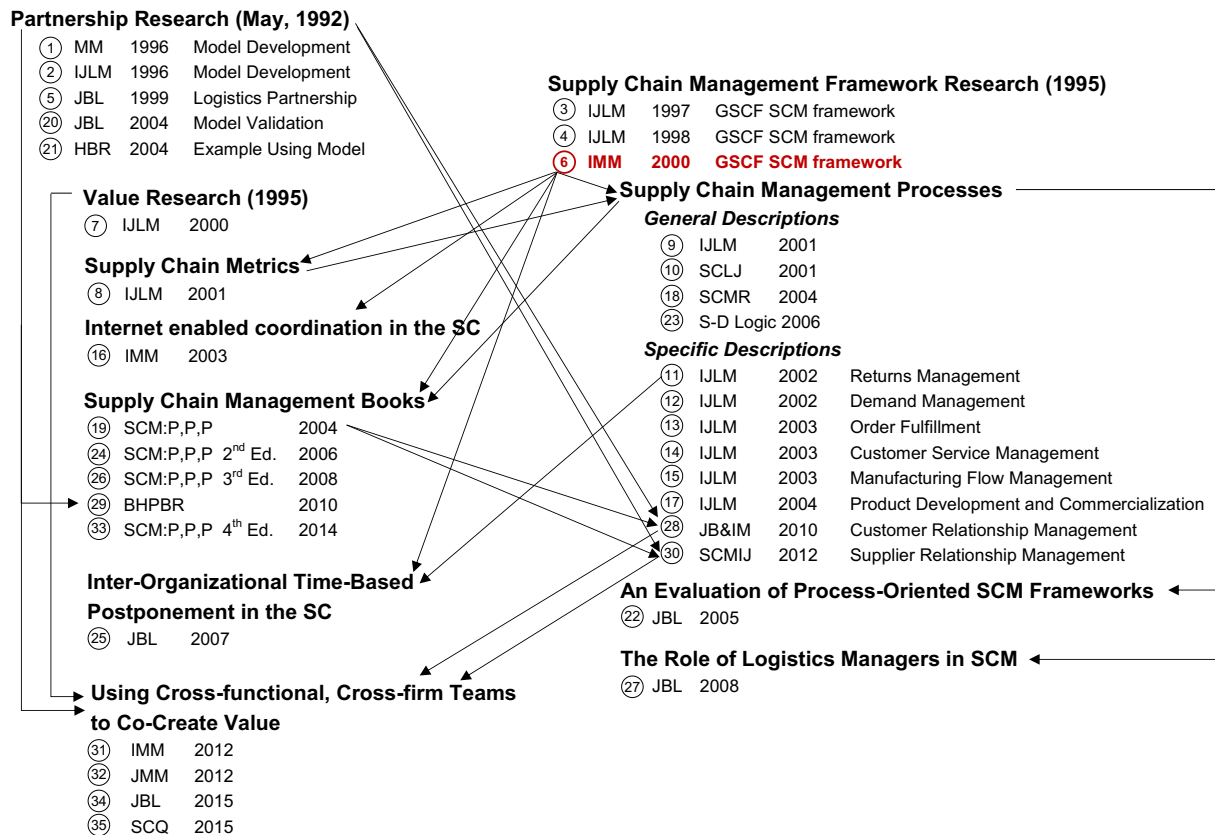


Fig. 2. Research streams that comprise the 2016 supply chain management framework. Note: encircled numbers refer to the citations shown in Table 1 and arrows show how research areas are connected.

Table 1
Literature published during 25 years of research on partnerships and the supply chain management framework. Note: The numbers shown in the first column reflect the encircled numbers shown in Fig. 2.

No.	Reference
1	Lambert, D. M., Emmelhainz, M. A., & Gardner, J. T. (1996). So You Think You Want a Partner? <i>Marketing Management</i> , 5, 2, 24–41.
2	Lambert, D. M., Emmelhainz, M. A., & Gardner, J. T. (1996a). Developing and Implementing Supply Chain Partnerships. <i>The International Journal of Logistics Management</i> , 7, 2 1–17.
3	Cooper, M. C., Lambert, D. M., & Pagh, J. D. (1997). Supply Chain Management: More Than a New Name for Logistics. <i>The International Journal of Logistics Management</i> , 8, 1, 1–14.
4	Lambert, D. M., Cooper, M. C., & Pagh, J. D. (1998). Supply Chain Management: Implementation Issues and Research Opportunities. <i>The International Journal of Logistics Management</i> , 9, 2, 1–19.
5	Lambert, D. M., Emmelhainz, M. A., & Gardner, J. T. (1999). Building Successful Logistics Partnerships. <i>Journal of Business Logistics</i> , 20, 1, 165–181.
6	Lambert, D. M., & Cooper, M. C. (2000). Issues in Supply Chain Management. <i>Industrial Marketing Management</i> , 29, 1, 65–83.
7	Lambert, D. M., & Burduroglu, R. (2000). Measuring and Selling the Value of Logistics. <i>The International Journal of Logistics Management</i> , 11, 1, 1–17.
8	Lambert, D. M., & Pohlen, T. L. (2001). Supply Chain Metrics. <i>The International Journal of Logistics Management</i> , 12, 1, 1–19.
9	Croxton K. L., García-Dastugue, S. J., Lambert, D. M., & Rogers, D. S. (2001). The Supply Chain Management Processes. <i>The International Journal of Logistics Management</i> , 12, 2, 13–36.
10	Lambert, D. M. (2001). Supply Chain Management: What Does it Involve? <i>Supply Chain and Logistics Journal</i> , 4, 4, 1–25.
11	Rogers, D. S., Lambert, D. M., Croxton, K. L., & García-Dastugue, S. J. (2002). The Returns Management Process. <i>The International Journal of Logistics Management</i> , 13, 2, 1–18.
12	Croxton, K. L., Lambert, D. M., García-Dastugue, S. J., & Rogers, D. S. (2002). The Demand Management Process. <i>The International Journal of Logistics Management</i> , 13, 2, 51–66.
13	Croxton, K. L. (2003). The Order Fulfillment Process. <i>The International Journal of Logistics Management</i> , 14, 1, 19–32.
14	Bolumole, Y. A., Knemeyer, A. M., & Lambert, D. M. (2003). The Customer Service Management Process. <i>The International Journal of Logistics Management</i> , 14, 2, 15–31.
15	Goldsby, T. J., & García-Dastugue, S. J. (2003). The Manufacturing Flow Management Process. <i>The International Journal of Logistics Management</i> , 12, 2, 33–52.
16	García-Dastugue, S. J., & Lambert, D. M. (2003). Internet-enabled Coordination in the Supply Chain. <i>Industrial Marketing Management</i> , 32, 3, 251–263.
17	Rogers, D. S., Lambert, D. M., & Knemeyer, A. M. (2004). The Product Development and Commercialization Process. <i>The International Journal of Logistics Management</i> , 15, 1, 43–56.
18	Lambert, D. M. (2004). The Eight Essential Supply Chain Management Processes. <i>Supply Chain Management Review</i> , 8, 6, 18–26
19	Lambert, D. M. (2004). <i>Supply Chain Management: Processes, Partnerships, Performance</i> . Sarasota, FL: Supply Chain Management Institute.
20	Lambert, D. M., Knemeyer, A. M. & Gardner, J. T. (2004). Supply Chain Partnerships: Model Validation and Implementation. <i>Journal of Business Logistics</i> , 25, 2, 21–42.
21	Lambert, D. M., & Knemeyer, A. M. (2004). We're In This Together. <i>Harvard Business Review</i> , 82, 12, 114–122.
22	Lambert, D. M., García-Dastugue, S. J., & Croxton, K. L. (2005). An Evaluation of Process-Oriented Supply Chain Management Frameworks. <i>Journal of Business Logistics</i> , 26, 1, 25–54.
23	Lambert, D. M., & García-Dastugue, S. J. (2006). Cross-Functional Processes for the Implementation of Service-Dominant Logic. In R. F. Lusch & S. L. Vargo, (Eds.), <i>The Service-Dominant Logic of Marketing: Dialog, Debate and Directions</i> . M.E. Sharpe Publishers, 150–165.
24	Lambert, D. M. (2006). <i>Supply Chain Management: Processes, Partnerships, Performance</i> (2nd ed.). Sarasota, FL: Supply Chain Management Institute.
25	García-Dastugue, S. J., & Lambert, D. M. (2007). Interorganizational Time-Based Postponement in the Supply Chain. <i>Journal of Business Logistics</i> , 28, 1, 57–81.
26	Lambert, D. M. (2008). <i>Supply Chain Management: Processes, Partnerships, Performance</i> (3rd ed.). Sarasota, FL: Supply Chain Management Institute.
27	Lambert, D. M., García-Dastugue, J. M., & Croxton, K. L. (2008). The Role of Logistics Managers in the Cross-functional Implementation of Supply Chain Management. <i>Journal of Business Logistics</i> , 29, 1, 113–132.
28	Lambert, D. M. (2010). Customer Relationship Management as a Business Process. <i>Journal of Business and Industrial Marketing</i> , 25, 1, 4–17.
29	Lambert, D. M., Knemeyer, A. M., & Gardner, J. T. (2010). <i>Building High Performance Business Relationships</i> . Sarasota, FL: Supply Chain Management Institute.
30	Lambert, D. M., & Schwieterman, M. A. (2012). Supplier Relationship Management as a Macro Business Process. <i>Supply Chain Management: An International Journal</i> , 17, 3337–352.
31	Enz, M. G., & Lambert, D. M. (2012). Using Cross-functional, Cross-firm Teams to Co-create Value: The Role of Financial Measures. <i>Industrial Marketing Management</i> , 41, 3, 495–507.
32	Lambert, D. M., & Enz, M. G. (2012). Managing and Measuring Value Co-creation in Business-to-Business Relationships. <i>Journal of Marketing Management</i> , 28, 13–14, 1588–1625.
33	Lambert, D. M. (2014). <i>Supply Chain Management: Processes, Partnerships, Performance</i> (4th ed.). Sarasota, FL: Supply Chain Management Institute.
34	Enz, M. G., & Lambert, D. M. (2015). Measuring the Financial Benefits of Cross-Functional Integration Influences Management's Behavior. <i>Journal of Business Logistics</i> , 36, 1, 25–48.
35	Lambert, D. M., & Enz, M. G. (2015). Co-creating Value: The Next Level in Customer-supplier Relationships. <i>CSCMP's Supply Chain Quarterly</i> , 9, 3, 22–28.

SCM framework which at the time included seven processes. An eighth process, returns management, was added prior to the second seminar held in April 1997. The framework and a definition of SCM were published in 1997 (Cooper, Lambert, & Pagh, 1997) based on the contents of the seminars and research (See Fig. 2 and Table 1). The framework was further developed as the research continued and follow-up articles were published in 1998 (Lambert, Cooper, & Pagh, 1998) and 2000 (Lambert & Cooper, 2000). Also, an article summarizing the research on measuring and selling value was published (Lambert & Burduroglu, 2000).

In 2000, an MBA course on SCM based on the framework was offered for the first time at The Ohio State University. In 2001, an article was published on supply chain metrics research (Lambert & Pohlen, 2001) in which process performance was tied to EVA® (Economic Value Added) and it was concluded that there were no end-to-end financial measures possible for the entire supply chain. Rather, SCM was really about relationship management, and the customer relationship management process of the seller organization and the supplier relationship management process of the customer organization

formed the links in the chain. Performance at each link would be measured as the impact of the relationship on each organization's incremental profitability. Also in 2001, an article was published that described the strategic and operational sub-processes for each of the eight SCM processes (Croxton, García-Dastugue, Lambert, & Rogers, 2001).

Publications based on our continuing research provided details on each process: the returns management process (Rogers, Lambert, Croxton, & García-Dastugue, 2002), the demand management process (Croxton, Lambert, García-Dastugue, & Rogers, 2002), the order fulfillment process (Croxton, 2003), the customer service management process (Bolumole, Knemeyer, & Lambert, 2003), the manufacturing flow management process (Goldsby & García-Dastugue, 2003), the product development and commercialization process (Rogers, Lambert, & Knemeyer, 2004), the customer relationship management process, (Lambert, 2004, 2010), and the supplier relationship management process (Lambert, 2004; Lambert & Schwieterman, 2012). In 2004, the first edition of *Supply Chain Management: Processes, Partnerships, Performance* (Lambert, 2004) was published.

4. Research methodology

In this section, we describe the research methodology used to extend and refine the SCM framework since 2000. The research included: focus groups with executives; breakout sessions and discussions during research center meetings; site visits to document best management practices; analysis of the data collected; preparation of manuscripts; and, executive feedback on the manuscripts. The triangulation of the results obtained using different research approaches increased the robustness of the findings (Eisenhardt, 1989; Yin, 2009). Next, we describe the methodologies used to: 1) identify the sub-processes of the eight SCM processes and develop the assessment tools, and 2) conduct the value co-creation research.

In order to identify the sub-processes of the eight SCM processes and the specific activities that comprised each sub-process, executives were engaged in focus group sessions (Calder, 1977; Krueger & Casey, 2000; Morgan, 1997). The executives were from several industries including agriculture, consumer packaged goods, energy, fashion, food products, high-technology, industrial goods, paper products, and sporting goods. The companies occupied multiple positions in the supply chain including retailers, distributors, manufacturers and suppliers. Participants represented various functions and their titles included manager, director, vice president, senior vice president, group vice president, and chief operations officer.

Executives were involved in a total of eight two-day research center meetings over a period of 28 months from July 2001 to October 2003. In the first three meetings, the executives provided the research team with input on the sub-processes that should comprise each of the eight business processes. Then, in the next five meetings, sessions were held for each specific process. For example, sessions were specifically devoted to identifying the detailed activities and implementation issues for the customer relationship management process (Lambert, 2010). In the July 2002 meeting, 22 executives participated. The task was to determine the specific activities that comprised each of the strategic and operational sub-processes. During the October 2002 meeting, in which 18 executives participated, slides were presented that summarized the results of the previous session and the learnings from company visits. Following the presentation, the executives participated in an open discussion providing suggestions for clarification. Based on the executives' feedback and additional company visits to document practice, a manuscript was produced for the following meeting. In the third, fourth and fifth meetings, 16, 17, and 21 executives respectively participated in open discussion and after each session, the manuscript was revised. Additional revisions were made to the material as experience was gained working with member companies on implementation of the customer relationship management process. A similar methodology was used to develop the assessment tools (Lambert, 2006) that can be used by managers to identify opportunities for process improvement (the assessment tools are described in 'The supply chain management framework in 2016' section of this manuscript).

The value co-creation research was conducted using case study (Eisenhardt, 1989; Yin, 2009) and action research methodologies (Näslund, Kale, & Paulraj, 2010; Stringer, 2007). Theoretical sampling was used to select two pairs of relationships (one pair was between a customer firm and two of its key suppliers and the other pair was between a supplier firm and two of its key customers). The relationships within each pair were comparable in terms of business volume and importance, and the main factor that differentiated them was that one of the relationships within each pair was managed using cross-functional teams while the other was based on traditional salesperson and buyer interactions. The first step consisted of interviewing managers from different functional backgrounds within the six firms in order to identify and compare their perceptions about the relationship in which they were involved. The second step consisted of identifying the collaborative initiatives conducted within each relationship during the previous two years and calculating the contribution to the focal firm's

profitability. We found that relationships managed using cross-functional teams led to appreciably more financial value than those managed using a single contact within each organization (Enz & Lambert, 2012). In a third step, we interviewed a subset of managers in the original sample in order to explore how perceptions about the relationships had changed after we showed managers the financial results associated with each relationship. The evolution of the one pair of relationships was monitored for the next six years (Lambert & Enz, 2015a).

For the next project, an action research approach was used to explore how the Collaboration Framework can be used to develop Product Service Agreements (PSAs) and create joint action plans for value co-creation (Lambert & Enz, 2012). The researchers helped managers develop a management structure and measurement methods to support the implementation of the action plans. The financial outcomes of the value co-creation initiatives were measured over time.

5. Research findings

As a result of the research conducted since 2000, a number of changes have been made to the SCM framework and to our thinking about SCM. The definition of SCM developed in 1995 and reported in Lambert and Cooper (2000) was updated because it did not mention: relationships, network of organizations or that the processes were cross-functional. In 2013, we worked with the executive members of the research center to craft the following new definition:

"Supply chain management is the management of relationships in the network of organizations, from end customers through original suppliers, using key cross-functional business processes to create value for customers and other stakeholders" (Lambert, 2014, p. 2).

It had become common to say that competition is no longer between companies, but it is "supply chain versus supply chain" (Lambert & Cooper, 2000, p. 65). We have changed our minds about this. While supply chain versus supply chain has some appeal given that companies exist in supply chains, it is not technically correct. For the competition to be supply chain versus supply chain, there would have to be a team "A" playing a team "B". When does this happen? The Coca-Cola Company and PepsiCo Inc. both purchase sweeteners from Cargill and packaging from the Graham Packaging Company, and in many cases, their products are sold to the same retail customers. This overlapping of supply chains is the rule and not the exception. Fig. 3 illustrates how the supply chains of major competitors can overlap. For example, the oral care businesses of Colgate-Palmolive, P&G and Unilever. If all three companies purchase from many of the same suppliers and sell to the same retailers, how can it be supply chain versus supply chain? It is not! If executives at Colgate-Palmolive manage relationships with suppliers and customers better than the executives at P&G and Unilever, Colgate-Palmolive will win more often.

Thus, supply chain management is actually about relationship management (Dyer & Singh, 1998; Piercy, 2009). A supply chain is managed, link-by-link, relationship-by-relationship and the organizations that manage these relationships best will win (Lambert & Pohlen, 2001). The links in the chain are formed by the customer relationship management process and the supplier relationship management process. For this reason, management needs tools that can be used to structure the key relationships (Varoutsas & Scapens, 2015) that are identified during the segmentation that occurs when implementing the customer relationship management and the supplier relationship management processes. As part of our research, we have developed two tools that can be used for structuring key business relationships: The Partnership Model and The Collaboration Framework.

The Partnership Model (Lambert et al., 1996a) was developed prior to the 2000 *Industrial Marketing Management* article and at the time we had no idea that it would be a key tool for implementing the SCM framework. Now, we realize that SCM is really about relationship

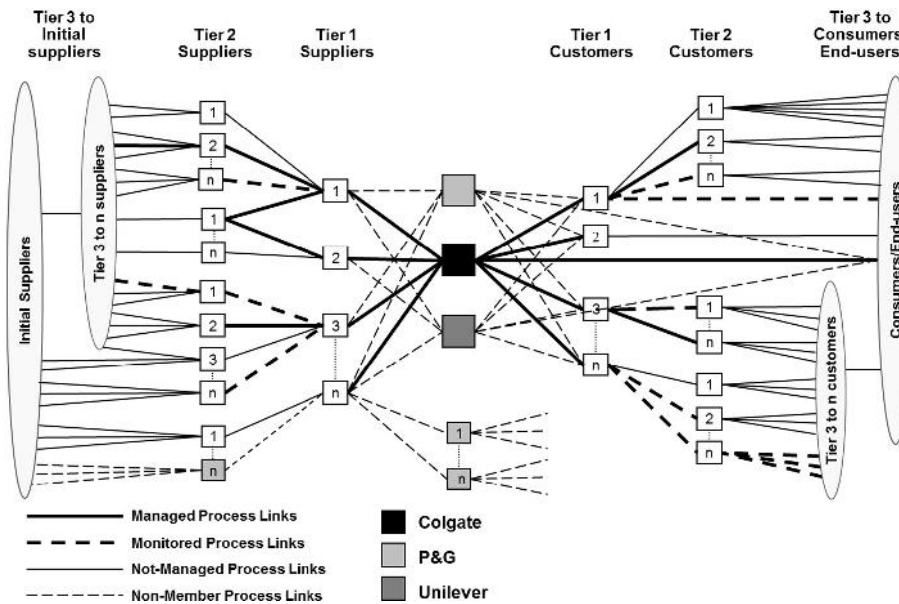


Fig. 3. Typically competitors buy from the same suppliers and sell to the same customers (Source: Lambert, 2014).

management and the Partnership Model provides a structure for developing key relationships. The Partnership Model separates the drivers, the facilitators, the components and the outcomes of partnership into four separate areas for attention. Drivers are the compelling reasons to partner and must be assessed independently by each organization in order to arrive at a common vision of the business benefits associated with building more closeness into the relationship. Then, the managers from each organization present their drivers to the other organization in order to set expectations. Facilitators are characteristics of the two firms that will help or hinder the partnership development process and they are assessed by the two groups together. Drivers and facilitators determine the potential for partnership: Type I, Type II or Type III (Lambert et al., 1996a). Components are the managerially controllable elements that should be implemented at a prescribed level depending on the type of partnership. Outcomes measure the extent to which each firm achieves its drivers.

Using the Partnership Model to tailor a relationship requires a one and one-half day session. The correct team from each firm must be identified and committed to a meeting time. These teams should include top managers, middle managers, operations personnel and staff personnel. A broad mix, both in terms of the management level and functional expertise, is required in order to ensure that all perspectives are considered. The process is not about whether to have a business relationship; it is about the style of the relationship.

The Collaboration Framework was developed in 2008 (first published in Lambert, Knemeyer, & Gardner, 2010) and is appropriate when one of two conditions are met. First, the relationship is new and individuals in the two organizations do not have enough information about each other and/or their joint business opportunities to score the drivers and facilitators in a full partnership meeting, but significant potential from collaboration exists. Second, the two organizations have significant joint business at stake and managers want to develop a joint plan for the next 18 to 24 months. The Collaboration Framework provides a structure for developing and implementing product and service agreements (PSAs) with key customers and suppliers that are part of implementing the customer relationship management and supplier relationship management processes.

The Collaboration Framework is comprised of six activities: 1) assess drivers for each company; 2) align expectations; 3) develop action plans; 4) develop product and service agreement; 5) review performance; and, 6) reexamine drivers. Assess drivers requires that each firm's representatives independently identify their business goals for

the relationship. Align expectations involves mutually establishing goals for the relationship based on the two organizations presenting their firm's drivers to each other and deciding what can be accepted as joint goals. Develop action plan includes prioritizing initiatives, assigning responsibilities, establishing time lines, and agreeing on the appropriate metrics. The PSA is a written summary of the rules of engagement and the action plan. It is necessary to regularly review performance to ensure that each firm has achieved its drivers. The teams should reexamine the drivers every 18 to 24 months.

The collaboration meeting is a one-day session in which expectations are set, action plans are developed, and responsibilities are assigned. The meetings are enhanced by the presence of individuals from multiple levels within the organizations who represent diverse functional expertise. The make-up of the group sends a message to those in the other firm about the importance of the relationship. It is important to involve the highest-level executives possible. The more levels of management above the people in the meeting, the more difficult it may be to achieve the commitments made. If key executives are not present and significant resource commitments are being made, then these executives should be briefed as soon as possible and their commitment obtained (Lambert & Enz, 2012).

As part of the ongoing research, we have developed tools and methodologies for supply chain mapping (Lambert, 2014). As supply chain network structures become more complex and geographically dispersed, management can benefit from developing a relationship-based map of their company's supply chain (Holmen, Aune, & Pedersen, 2013). The visual representation and analysis of the complexities in a firm's direct and indirect supply chain relationships serves as a starting point for increasing the cross-functional and cross-firm communication that is necessary for implementation of the SCM processes (Henneberg, Naudé, & Mouzas, 2010). The mapping effort enables management to identify the critical relationship linkages that must be closely managed and internal and external improvement opportunities. Also, the supply chain map can be used to support risk mitigation and sustainability goals. Once a relationship-based map is developed, a wide variety of activity-based mapping techniques can be used to identify and realize improvement opportunities across the network of companies that constitute the supply chain (Lambert, 2014).

A number of refinements also have been made to Fig. 1 from the Lambert and Cooper (2000) article. First, the arrowheads were dropped from the chart because people interpreted this as arrows shooting through the corporate silos when what we meant to convey was that

the processes were focused on the customer (except returns which indicated a reverse flow). While some processes such as demand management may involve the firm, key customers and suppliers, the links in the chain are formed by the customer relationship management process of the seller organization and the supplier relationship management process of the buyer organization.

Second, two processes were renamed. The procurement process was changed to supplier relationship management and moved up under customer relationship management in the figure. And, returns which tends to be viewed as reverse logistics was renamed returns management to reflect our broader conceptualization of the process.

Third, the term “consumer/end customer” was changed to “end customer” in order to incorporate learnings from the service-dominant logic of marketing (Vargo & Lusch, 2004, 2011), which states that value is not consumed but co-created during the usage of the product or service and the customer is a co-creator of value (See Fig. 4).

In the next section, we describe the updated SCM framework.

6. The supply chain management framework in 2016

In our research, executives believed that competitiveness and profitability would increase if a firms' internal business functions were coordinated using business processes and managed across multiple companies. Thus, “corporate success requires a change from managing individual functions to integrating activities into supply chain management processes” (Blackstock, 2005). Several authors (e.g., Davenport, 1993; Hammer & Champy, 1993) have suggested implementing business processes in the context of SCM, but there is not yet an “industry standard” for what these processes should be. The value of having standard business processes is that managers from organizations across the supply chain can use a common language which facilitates linking their firms' processes and IT systems with those of other members of the supply chain. The processes shown in Fig. 4 were identified by Lambert and Cooper (2000) and each one has been described in detail in an article based on the research conducted since 2000. The eight SCM processes are:

- Customer Relationship Management
- Supplier Relationship Management (referred to as Procurement in Lambert & Cooper, 2000)

- Customer Service Management
- Demand Management
- Order Fulfillment (referred to as Customer Order Fulfillment in Lambert & Cooper, 2000)
- Manufacturing Flow Management
- Product Development and Commercialization
- Returns Management (referred to as Returns in Lambert & Cooper, 2000)

A brief description of each of the eight processes updated based on our research since 2000 follows.

6.1. Customer relationship management

Increasingly, Customer Relationship Management is being viewed as strategic, process-oriented, cross-functional, value-creating for buyer and seller, and a means of achieving financial performance (Ehret, 2004; Keramati, Mehrabi, & Mojir, 2010; Payne & Frow, 2006; Zablah, Bellenger, & Johnston, 2005). The customer relationship management process provides the structure for how relationships with customers will be developed and maintained (Lambert, 2004). Management identifies customer groups to be targeted as part of the firm's corporate and marketing strategies and determines how customers within each group will be segmented. These decisions are made by the leadership team of the enterprise and the owner of the strategic process should be the CEO. The goal is to segment customers based on their value over time and increase the loyalty of target customers by providing customized products and services (Freytag & Højbjerg Clarke, 2001; Seibold, 2001). Partnerships are developed with a small group of key customers. Cross-functional customer teams tailor Product and Service Agreements (PSAs) to meet the needs of key accounts while achieving the firm's profit goals. For other customers, teams develop PSAs that provide value for a segment of customers and meet the firm's profit goals. In this case, the PSAs are not negotiable and are delivered by a salesperson to a buyer. The PSAs specify levels of performance. The teams work with key customers to improve processes and reduce non-value-added activities. Performance reports are designed to measure the profitability of individual customers as well as the firm's impact on the financial performance of the customer (Lambert & Pohlen, 2001).

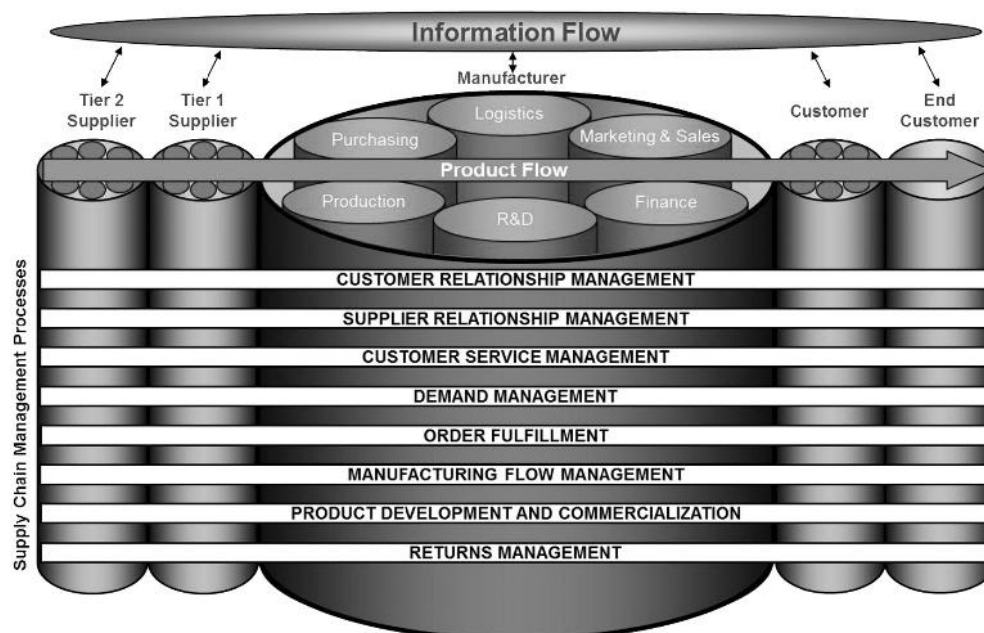


Fig. 4. The supply chain management framework in 2016 (Source: Lambert, 2014).

6.2. Supplier relationship management

The supplier relationship management process provides the structure for how relationships with suppliers will be developed and maintained (Lambert, 2004; Lambert & Schwieterman, 2012). As the name suggests, this process is very similar to customer relationship management. Suppliers are segmented based on their importance to the company's long-term success. Just as a company needs to develop close relationships with its key customers, it also needs to foster such relationships with its key suppliers (Forkmann, Henneberg, Naudé, & Mitrega, 2016; Gadde & Snehota, 2000). Close relationships are developed with a small subset of suppliers based on the value that they provide to the organization over time, and more traditional relationships are maintained with the others. Cross-functional teams negotiate a PSA with each key supplier that defines the terms of the relationship. For each segment of less critical suppliers, a standard PSA is provided to the supplier salesperson by a buyer and it is not negotiable. Partnerships are developed with a small core group of suppliers (Lambert & Knemeyer, 2004). The desired outcome is a win-win relationship where both parties benefit.

6.3. Customer service management

Customer service management is the SCM process that deals with the administration of the PSAs developed by customer teams as part of the customer relationship management process (Bolumole et al., 2003). Customer service managers monitor the PSAs and proactively intervene on the customer's behalf if they detect a risk that can interfere with keeping the promises that have been made. This requires that triggers and signals be operationalized to identify and solve problems before they affect a customer. Customer service managers interface with other process teams, such as supplier relationship management, manufacturing flow management and order fulfillment to ensure that promises made in the PSA's are delivered as planned.

6.4. Demand management

Demand management is the SCM process that balances the customers' demand with the capabilities of the supply chain (Croxtton et al., 2002). With the right process in place, management can match supply with demand proactively and execute the plan with minimal disruptions. The process is not limited to forecasting. It includes synchronizing supply and demand, reducing variability and increasing flexibility. For example, it involves managing all of the organization's practices that increase demand variability, such as end-of-quarter loading and terms of sale which encourage volume buys. The right amount of supply chain flexibility should be developed in order to cope effectively with unexpected supply or demand conditions. Marketing requirements and production plans should be coordinated on an enterprise-wide basis.

6.5. Order fulfillment

The order fulfillment process includes all activities necessary to design a network and enable a firm to meet customer requests while maximizing its profitability (Croxtton, 2003). In the case of global companies, it is necessary at the strategic level to determine which countries should be used to service the needs of various customers by evaluating considerations such as service requirements; labor, materials, transportation and utilities costs; tax rates and where profits should be earned to legally minimize tax liability; and, import and export regulations. While much of the actual work at the operational level will be performed by the logistics function, at the strategic level the process needs to be designed cross-functionally and with input from key suppliers and customers. The objective is to develop a seamless process from the various customer segments to the organization and then on to its suppliers.

6.6. Manufacturing flow management

Manufacturing flow management is the SCM process that includes all activities necessary to obtain, implement and manage flexibility in the supply chain and to move products into, through and out of the plants (Goldsby & García-Dastugue, 2003). A cross-functional team evaluates the current and desired flexibility of strategic resources such as manufacturing plants, suppliers, distribution channels, IT, and human resources. Manufacturing flow planning and execution must extend beyond the four walls of the manufacturer to other members of the supply chain. The most convenient decoupling points in the supply chain are determined considering the impact on customer service levels and total supply chain costs. Depending on the requirements of different customer segments, the implementation of more than one supply chain configuration might be necessary. For example, a lean supply chain configuration, in which the focus is on efficiencies, waste elimination and variability reduction is suitable for products with stable demand patterns (e.g., products that are manufactured in large volumes or that are in the maturity of their life cycles). An agile supply chain configuration is focused on increasing responsiveness to uncertain demand, reacting quickly to supply chain risks and implementing mass-customization, SMED, and postponement techniques, which is desirable for products with volatile demand patterns (e.g., innovative products and those that are in the early phases of their life cycles). At the operational level, the production plans are developed and executed.

6.7. Product development and commercialization

In many major corporations, the supply chain network is being viewed as an enabler of innovations and their commercialization (Aarikka-Stenroos, Sandberg, & Lehtimäki, 2014; Skippari, Laukkanen, & Salo, in press). Product development and commercialization is the SCM process that provides the structure for developing and bringing to market products jointly with customers and suppliers (Rogers et al., 2004). Effective implementation of the process not only enables management to coordinate the efficient flow of new products across the supply chain, but assists other members of the supply chain with the ramp-up of manufacturing, logistics, marketing and other activities necessary to support the commercialization of the product (Ostendorf, Mouzas, & Chakrabarti, 2014). The product development and commercialization process team must coordinate with the customer relationship management process teams to identify customer articulated and unarticulated needs; select materials and suppliers in conjunction with the supplier relationship management process teams; and, work with the manufacturing flow management process team to develop production technology or capabilities to manufacture and implement the best product flow for the product/market combination.

6.8. Returns management

Returns management is the SCM process by which activities associated with returns, reverse logistics, gatekeeping, and avoidance are managed within the firm and across key members of the supply chain (Rogers et al., 2002). The correct implementation of this process enables management not only to make the reverse product flow efficient, but to identify opportunities to reduce unwanted returns (avoidance) and to control reusable assets such as containers. While significant opportunities to reduce costs are possible through better management of reverse logistics, even greater potential to reduce costs and increase revenue are possible by avoiding management practices (e.g., end-of-quarter loading of customers, product freshness issues and returns policies that are too liberal) and performance failures (e.g., quality problems, order picking errors and product damaged in transit) that cause returns. There are many types of returns that need to be managed within this process including: customer returns, marketing returns, asset returns, product recalls, damage returns, material reclamation returns and environmental

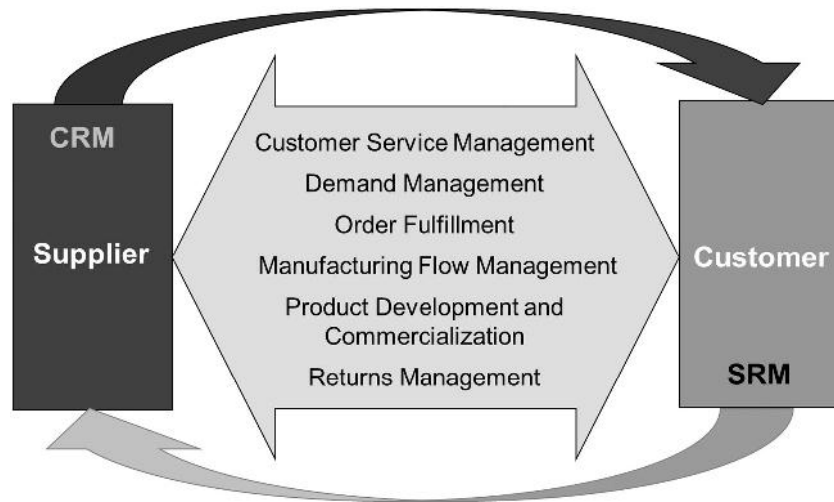


Fig. 5. CRM and SRM form the links in the supply chain (Source: Lambert, 2014).

returns (for a description of each type of return see Lambert, 2014, pp. 162–165).

Supply chain management is about relationship management and the supply chain is managed link by link. The Customer Relationship Management (CRM) and Supplier Relationship Management (SRM) processes form the links in the supply chain and the other processes are implemented through that CRM and SRM linkage (see Fig. 5).

In the individual articles describing each of the eight processes, detailed descriptions are provided for the strategic and operational sub-processes which can be used to guide academics in research and executives in implementation. As an example, the strategic and operational sub-processes of the CRM process and the connections to other SCM processes are shown in Fig. 6. The strategic sub-processes provide the structure for how the process will be implemented and the operational sub-processes provide the specific steps for execution of the day-to-day activities. Fig. 6 identifies the interfaces between CRM and the other seven processes. Interfaces with each of the business functions are accomplished by each function being represented on the cross-functional business team.

Each process team is comprised of managers from all business functions, including: marketing, sales, finance, production, purchasing, logistics and, research and development. The functions included in Fig. 4 are not meant to be all-inclusive, they represent the typical business functions. If there is any activity with a vice president in charge, someone from that organization should be included on each cross-functional team. For example, in the chemical industry, there may be a vice president responsible for environmental health and safety. At Sainbury's, the UK retailer with over 1300 locations, there is a person with director (i.e., vice president) responsibility leading the “20-by-20 plan”, a corporate sustainability program. Such organizational functions should be included on each cross-functional team to ensure that their perspectives and concerns are considered. Teams are responsible for developing the procedures at the strategic level and for managing implementation at the operational level.

The research on value co-creation was designed to evaluate the importance of using cross-functional teams for managing key supply chain relationships and to explore how managers change how they make decisions when they are provided with financial measurements of the

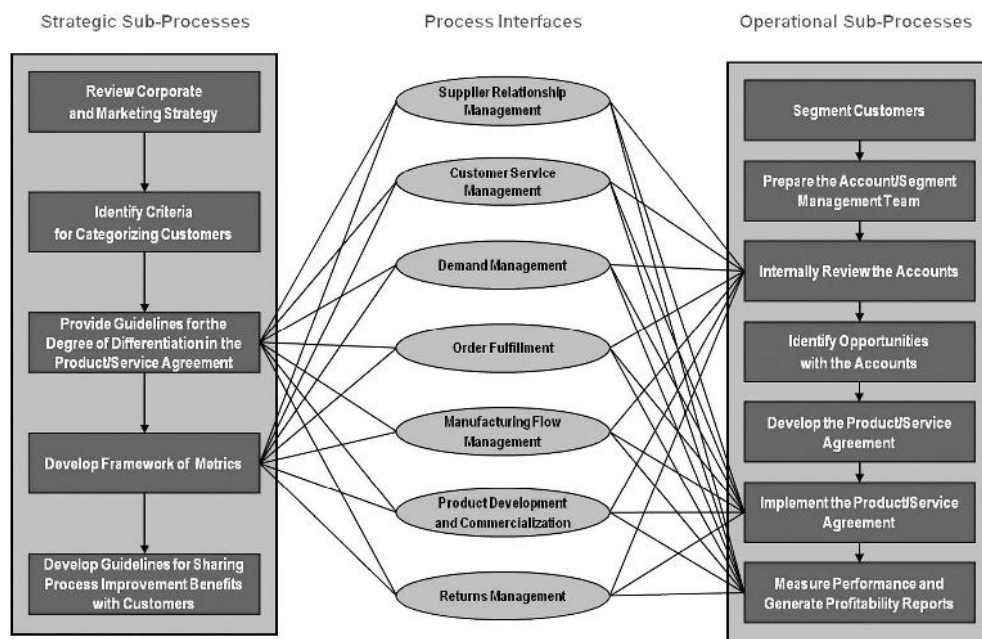


Fig. 6. The customer relationship management strategic and operational sub-processes and connections to other SCM processes (Source: Lambert, 2014).

value co-created with a customer or a supplier (Enz & Lambert, 2015). Value co-creation takes place through mutually beneficial interactions across actors within business networks (Kohtamäki & Rajala, 2016). Our findings indicated that the collaborative initiatives conducted within cross-functional relationships led to higher profit contribution than relationships managed with a traditional salesperson-to-buyer approach. In an example, with two suppliers from whom a similar volume of purchases was made, a customer interacted cross-functionally with one of the suppliers and the benefit was a profit improvement of \$25.9 million from their joint initiatives. In the other relationship, where only the salesperson and the buyer interacted, the profit improvement was \$0.4 million (Enz & Lambert, 2012). The findings convinced management of the importance of cross-functional involvement, value co-creation and measuring relationship profitability in a holistic way. The relationships described in the example were monitored for the next six years, and we found that purchases from the supplier with no cross-functional involvement had been reduced by more than 90% and the volume was transferred to other suppliers where management had “the willingness and capability to think in terms of value co-creation and work in cross-functional teams” (Enz & Lambert, 2012, p. 506).

Based on the experience described above, management of the customer firm decided to issue a request for proposal (RFP) for distribution to its restaurants and included potential to co-create value as a decision criterion. After the bidding process was complete, management selected four finalists and each one would save money over the current multi-distributor network. Two firms were cheaper than the one selected, and the cost premium over the distributor that quoted the lowest price was \$2.7 million. The restaurant chain’s management believed that the \$2.7 million would be offset by working with the distributor to co-create value. Six months after the contract was awarded little progress was being made in terms of value co-creation. Therefore, the Collaboration Framework was used to identify joint initiatives on which to collaborate. During the first full year after the day-long collaboration meeting, cross-functional, cross-firm teams were deployed to work on the initiatives and the combined before taxes profit impact was \$4,365,799, of which the restaurant company received \$3,334,390 and the distributor received \$1,031,409. The value co-creation results

have been tracked over the years (Lambert & Enz, 2015b). After five years, in 2016, the profit improvements before taxes for the two companies exceeded \$40 million.

As an outcome of our research on supply chain metrics (Lambert & Pohlen, 2001), we determined that the performance of each process should be measured in terms of the impact on EVA®. “EVA is arguably the purest metric for determining a company’s effectiveness in turning one dollar of input (capital) into a dollar of output (profits)” (Cendrowski, 2013). Fig. 7 shows how the customer relationship management process can affect the firm’s financial performance as measured by EVA®. It illustrates how customer relationship management can impact sales, cost of goods sold, total expenses, inventory investment, other current assets, and the investment in fixed assets. For example, customer relationship management can lead to higher sales volume as a result of strengthening relationships with profitable customers, selling higher margin products, increasing the firm’s share of the customer’s expenditures for the products/services sold, and/or improving the mix, that is, aligning services and the costs to serve (Keramati et al., 2010). A similar figure was developed for each of the eight SCM processes to illustrate how the process affects EVA®.

Management should implement processes that increase the profitability of the supply chain, not just the profitability of a single firm. Key supply chain members should share equitably in the risks and the rewards. If the management team of a firm makes a decision that positively affects that firm’s EVA® at the expense of the EVA® of customers or suppliers, every effort should be made to share the benefits in a manner that improves the financial performance of each firm involved and thus give each one an incentive to improve overall supply chain performance.

For each of the eight SCM processes, an assessment tool was developed to help managers with implementation (Lambert, 2006). Completion of an assessment enables management to achieve consensus among managers from different functions about the performance and importance of specific activities, to identify opportunities to improve performance, to prioritize improvement opportunities, and to develop corrective actions. The assessment requires broad cross-functional involvement as well as participants from different levels of the organization. The assessment tool, which is comprised of questions related to

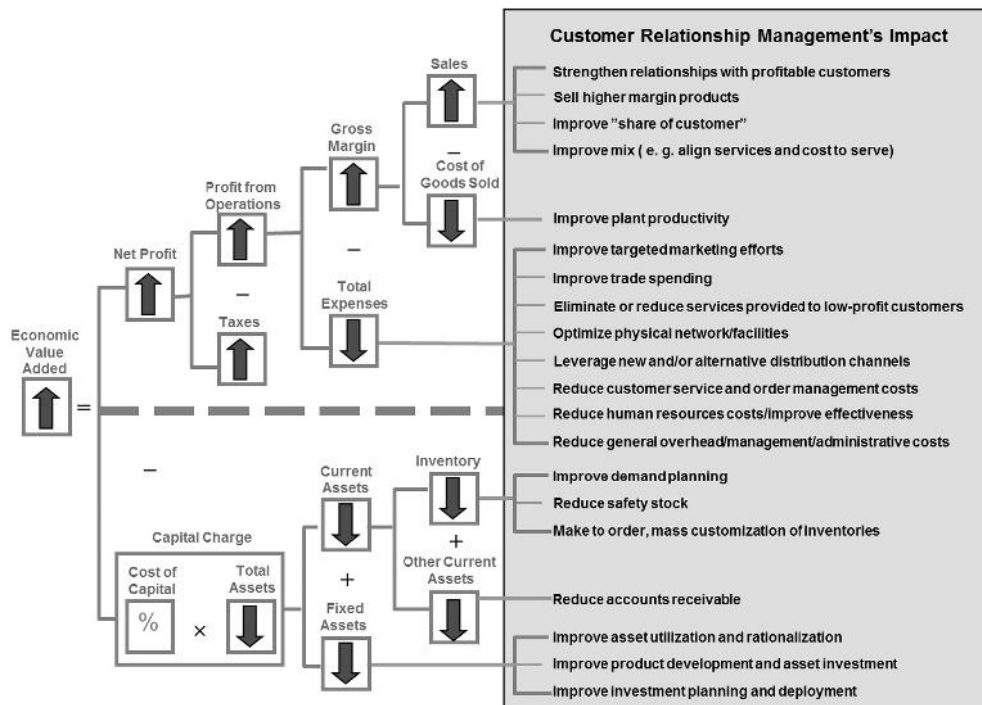


Fig. 7. How customer relationship management affects Economic Value Added, EVA® (Source: Lambert, 2014).

each activity included in the strategic and operational sub-processes, is completed by each participant individually (for more information on the assessment tools and a chapter devoted to conducting the assessments, see Lambert, 2014). For each of the items in the assessment tool, respondents choose a score from 1 to 5 for the description that best represents the company's current situation. Also, the perceived importance of each item is evaluated on a scale from 1 to 3. The tool includes a 'Don't know' option in case the respondent is not familiar with the topic of the question, and space to write a brief justification for the respondent's choice. The individual assessments are summarized and a four-hour consensus-building meeting is conducted in order to have the team agree on a score for each item and its importance. The main benefit is the discussion that occurs among participants with different organizational backgrounds. Once the meeting is over, the consensus scores, importance scores and any relevant ideas discussed during the meeting are summarized with action items and priorities.

The management components described by Lambert and Cooper (2000) were updated as the research team learned about the factors that determine the successful integration of the supply chain processes within a firm and across firms. The "physical and technical management components" were renamed "structural management components" and the "managerial and behavioral management components" were renamed "behavioral management components." In structural management components, the planning and control methods were separated into a planning component and a control methods component to more properly reflect the importance of these two categories. Communication and information flow facility structure was broken into two categories: knowledge management and communication structure. It was decided that product flow facility structure was not a management component, and trust and commitment was added as a behavioral management component (Lambert, 2014). Fig. 8 shows the updated list of supply chain management components.

7. Comparing the supply chain management framework and the supply chain operating reference (SCOR) model

As pointed in the introduction to this article, only two cross-functional, cross-firm, process-based SCM frameworks exist: The SCM framework (Lambert & Cooper, 2000) and The Supply Chain Operations Reference (SCOR) model. First, we will describe the SCOR model and then we will compare it to the SCM framework.

7.1. The supply-chain operations reference (SCOR®) framework

In 1996, the Supply-Chain Council (SCC), a nonprofit organization founded by Pittiglio, Rabin, Todd & McGrath (PRTM), a consulting company, and AMR Research began work on the SCOR® model (Supply-Chain Council, 1996). Initially, SCOR® included four business processes: plan, source, make, and deliver, to be implemented within the firm and eventually connected across firms in the supply chain. Return, the fifth process, was added in 2001 (Supply-Chain Council, 2001). In 2012, a sixth process, enable, was added to SCOR®. The SCOR® framework has four components: processes, performance metrics, practices, and people. The six SCOR® processes are (Bolstorff & Rosenbaum, 2007; Supply-Chain Council, 2012) (see Fig. 9):

- Plan: includes the gathering of requirements, gathering of information on available resources, balancing requirements and resources to determine planned capabilities and gaps in demand or resources, and identifying actions to correct these gaps.
- Source: includes the issuance of purchase orders, scheduling deliveries, receiving, validation and storage of goods, and accepting the invoice from the supplier.
- Make: describes the activities associated with the conversion of materials or the creation of the content for services.
- Deliver: describes the activities associated with the creation, maintenance and fulfillment of customer orders, including the receipt, validation and creation of customer orders, scheduling order delivery, pick, pack and shipment, and invoicing the customer.
- Return: describes the activities associated with the reverse flow of goods, including the identification of the need to return, the disposition decision making, the scheduling of the return, and the shipment and receipt of the returned goods.
- Enable: describes the activities associated with the management of the supply chain, including management of business rules, performance management, data management, resource management, facilities management, contract management, supply chain network management, managing regulatory compliance and risk management.

For each of these level-1 processes, three or more differentiating level-2 process categorizations are defined. Each level-2 process contains level-3 process elements which provide implementation details.

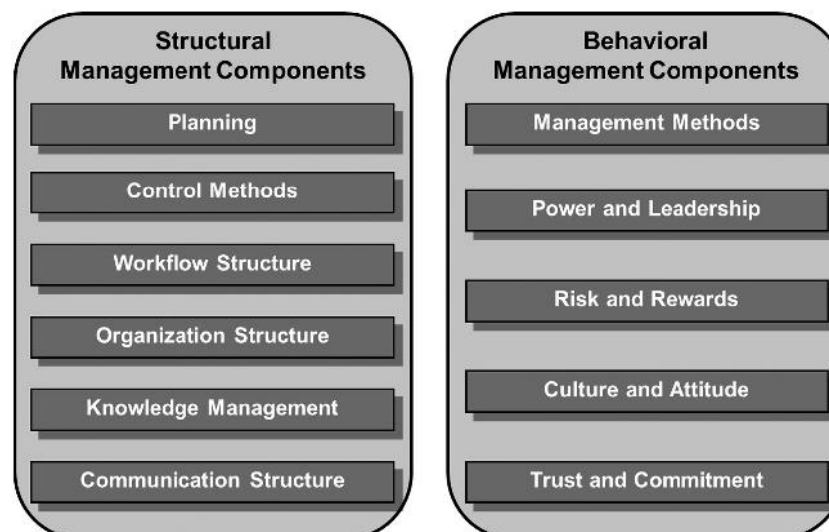


Fig. 8. The management components of supply chain management (Source: Lambert, 2014).

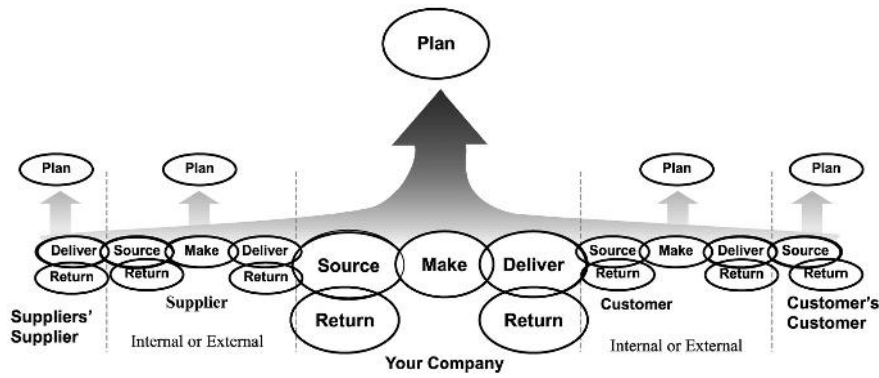


Fig. 9. The Supply Chain Operating Reference (SCOR) model (Source: Supply-Chain Council, 2012).

7.2. Strengths and weaknesses of the two frameworks

Each framework has strengths and weaknesses (Lambert et al., 2005). SCOR® focuses on transactional efficiency, while the SCM framework described in this article is focused on relationship management. While managers need to achieve transactional efficiency, failure to recognize the value of a relationship orientation will limit supply chain efficiency.

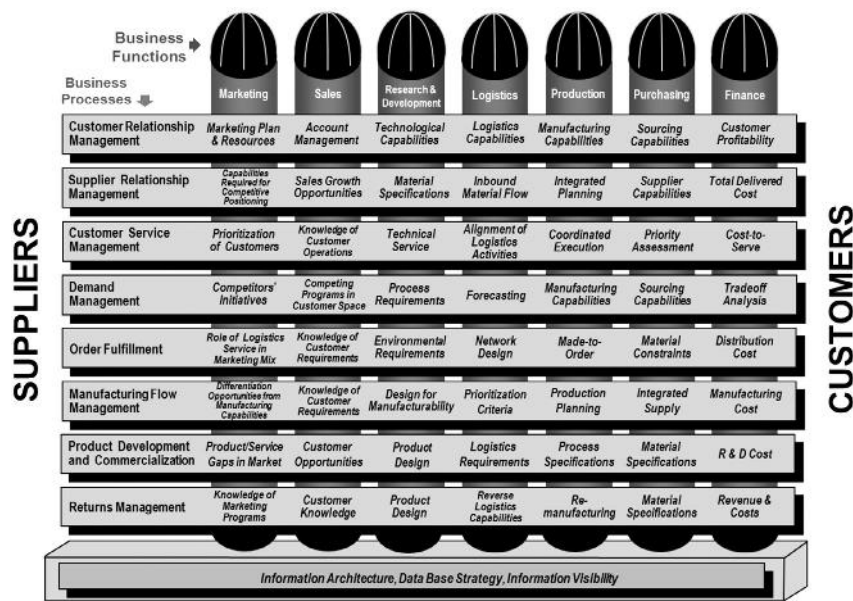
Each of the SCM framework processes is informed by the corporate strategy and the appropriate functional strategies, which is needed in order to assure alignment and make functional activities responsive to the market. SCOR® processes are developed based on the operations strategy (Bolstorff & Rosenbaum, 2007). While the operations strategy should be developed based on the corporate strategy and be aligned with the other functional strategies, SCOR® does not explicitly consider this connection.

The SCM framework is broad in its scope, including activities such as product development, demand generation, relationship management and returns avoidance. This breadth is why participation of all the functional areas is critical in the SCM framework. The activities included in the eight processes will touch all aspects of managing the business. In contrast, the scope of the SCOR® framework is limited. As stated in the SCOR® literature, “It does not attempt to describe every business process or activity. Specifically, the model does not address sales and

marketing (demand generation), product development, research and technology development and some elements of post-delivery customer support” (Supply-Chain Council, 2012). The activities that are included are those related to the forward and backward movement of the products, and the planning required to efficiently manage these flows.

SCOR® and the SCM framework are similar in that they both advocate cross-functional involvement and recognize that business processes will not replace corporate functions. However, the number of corporate functions included in each framework is different and the type of cross-functional involvement differs as well. Fig. 10 shows examples of how each functional area provides input to each business process in the SCM framework.

In the case of SCOR®, the cross-functional involvement is pursued primarily within three functions: logistics, production and purchasing. Fig. 11 shows the input each function provides into the SCOR® processes (Bolstorff & Rosenbaum, 2007; Supply-Chain Council, 2012). While SCOR® includes enable as a process, the activities included resemble the management components of the SCM framework. Focusing on just three functions might make SCOR® easier to implement but management is attempting to manage the supply chain without critical input from marketing, finance, and research and development. Failure to include all functions has a cost. Those left out have the potential to maliciously or inadvertently undermine the initiatives. Using the SCM framework increases the likelihood of success because all functions



Note: Process sponsorship and ownership must be established to drive the attainment of the supply chain vision and eliminate the functional barriers that artificially separate the process flows.

Fig. 10. Functional involvement in the supply chain management processes (Source: Lambert, 2014).

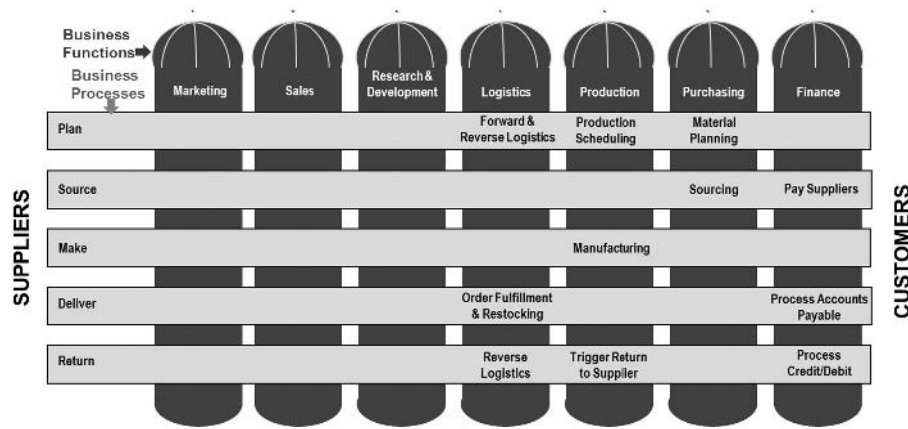


Fig. 11. Functions involved in implementing the SCOR model (Source: Lambert, 2014).

are involved in the planning and implementation of the initiative. However, top management has to commit to the vision and reward team activities in order to successfully achieve the cross-functional involvement necessary for the SCM framework.

The processes that form the linkages in the supply chain are very different in the SCOR® model and the SCM framework. In the SCOR® model, the links are the 'deliver' process of the supplier (activities associated with the creation, maintenance and fulfillment of customer orders, including the receipt, validation and creation of customer orders, scheduling order delivery, pick, pack and shipment, and invoicing the customer) and the 'source' process of the buyer (includes the issuance of purchase orders, scheduling deliveries, receiving, validation and storage of goods, and accepting the invoice from the supplier). That is, the linkage only involves the placing of orders, invoicing and the associated logistics activities. Supplier evaluation criteria should include more than logistics performance indicators and sourcing decisions should encompass much more than placing and receiving orders as important as these activities may be. In contrast, the links in the SCM framework are the CRM process of the seller and the SRM process of the buyer which comprise all activities that enable maximization of the profitability of buyer-seller relationships including joint development of new products, collaboration to minimize waste, and coordinated planning of supply chain activities that grow the business.

A perceived strength of SCOR® is a set of benchmarking tools. There are two types of benchmarking: performance and process benchmarking. Performance benchmarking is about learning how competitors or firms in comparable industries are performing on key operational metrics such as inventory turns or fill rates, while process benchmarking, or what SCOR® calls best-practice analysis, is concerned with learning about and duplicating best practices. SCOR® also offers best-practice analysis which includes tools primarily aimed at improving transactional efficiency in the supply chain, such as activity-based costing, advanced-shipping notification, Kanban and supplier certification programs.

A drawback to benchmarking best practices is a lack of creativity and the possibility of missing an opportunity to differentiate the firm from competition. The strength of the SCM framework is that it starts with the corporate strategy and the related functional strategies. To perform process benchmarking using the SCM framework, management can rely on the assessment tools that have been developed for each of the eight SCM processes to find improvement opportunities by exchanging and leveraging ideas among individuals with a variety of functional backgrounds. The SCM processes represent the combined knowledge of the executives and academics that participated in the Forum's meetings over 25 years. In other words, the sub-processes and activities are the best practices to successfully manage a business and develop sustained competitive advantages.

Finally, the two frameworks use different approaches to measuring how SCM creates value. In the SCM framework, operational measures are tied to the firm's EVA® and to profitability reports for customers and suppliers. The goal is not only to measure cost reduction and increased asset utilization but also to identify the revenue implications from closely managing relationships with key suppliers and customers. For example, including customers and suppliers in the product development and commercialization process should shorten time to market and yield products that better meet customer requirements, generating more profit.

Because the objective of SCOR® is operational efficiency, the drivers of value creation are focused on cost reductions and improvements in asset utilization. Generally, it is easier to measure how much will be saved by a particular program than to estimate how a segment of customers will respond to a service improvement, a new marketing effort, or a new product. The SCM framework has the advantage of considering revenue generation as well as cost reduction. For long-term financial success, it is necessary to focus on revenue enhancement because cost savings opportunities tend to diminish as improvements are made.

In summary, while the SCM framework and SCOR® framework both focus on the implementation of cross-functional processes in the supply chain, the SCM framework is more inclusive since all business functions are involved and a broader set of activities is included. In addition, the SCM framework assures alignment between corporate and functional strategies and provides a mechanism for considering revenue generation, rather than focusing only on cost reductions. We believe this more holistic approach focused on relationship management has far more opportunity to create value and competitive advantage for organizations that use it.

8. Opportunities for future research

Lambert and Cooper (2000) suggested eight areas for future research and provided a list of specific research questions for each of these areas. In this article, we summarized the outcomes of research conducted to address some of these gaps, but a subset of the original research questions remain unanswered: 1) how to obtain buy-in from the functional areas in order to implement a process approach within the firm; 2) how to identify the appropriate team members that should participate in each supply chain process and ensure that functional owners see the value of sharing their most valuable resources to the cross-functional teams; 3) how to compensate the employees working both in a functional role and on one or more SCM process teams so that they do not treat the work on the cross-functional teams as an extra-curricular activity; 4) how to share the costs and the benefits of SCM process improvements among the various firms that participate in the effort when the outcomes are not viewed to be equitable; 5) how to measure the value created for the end customer of the supply chain; and, 6) how

to take a map of the existing supply chain and modify it to obtain the best supply chain given the desired outputs.

The research center members continue to be focused on the original goal “to develop a normative model that can guide managers in their efforts to develop and manage their supply chains. It is much easier to write a definition for SCM than it is to implement” (Lambert & Cooper, 2000, p. 80). Based on the work conducted as of 2016, the executives and academics who participate in the research center have identified the following additional research opportunities: 1) how implementing the SCM framework mitigates risk in the supply chain; 2) how sustainability efforts are supported by the SCM framework; 3) how to measure the financial benefits of implementing the SCM processes; 4) how the SCM framework supports product lifecycle management; 5) how supply chain finance affects key relationships in the supply chain; 6) how the marketing function contributes to successful implementation of the SCM framework; 7) how to identify deficiencies in each function as well as the customer and supplier networks in order to develop capabilities that support the implementation and the on-going management of the processes; and, 8) the interaction between SCM and corporate strategy. Descriptions of these new research opportunities follow:

- 1) When the SCM framework is successfully implemented in companies, close cross-functional relationships are developed within the firm and with key members of the supply chain. As a result, managers in these companies should be better prepared to identify and mitigate risks, and overcome unexpected disruptions (Kaufmann, Carter, & Rauer, 2016). Research is necessary to document how supply chain risks can be mitigated by implementing the SCM framework.
- 2) Sustainability has become a major concern for many executives (Lacoste, 2016). In cases such as Sainsbury's, the UK retailer which has a major corporate sustainability initiative with a senior executive responsible, someone from the sustainability organization should be included on each of the cross-functional teams. Research is needed to identify the benefits of embedding individuals from the sustainability organization into each process as compared to having sustainability efforts centralized in a single function.
- 3) In our research, we have been able to document in financial terms the value co-created in cross-functional business relationships. However, there is an opportunity to measure the costs and benefits in financial terms of implementing one or more of the SCM processes and sustaining the process(es) over time.
- 4) Research on product lifecycle management should identify how product portfolio decisions affect the balance between a firm's innovativeness and business complexity costs in different stages of a product's lifecycle (Gottfredson & Aspinall, 2005). A contribution in this area would be to explain how the various organizational functions should interact with key customers and suppliers to make decisions that maximize the long-term profitability of the firm and the key supply chain members.
- 5) The current research on supply chain finance is really misnamed in the sense that it is all about improving the financial performance of the focal firm (for example see Rogers, Leuschner, & Choi, 2016). Future research should address how improving financial measures such as cash-to-cash cycle affects similar metrics for key customers and suppliers. The emphasis should be on actions that improve the long-term performance of the focal firm and its key customers and suppliers.
- 6) Lambert and Cooper (2000, p. 29) stated that “successful SCM requires a cross-functional approach and marketing must play a critical role.” Managers and academics would benefit from research that explains how representatives from the marketing function can contribute to the successful implementation of each SCM process, how companies benefit from having marketing representatives actively involved on the cross-functional process teams, and the benefits to be gained by the marketing function as a result of this involvement.
- 7) Dynamic capabilities are strategic organizational processes like product development, alliancing, and strategic decision making that manipulate resources into new value-creating strategies (Eisenhardt & Martin, 2000; Storbacka, 2011). If properly implemented, the eight SCM processes represent capabilities. Since the SCM processes rely on the resources that reside in the business functions, the processes can be strengthened by further developing capabilities in each business function. Capabilities that reside in supplier and customer organizations will influence the successful implementation of SRM and CRM. Research is required to identify deficiencies in the capabilities of each function as well as in the customer and supplier networks in order to develop capabilities that support the implementation of the SCM framework and the on-going management of the supply chain.
- 8) In the detailed descriptions of the eight SCM processes, the first sub-process at the strategic level deals with reviewing and understanding the corporate strategy (for example see Fig. 6). However, the capabilities represented by the SCM processes also should be considered when developing the corporate strategy. The interaction between the SCM processes and corporate strategy represents an opportunity for research.

9. Conclusions

In 2000, a cross-functional, cross-firm SCM framework was presented as a new business model that would overcome the silo mentality within the firm and lead to the integration of key members of the supply chain (Lambert & Cooper, 2000). It was suggested that the ultimate success of a single organization would depend upon management's ability to ventilate functional and corporate silos through cross-functional and cross-firm processes. In 2016, the framework remains one of two cross-functional, cross-firm process frameworks that can be and have been successfully implemented in major corporations. The other model, SCOR, does not include key business functions such as marketing, finance, and R&D.

In this article, we reported on the 16 years of continuing research to further develop the SCM framework. We described the research priorities that drove the research center's agenda and the articles published on each topic; the methodologies used to conduct the research and to develop the tools that managers required to successfully implement the framework; the main research findings and how the SCM framework has been refined and extended; the differences between the SCM framework and the SCOR model; the research opportunities identified by Lambert and Cooper (2000) that still need to be addressed; and, new research priorities that executives have helped us identify.

The updated set of guidelines and tools described in this article provide guidance for managers who want to implement the SCM framework. In particular, our research can help marketing and sales managers keep their functions relevant within the organization. Using their unique knowledge and capabilities they can contribute to the cross-functional teams implementing the eight SCM processes that are the basis for long-term competitiveness. Academics can benefit from the description of the 25 year evolution of one of the two cross-functional, cross-firm, process-based SCM frameworks and the research methods used to develop it. Like most companies, business schools are highly compartmentalized. Academics in the various departments have little incentive to interact with each other because they are rewarded for publications in their own field's specialized journals, so cross-disciplinary research is rare (Lambert & Enz, 2015; Podolny, 2009). The way the research center has been managed since its inception can be replicated in other academic institutions to conduct research with relevant contributions for theory and practice. Researchers interested in supply chain management can use the suggestions for future

research to focus their work on topics that executives have identified as priorities for their businesses.

The SCM framework, the result of 25 years of collaboration between industry and academia, provides the knowledge and the tools needed to manage a complex network of business relationships. While functional specialization is still a must and processes will not replace functions (Webster, Malter, & Ganesan, 2005), there is a need to collaborate with other functions within the organization and with key supply chain members in order to create and deliver appealing value propositions.

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