

2017

# The Past and Future of Supply Chain Collaboration: a literature synthesis and call for research

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# The Past and Future of Supply Chain Collaboration: a literature synthesis and call for research

## **Abstract**

**Purpose** The purpose of this paper is to provide scholarly and practical benefits by detailing the past and suggesting a future research agenda for supply chain (SC) collaboration. A literature review is utilized to examine what has been investigated prior, and what remains to be analyzed, in order to assist today's managers and researchers. The research expands the understanding of SC collaboration from a focal firm perspective while providing boundaries for future investigation and at the same time detailing the current state of collaboration to practitioners.

**Design/methodology/approach** The current research utilizes a systematic review of the literature to shape a proposed research agenda on the topic of SC collaboration.

**Findings** The paper provides insights into gaps in the literature as it pertains to SC collaboration. Specifically, the paper suggests investigating SC collaboration as it relates to perceived and real performance, understanding what know-how and commitment a focal firm must make to SC collaboration, and how to successfully navigate collaboration termination.

**Research limitations/implications** This manuscript makes four specific contributions to the literature. First, it provides the first holistic graphic depiction of the central constructs employed in extant SC collaboration research. Next it examines three specific factor areas influencing collaboration. Overlooked issues are then revealed as suggestions for future research in SC collaboration. Finally, the method employed to conduct the systematic literature review can be used as a blueprint for future researchers in performing a similar exercise.

**Practical implications** The current research seeks to provide a research agenda which meets the needs of today's business managers.

**Originality/value** The paper provides a suggested research agenda for SC collaboration

## **Keywords**

Performance, Technology, Systematic literature review, Partnerships, Inter-organizational, Supply chain collaboration

## **Disciplines**

Operations and Supply Chain Management | Organizational Behavior and Theory | Organizational Communication | Performance Management | Technology and Innovation

## **Comments**

This accepted article is published as M. Ralston, P., Richey, R. and J. Grawe, S. (2017), "The past and future of supply chain collaboration: a literature synthesis and call for research", *International Journal of Logistics Management*, 2017, 28(2);508-530. doi:10.1108/IJLM-09-2015-0175. Posted with permission.

(Appearing in the International Journal of Logistics Management Vol. 28 (2))

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**Article Type:** Research paper

## **The Past and Future of Supply Chain Collaboration: A Literature Synthesis and Call for Research**

### **INTRODUCTION**

Supply chain (SC) collaborative relationships are defined as “long-term relationships where participants generally cooperate, share information, and work together to plan and even modify their business practices to improve joint performance.” (Whipple et al., 2010: p. 507). These SC collaborative relationships involve at least two or more partners and sometimes extend to an entire portfolio of relations. Enhancing managerial difficulty, SC collaborations are typically longer-term endeavors where partners know the capabilities, needs, and often weaknesses of each other. Firms must become more interdependent, less opportunistic, and give up a degree of control to their partners. Collaborations are complex, ambiguous, and risky, often causing SC managers to become frustrated and even question the value of developing and maintaining these relationships.

The reason a SC manager or firm may prefer to engage in supply chain collaborative relationships, commonly referred to as *supply chain (SC) collaboration*, is to actively seek to develop new and improved processes, practices, and strategies. As a business philosophy, SC collaboration maintains a central goal of creating a relationship-based synergy from the expertise and skill of individual firms to collectively provide benefits to business partners and end consumers (Daugherty et. al 2006). Stated simply, collaboration is a key SC strategy typically necessary for the transfer of products and services from production to consumption across a network of multiple relationships (Hazen and Byrd, 2012).

Strategically, collaboration is a governance structure that allows organizations flexibility and a degree of control simultaneously resulting in superior returns on investment (Richey et al., 2010). Yet, while some firms advocate collaboration as a means to reach business goals, not all firms fully support the collaborative endeavors of others. Additionally, desired collaborative benefits may actually prevent SC collaboration from occurring. For instance, some firms view one party's collaborative win (i.e. a reduction of inventory or lowering of costs) as a redistribution of these expenses to other members in the supply chain (Barratt, 2004; Ireland and Bruce, 2000). Nevertheless, while the advantages of SC collaboration are less disputed in the literature today, realizing collaborative benefits can still be problematic. As such, the current research is motivated to 1) understand SC collaboration and 2) explain how a firm can successfully implement collaboration across its supply chain in today's business environment. Generally, firms and SC managers still need to understand how to achieve the benefits of SC collaboration through its successful implementation, while mitigating the inhibitors to, and downsides of, collaborative relationships (Richey et al., 2010). The current research aids in accomplishing this by reviewing past literature and suggesting a future research agenda. Practitioners are rewarded with insights as to what can assist in making SC collaboration successful and what kind of performance enhancements may be expected. Researchers are provided observations as to what previous work in SC collaboration has found while also understanding some areas that may prove valuable to investigate in the future.

This manuscript makes four specific contributions to the literature. First, it provides the first graphic depiction of the central topics used to date in extant SC collaboration research solidifying a base framework for the future. Understanding, what has already been accomplished when it comes to SC collaboration is an important step for theoretical advancement of the

concept. Second, the current work examines three specific factor areas influencing collaboration. These factors, identified from the in-depth literature review, are broadly classified as internal, relational and technological factors. Reviewing these antecedents are not only important theoretically, but practically as well. Knowing what factors influence collaboration allow business professionals the chance to review if their firms have these characteristics which can lead to external supply chain collaborative success. Third, a number of topic areas are revealed from the in-depth literature review and (re)emphasized as suggestions for future research in the domain of SC collaboration. Understanding what research has already been done in the field has benefits for researchers and practitioners. Business professionals can assess whether SC collaboration has fulfilled the firm's goals and, if not, are able to implement strategies to improve collaboration. Researchers are aided with a framework with what work has been accomplished in the past and where potential areas of contribution may lie in the future. Finally, the method utilized to conduct a *systematic* literature review is detailed with step-by-step instructions. This not only shows the precise stages and phases of the systematic literature review process for the current project, but can also act as a guide to future researchers employing the same method.

The manuscript follows the generally accepted structure, beginning with a description of SC collaboration. Then the methodology utilized to perform the literature review is presented. Next, the results from the literature review are presented. Finally, a discussion section provides research and managerial implications based on the literature review as well as presents a suggested future research agenda.

## **SUPPLY CHAIN COLLABORATION**

SC collaboration has been a topic of interest in SC literature, but recent articles and editorials in the area have called for more research highlighting the importance of SC collaboration to the business community (Ellinger and Richey, 2013; Daugherty, 2011; Stank et al., 2011). A single company can seldom successfully compete in isolation. Knowing this, SC managers and their firms often look externally for assistance in meeting customer needs. Reasons may include sharing risks, capitalizing on partner skill and expertise, and even as a result of business necessity (i.e. an inability to handle growth and market expansion). The vision being that these relationships between firms lead to enhanced customer value and competitive advantage (Cao and Zhang, 2011).

Organizations have long recognized that better relationships can lead to better performance, either through financial performance, partnership performance, and/or sustained competitive advantage (Min et al., 2005; Cooper et al., 1997; Ellram and Cooper, 1990). SC collaboration sees two or more parties coming together by cooperating, sharing information, and working together to plan and modify their business practices to improve joint performance (Whipple et al., 2010). Typically, these collaborations result because greater success is expected to occur collectively than can be attained in isolation (Daugherty, 2011; Daugherty et al., 2006).

SC collaboration, while similar, is a distinct phenomenon from other inter-organizational structures such as contractual SC partnerships, SC operational integration, or joint ventures/strategic alliances. Each of the latter organizational forms suggest a higher degree of formalization and control that may not necessarily exist in SC collaboration (Ralston et al., 2015; Flynn et al., 2010; Braunscheidel and Suresh, 2009; Swink et al., 2007). For example, SC integration is defined as the management of various sets of activities that seamlessly links relevant business processes within and across firms to build a better functioning supply chain

(Chen et al., 2009). The implication is that SC integration may entail a tighter coupling of firm processes or combination of firm strategies than may be present in SC collaboration. However, SC collaboration results, when successful, may mirror those that come with the more expensive formalized linkages while maintaining a higher degree of flexibility and related responsiveness (Cao and Zhang, 2011). At the very least, collaboration serves as the foundation for tighter interorganizational linkages in the future (Cao and Zhang, 2011; Devaraj et al., 2007; Barratt, 2004; Kahn and Mentzer, 1996).

However, implementing SC collaboration and reaping the benefits of collaboration is not without its challenges. Sabath and Fontanella (2002) discuss the unfulfilled promise of SC collaboration citing an overreliance on technology, treating every customer/partner the same, and lacking trust as barriers to successful collaborative results. As a case in point, compensation and incentive structures do not always encourage collaboration and performance objectives are traditionally functionally based, not supply chain focused (Esper et al., 2010; Ellinger, 2000). If companies want to derive the benefits of collaboration, they have to be prepared for the work that goes into collaborating.

As one of the stated goals at the outset of this research project was to fully understand SC collaboration, a literature review was performed to investigate previous findings. We next describe the specific method employed in understanding the current body of literature on SC collaboration.

## **METHODOLOGY**

Qualitative methods tend to seek rich (in-depth) descriptions of phenomenon in a specific context (Naslund, 2002). These descriptions are then interpreted to further understand or explain



the phenomenon of interest (Sachan and Datta, 2005). The ultimate goal is to discover relationships or concepts from the data which can be organized into a theoretical or explanatory scheme (Strauss and Corbin, 1998).

Creswell (2013) notes five approaches to qualitative inquiry: narrative studies, phenomenological research, grounded theory research, ethnographic research, and case studies. Narrative studies typically are presented as a lived or told story of an individual or individuals for a particular topic area (Clandinin, 1989). Phenomenological research looks to describe the common meaning for several unique entities (individuals, firms, industries, etc...) across one phenomenon looking to create "one universal essence" (i.e. what does it all boil down to) (Creswell, 2013). Grounded theory research seeks to uncover relevant conditions or common meaning, similar to phenomenological research. However, grounded theory research also attempts to understand reactions to the phenomenon and consequences of those reactions (Corbin and Strauss, 1990). Ethnographic research involves in-depth involvement with a particular group for an extended period of time to describe the behavior of a group of individuals or firms within a given culture (Creswell, 2013, Voss et al., 2002). Case study research involves an object of study within a real-life or contemporary setting (Pagell and Wu, 2009).

While clearly a strong method of discovery, results from qualitative studies are sometimes questioned as to the rigor with which they are performed as well as the interpretative results presented (Glaser and Strauss, 2012). Interpretations are not only context dependent, but also researcher dependent (Creswell, 2013). Qualitative methods being dismissed because interpretations are different than other researchers' interpretations or because presented interpretations are perceived wrong is most likely shortsighted. The approaches to qualitative

inquiry must be presented so other researchers can understand the foundations of interpretation of any set of data (Denzin and Lincoln, 1994).

If research is performed to provide us a greater understanding of how the world works, then using a holistic methodology to objectively review past work may be needed (Strauss and Corbin, 1998). In so much as we can assume the quality of past research, the benefits of looking at past literature allows for the development of grounded theory or theory developed from its actual or intended uses (Glaser and Strauss, 2012). This may be the true value of comprehensively and systematically looking at past research (Charmaz, 2001).

#### *Systematic Literature Review*

Effectively using past evidence -- in this case prior literature on SC collaboration -- is one way to interpret a phenomenon, ground theoretical reasoning, and identify what steps to take next in order to further study (Rousseau et al., 2008). However, one must readily acknowledge that there are a number of methods to review past literature. A common misgiving about traditional literature reviews is the subjective nature of the exercise where researchers review past work with no specific guidelines or clear end point (Denyer and Tranfield, 2009). For the purposes of the current research, a systematic literature review (SLR) was performed. SLRs are different than traditional literature reviews because of the utilization of a formal review process which seeks to improve rigor. SLRs are a method of making sense of large pools of information (Petticrew and Roberts, 2006).

SLRs often have twofold aims of enhancing the knowledge base on a particular phenomenon while also informing, and potentially shaping, business practice (Tranfield et al., 2003). This occurs through a systematic, transparent, and reproducible review process, which

should produce objectively consistent results no matter the research team conducting the SLR (Denyer and Tranfield, 2009). While numerous approaches to SLRs exist, the current research accomplished the SLR through a series of 10 phases over 3 stages (Tranfield et al., 2003; Davies and Crombie, 1998) (see Table 1). Stage 1 coincides with the general steps included for planning the review. Phase 0 is identifying the need for a review. When thinking about SC collaboration, the immediate perception may be that the topic is not new. And in general this is probably an accurate assumption. Reviewing past literature is a necessary step to assess where the study of SC collaboration has gone, what has been discovered, and what requires further understanding when associated with SC collaboration (Strauss and Corbin, 1998).

**INSERT TABLE 1 HERE**

Phase 1 includes preparing a proposal for review. If the goal is to understand collaboration within supply chains, then thought must be given to as to what is truly hoped to be accomplished through such a review. It is actually here that the current research delimited the scope of the current project to SC collaboration. When determining best methods for searching previous literature as well as the iterative process of refinement that begins in the early stages of SLRs (Clarke and Oxman, 2001); it became readily apparent that including topics related to SC collaboration (integration, partnerships, etc.) would expand the scope of the study in an unintentional manner. It is not that topics outside of SC collaboration are not valuable, it is that the scope of the current project is tied to SC collaboration.

Phase 2 includes creating a review protocol. The review protocol behind the current research project delineated the questions motivating the current study, the focus of the study, and

the strategy for searching and identifying not only articles on the topic of SC collaboration, but whether the articles were applicable to the current research project (Briner et al., 2009). The creation of a review protocol is a vital step in SLRs providing objectivity and also the potential for duplication (Tranfield et al., 2003). For the current project, two members of the research team conducted the SLR.

Phase 3, the identification of past research, coincides with the beginning of stage 2 in SLRs, conducting the review. Previous literature was systematically reviewed in ten academic journals: *Decision Sciences*, *The International Journal of Logistics Management*, *International Journal of Physical Distribution and Logistics Management*, *Journal of Business Logistics*, *Journal of Operations Management*, *Journal of Purchasing and Supply Management*, *Journal of Supply Chain Management*, *MIS Quarterly*, *Production and Operations Management*, and *Supply Chain Management: An International Journal*. These journals were selected based on journal mission statements, reputation within the discipline, and journal citation report impact factors.<sup>1</sup>

The review covered the previous 26 years, from 1989 to 2015, for each journal by using a keyword search of “collaboration” in the EBSCO Business Source Complete database while researching under the specific academic journals. Using a keyword search is one method to bring objectivity to the article gathering process for literature reviews (Fawcett et al., 2012; Grawe, 2009). The keyword search term analyzed published journal articles titles, abstracts, and

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<sup>1</sup> All of the JCR impact factors for the selected journals were over one and ranged from 1.14 to 5.31.

keywords for “collaboration”. A total of 286 articles were identified using this procedure. The number of articles returned across the ten top journals for each of the academic databases is shown in Table 2.

**INSERT TABLE 2 HERE**

In phase 4, the identified articles were then analyzed to see if they were applicable and appropriate for review in the current research project. To be considered for review, the articles needed to speak about collaboration within the supply chain as a focal point of emphasis in the identified journal article. For example, studies discussing technology as a precursor to SC collaboration, where SC collaboration is then discussed as a key outcome of technology usage were included in the SLR. An article that provided one possible outcome of technology usage to be collaboration, but did not elaborate on the statement was not considered valuable for the SLR. Two separate members of the review team conducted the article analysis. Each member was tasked with coding articles for inclusion/exclusion in the SLR. The initial results of the percent agreement between coders indicated a total inter-coder reliability of 92.64%. Generally, reliability coefficients of .90 are considered acceptable (Neuendorf, 2002). The coders discussed the 17 cases of disagreement after the initial coding process and resolved all differences on a second coding assignment. The inter-coder reliability assessment is shown in Table 3.

**INSERT TABLE 3 HERE**

Phases 5 and 6 include study quality assessment and data extraction methods respectively. After these steps, we proceeded to phase 7 which is data synthesis. The beginning

of the results section will begin the discussion on data synthesis and resultant topics. Three themes emerged from the SLR that require discussion: initiators to collaboration, the relationship between SC collaboration and performance, and collaborative difficulty. Stage 3 of the SLR process contains two phases. Phase 8 is reporting findings and providing recommendations. Phase 9 is getting evidence into practice. This academic journal article represents the beginnings of both phase 8 and 9 for the current research project.

## **RESULTS**

### **Systematic Literature Review**

The following section contains the findings from the SLR. In order to aid comprehension of the results different themes were identified which provides a sense of order to previous findings. These themes include initiators to SC collaboration, SC collaboration's relationship with performance, and SC collaboration failure. Each topic area is discussed further below.

Additionally, Figure 1 provides a visual description and list of the factors identified in the SLR, which may initiate collaboration between firms, what can be expected from collaboration, and influencers to collaboration. This graphic is presented for future researchers to understand, at a base level, what some previous research has analyzed. In this manner, new research can reassess, or build upon, previous work.

**INSERT FIGURE 1 HERE**

*Initiators to Collaboration*

Successful SC management is assumed to require a long-term orientation with the sharing of risks and rewards balanced over time between partners (Cooper and Ellram, 1993). Collaboration between SC partners has been referred to as the driving force behind effective SC management (Min et al., 2005; Cooper and Ellram, 1993). This collaborative focus can provide dividends throughout the supply chain. Min et al. (2005) note that SC collaboration can positively impact operational effectiveness and transaction efficiency as well as profitability. With this being the case, a number of studies in the SC literature have focused specifically on collaboration and what it takes to create a successful union. As such, the extant research breaks down initiators to collaboration across three different facets: 1) internal factors, 2) relational factors, and 3) technological factors.

#### *Internal factors*

Firms must be ready to collaborate. Valuable resources may be identified and external relationships may be in place, but if firms are not willing to work with other firms for win-win solutions and the co-value creation processes, collaboration simply will not work. Top management support for collaboration provides a foundation for collaboration and alerts employees of an organization to its importance (Jin et al., 2013; Chen et al., 2010; Fawcett et al., 2008). Top management support can provide the impetus and help create a willingness to work with other organizations instead of a soft institutional requirement to do so (Ellinger, 2000).

Collaboration also calls for adaptability as a form of responsiveness. Thus, a willingness to change, and to an extent innovate, is required of firms when collaborating (Frankel et al., 2002). This does not mean firms have to change when collaborating, rather they must be prepared to do so if necessary. Understanding the competitive environment by employing a market and customer orientation are also internal factors needed for collaboration (Hofer et al.,

2014; Fawcett et al., 2012). This can manifest itself into a collaborative competence, developed from previous collaborations, as well as developing insight into potential partners and their operations (Hartmann and de Grahl, 2011; Zacharia et al., 2011; Frankel et al., 2002).

Table 4a provides a listing of the articles from the SLR, which discussed internal catalysts to SC collaboration.

**INSERT TABLE 4a HERE**

#### *Relational Factors*

The relationship between collaborating firms plays a clear role in the success of collaboration. Firms must be willing to work with other partners if they want collaborations or specific collaborative tasks to be successful (Stank et al., 2001). As such a number of relational factors have been identified which may contribute to positive outcomes from collaboration. Min et al. (2005) used interviews with SC executives to determine that having a relationship orientation and relationship specific investments can positively impact collaboration. Relationship orientation refers to the proactive creation, development, and maintenance of relationships with customers and business partners that result in mutual exchange and benefit (Singh and Power, 2009; Panayides, 2007; Harker, 1999). This relational orientation reflects a company mindset to enter into relationships with other parties in order to generate customer value, which might not exist if the company acted alone (Kähkönen and Lintukangas, 2012; Lambert et al., 2008; Day, 2000). In other words, there is a willingness to seek out win-win partnerships. Along with this willingness can come the realization that not only must information be shared and decisions synchronized between multiple organizations, information



needs to be of high quality as well (Wiengarten et al., 2010; Daugherty et al., 2006; Simatupang and Sridharan, 2005; Frankel et al., 2002).

Another way to encourage collaborative success is through relationship specific investments. These investments in another party not only show the value of the collaborative endeavor from one party to another, but also the value one party finds in another (Min et al., 2005; Jap and Ganesan, 2000). Through these investments dependence is created, bringing partners together (Zhang and Huo, 2013), but also raising barriers to exiting a poor relationship (Daugherty et al., 2006). In most cases, the only way firms can extract value from relationship specific investments is by continuing to work with one another. However, finding a level of coordination, even among parties that want to have beneficial relationships, can be difficult. Personal relationships built over time, either through business need or something like “guanxi” in China may help (Chen et al., 2010, Day, 2000). Personal relationships and previous business interactions can help build trust which further strengthen an existing, or can lead to a new, collaboration (Tsanos et al., 2014; Nyaga et al., 2010; Fawcett et al., 2008).

Finally, communication, or the willingness to interact and provide meaningful forms of exchange between parties, can lead to collaboration success (Hartmann and de Grahl, 2011). Being a steward of the relationship, knowing that SC collaboration can only be effective with open, multi-way feedback is a valuable insight partnering firms can share. Grundinschi et al. (2014) refer to a collaboration fluency or the ability to successfully work and interact with partners as a hallmark of continuing collaboration. While a number of methods exist to communicate, ensuring information is shared between parties must occur (Fawcett et al., 2012). One communication method detailed often in the literature is the use of technology between partners (Wong et al., 2012). Technology can provide the benefit of providing seamless

communication between parties while ensuring, if told to do so, the right information is being shared.

Table 4b provides a listing of the articles from the SLR, which discussed relational initiators to SC collaboration.

**INSERT TABLE 4b HERE**

#### *Technological Factors*

Technology can play a role in helping to foster collaboration in a supply chain.

Electronic methods of communication have increased accessibility and brought collaborators closer together (Auramo et al., 2005). Technology such as electronic data interchange and other integrated software platforms are ways that firms can communicate and share information (Germain and Iyer, 2006; Sanders and Premus, 2005; Rodrigues et al., 2004). These additional methods of exchanging and generating knowledge can positively impact SC collaboration in multiple ways. For example, shared data and technology platforms enable collaborative partners to access the same databases, keeping parties on task and honing the scope of SC collaboration (Stock et al., 2000). Information technology can ensure that SC collaborations, or the processes underlying the collaboration, are coordinated helping to increase their effectiveness (Ellram and Cooper, 2014; Sanders, 2008; Cassivi, 2006; Sanders and Premus, 2002).

Another benefit of technology interfacing with SC collaboration is the ability to handle basic or routine tasks between parties (Whipple and Russell, 2007; Auramo et al., 2005). Once technology enables collaboration, other collaboration opportunities may present themselves (Kärkkäinen and Holmström, 2002; Horvath, 2001). This may occur due to efficiencies being

realized or operational effectiveness being increased. Human resources can be reallocated elsewhere or diverted to more valuable SC collaboration opportunities such as coordinating beyond tier one partners (Pala et al., 2014). Receiving a more holistic view of a supply chain, and the parties that a firm collaborates with in that supply chain is a valuable outcome from developing technology in and around SC collaboration.

Finally, and while this can be prevented with shared, specific investments in technology, platforms used between parties must effectively interface with one another. When existing platforms do not work with one another, even collaborations with the best intentions may fail to develop. Technological complementarity can lead to collaboration between firms (Richey et al., 2012). As technological complementarity grows, so grows technological intensity (Lai et al., 2008). This intensity can positively impact SC collaboration by further enhancing the ability, and the depth, by which partners work together.

Table 4c provides a listing of the articles used in the technological collaborative initiator review. Understanding what it takes to collaborate, across a variety of environments and situations, can lead firms to successful relationships with partners, which hopefully impact performance.

**INSERT TABLE 4c HERE**

#### *Collaboration and Performance*

While SC collaboration has been discussed since the late 1980s and early 1990s in SC literature (Cooper and Ellram, 1993; Ellram and Cooper, 1990; Bowersox and Daugherty, 1987), the volume of empirical work assessing collaboration's link with performance has steadily

increased since the early 2000s. A number of the articles support the notion that collaboration can have a positive impact on performance. However, little uniformity exists between the performance metrics utilized within previous research.

Collaboration between firms can positively impact the new product development process and financial performance of individual firms (Allred et al., 2011; Mishra and Shah, 2009; Rosenzweig, 2009; Koufteros et al., 2007; Corsten and Kumar, 2005). Daugherty et al. (2006) find high performing collaborations, even those relatively germane, to have another benefit. Successful collaborations led to the reinforcement and expansion of the collaborative arrangement between the given partners. Successful collaboration also contributes to the trust and commitment between collaborative parties, which leads to a strengthening of the collaborative engagement between firms (Nyaga et al., 2010). In a sense, SC collaborations can and do evolve over time, hopefully to the benefit of each partner.

The evolution of the field shows that the collaboration/performance relationship may be more complicated than a direct relationship. Cao and Zhang (2011) advocate the existence of mediators (and perhaps the existence of moderators) between the collaboration/performance relationship termed collaborative advantage. Collaborative advantage is viewed as an organizing force, which brings SC partners together and helps create superior performance. Collaborative advantage is what positively impacts performance, and not necessarily simply collaborating. Zacharia et al. (2009) mediate the relationship between collaboration and business performance with operational and relational outcomes. The authors note that business performance can be impacted by collaboration, but other steps may be at play first. Narayanan et al., (2015) suggest that SC collaboration may not lead to performance benefits at all. There is no guarantee of positive impact with no, or even negative, impact possible. The authors look at agility

performance and find that trust, asset specificity, and requirements certainty can moderate the collaboration performance relationship.

Table 5 briefly summarizes the papers reviewed in this section. While quantifying the true cost of collaborations and judging the value they provide to firms remains a challenge, it is undeniable that SC collaboration can impact performance.

**INSERT TABLE 5 HERE**

#### *Collaborative Failure*

Noting the positive impact collaboration can have on performance, why do some collaborations fail? One prevalent theme throughout the literature on SC collaboration is the difficulty in achieving successful collaboration, real or perceptual. While understanding the reasons successful collaborations are labeled as disappointments by one or more member firms is valuable, certain tangible reasons that prevent collaborative success have been identified.

One reason is managerial myopia which focuses solely on financial objectives of collaboration, instead of also analyzing additional beneficial factors like innovation developed or operational efficiencies achieved (Mejias-Sacaluga and Prado-Prado, 2002). If collaborations are not analyzed holistically for benefits and barriers, they may fall short of expectations (Richey et al., 2010). Questionable SC partner behavior may also detract from collaborations. For example, companies that always claim every percent defective allowance for damaged product or return out of date merchandise are seen as devaluing their partner. This impacts trust and a willingness to work together in the future (Moberg and Speh, 2003). Other collaborative detriments include IT incompatibility, fear of external partner pressure, functional powerhouses

that prevent external collaboration, and financial reasons (Richey et al., 2012; Kampstra et al., 2006).

SC collaboration has also become a global phenomenon with firms partnering across national borders (Ellram et al., 2008). While reasons to partner with firms from other countries include cost considerations, operational expertise, and geographic expertise; there are times when geographic borders may cause perceived status inferiority which inhibits collaboration effectiveness (Levina and Vaast, 2008). This indicates outsourcing a function or service to a company in another country solely on the basis of cost may not be the most effective strategy.

Another factor in SC collaboration failure is working with other companies on record alone (Cui et al., 2012). Relying on a company's past track record solely can discount the effective communication and flexibility needed between partners in SC collaboration. In an instance like this, identifying proper roles, laying out responsibilities, and putting forth goals which are attainable and understood may help collaborative shortcomings (Fawcett et al., 2012). In a sense, firms in SC collaborations do not always require the best partner available, rather SC collaborations maybe more effective when the best partner for that firm is selected.

Table 6 briefly points out the articles and collaborative performance detractors discussed above. Achieving collaborative success can be challenging. Failure is a risk of doing business, but the previous research highlights common pitfalls to SC collaborations that may be preventable. While collaborations and their performance will always be exposed to market forces beyond the control of the participants, managing internal success factors of collaboration is a necessary component to increase the chances of desired improvements associated with SC collaboration and performance.

**INSERT TABLE 6 HERE**

## **A SUGGESTED RESEARCH AGENDA**

While much work has been accomplished when investigating SC collaboration, there is still more to examine and understand with the topic (Daugherty, 2011). The preceding literature review exposes aspects of SC collaboration that must be better understood. While more discussion follows on a suggested research agenda, Table 7 presents some ideas for future research in a tabular form. The table highlights five topic areas broadly discussed in previous literature while also highlighting different concepts used within past research to assist in investigating the topic areas. Model category refers to where the resultant topic area would fit in relation to the different overall categories from Figure 1. Finally, future research subjects are some specific suggestions on areas to research in the future. Figure 1 and Table 7 are meant to be quick reference guides for current and future researchers in regards to SC collaboration. The remainder of this section will examine each of the resultant topics areas as depicted in Table 7.

**INSERT TABLE 7 HERE**

### **Performance**

When thinking of performance, more research is needed to distinguish between value of SC collaboration and specific types of financial, operational, and relational performance. Also, the difference between real and perceived performance should be better understood. The current research depicts that SC collaboration can impact performance. However, there is no standard performance metric utilized between previous research studies. While this is understandable, a

new question emerges as to fully understand SC collaboration's impact on different types of performance. Financial and operational performance may be easier to quantify; but relational performance may also be valuable. Understanding specifically how this occurs may be valuable for practitioners to know as immediate effects may not be quantifiable or positive.

Scholars seeking to engage in additional research in this area should also consider examining the impact of collaboration on a variety of outcomes. For example, how do collaborative relationships affect the service and product portfolios of suppliers and service providers engaged in collaborative relationships with multiple key customers? Is there an opportunity for customized services developed by a supplier for one firm to be transferred in some way to another? Additionally, does collaboration allow firms to be more resilient in the face of supply chain disruptions, or does the relational uncertainty associated with disruptions cause the firm to be less resilient? SC collaboration research should also be done at the individual employee level. Do employees engaged in regular interaction with collaborative partner experience higher levels of job satisfaction, or can exposure to another firm cause the employee to become disenchanted with his or her own firm and increase the intention to leave? Arguably the effects of SC collaboration for service support personnel (i.e. a trucking firm organizational implant) may be very different than a sales representative serving as a corporate liaison between a manufacturer that is their employer and a large mass merchandiser. The effects of collaboration can be seen at the individual, firm, and supply chain levels, and we should develop a research stream that examines effects at each level.

**Collaboration Know-How:**



Is collaboration expected to immediately impact financial or operational performance or is a solution being developed or process improved, which will eventually impact performance metrics? Previous research shares little consensus on the matter. As such what might be more valuable for firms to develop is a collaborative know-how, a competence which can help with collaboration developed by a firm with any of its partners. Mishra and Shah (2009) define collaborative competence as a way for a firm to simultaneously involve key stakeholders on supply chain processes to positively impact operational and financial performance. The thought being that having a collaborative competence when collaborating with stakeholders on SC processes should assist in meaningfully effecting performance. Therefore, this general idea of collaborative competence is what can be taken from collaborative initiative to collaborative initiative. Perhaps there is no rigid collaboration guide map, rather the ability to assist in encouraging collaboration can be defined which, if encouraged well, can lead to success from SC collaboration regardless of what brought the parties together in the first place.

Further, every collaborative initiative is different. Zacharia et al. (2011) analyze this to an extent when reviewing episodic or terminal collaborations. Barratt (2004) suggests a segmentation approach to SC collaboration in which firms work with heterogeneous customers/suppliers differently. Lambert et al. (1998) state that resource allocations and managerial attention should only be given to the most important collaborations. Taking this one step further, if collaborations are unique, the steps or processes behind each may be different. Perhaps, it may make sense for firms to have a broad SC collaboration process that can be adapted to or built upon dependent on a specific collaborative endeavor. This is something Wagner and Franklin (2008) refer to as a “platform and toolkit” approach. Further work would

be beneficial and a case study approach following a firm entering a number of collaborations may help address the question of how to set the expectations of different collaborations.

Additionally, establishing boundary conditions of SC collaborations must be further explored to determine when to collaborate and what factors lead to collaboration success (see Richey et al., 2010). While the decision to participate in SC collaboration occurs at the firm level, after SC collaboration takes place typically more than two parties are involved (Carter et al., 2015). That indicates that the level of coordination needed to ensure collaborative success has increased. There are now more processes, people, and systems to coordinate (Mena et al., 2013). Understanding the how and when of SC collaboration is a valuable area of research to assist the academic community in gaining a better understanding of the workings of collaboration (Narayanan et al., 2015). Business practitioners would be rewarded with the knowledge of what resources are required to make collaborations successful and whether or not the current business situation requires collaboration. This information aids firms in the traditional “make versus buy” decision. Each collaborative decision is different, but knowing what factors are present in the current business environment or what resources are available to firms may assist in determining the ability to engage in, and value of, a potential SC collaboration.

### **Partner Marketplace**

Along with a collaboration know-how, something also important is understanding the competitive marketplace of potential partners for supply chain collaboration. Multiple factors must be considered including the number of potential partners for a given collaboration, the number of potential partners for a specific facet of a collaboration (i.e. how many different

transportation providers exist with which a firm could work), and the current competitive marketplace that affects all parties in a supply chain collaboration. Supply chains do not exist in a vacuum. For a firm entering or currently in a collaboration, supply chain mapping can be a good way to keep track of partners involved in a process, including those that might not be directly connected to your firm (i.e. 2<sup>nd</sup> or 3<sup>rd</sup> tier partners). Additionally, supply chain mapping at a focal firm level might allow firms to note other potential collaborators at a given link in the supply chain in case of a breakdown in order to mitigate risk.

After supply chain mapping comes the work of actually understanding your current partners' business as well as their capabilities and motivational force. Some researchers have termed this partner insight (Zacharia et al., 2009; Hartmann and DeGrah, 2011). Partner insight may serve a focal firm well when forming, altering, or terminating current collaborations. Additionally, partner insight may be just as important for episodic or terminal supply chain collaborations as ones that may exist in perpetuity. Further understanding is needed from a focal firm perspective on what is important to be aware of in the competitive marketplace as well as which issues a firm should concern themselves with when it comes to their current or potential future partners and SC collaboration.

**Information:**

The connection between information and effective collaboration cannot be discounted. While the broad topic has certainly been investigated before, more will have to be done with how information is shared between collaborators, in what form information remains (proprietary shared at points throughout the day, proprietary real-time, cloud real-time), and what to do with information when collaborations dissolve. The internet of things (IoT) network will create an

immense platform for collaborators to share information, but challenges will be present. How will the IoT and SC collaboration impact SC security, the ability to develop uniquely customized offerings, and understanding what information will actually be useful now that so much will be available. Research identifying supply chain collaboration and types of information technology will be useful as well as the absorptive capacity limits of firms receiving large amounts of information from supply chain collaborators.

### **Collaboration Commitment**

Collaboration commitment can come in many forms from top management team support to formalization and role definition. The general feeling is that collaboration commitment can lead to evolving, and potentially deeper, supply chain collaboration. Daugherty et al., (2006) state as much from interviews with business practitioners. However, more work can be done to see how this actually takes shape. Autry and Golicic (2008) advocate for something called performance spirals where relationships between businesses that lead to enhanced performance can actually beget more (or enhanced) collaboration. This was found to occur among firms superior in relationship management. The current literature review identified different initiators to collaboration including internal, relational, and technological factors. Do internal and technological factors, which can also show a commitment to collaboration, lead to the same evolving supply chain collaboration between partners? How do relationships expand when these collaborations are primarily driven with internal or technological antecedents?

More investigation is needed to explore how firms can terminate SC collaborations after their original purpose has been met or after the realization that collaborative success may not be had. Dwyer et al., (1987) spoke about dissolution of business relationships nearly thirty years

ago, yet this area remains a challenge for firms. When performing the SLR, we were surprised at the lack of literature dealing with purposeful termination of collaboration. One potential outcome of a collaboration that meets or serves its purpose is collaboration dissolution. Dissolution of a relationship is often difficult and costly, but reasons certainly exist why firms would choose to eliminate a partnership. Perhaps a firm perceives themselves to be a weaker party in a SC collaboration (Habib et al., 2015). Parties can perceive SC collaboration differently where one firm sees the relationship to be a long-term commitment and the other sees the collaboration as episodic or terminal (Zacharia et al., 2011). Relationship specific investments may act as a catalyst to improve SC collaboration performing under expectations, but they also serve as a barrier to exit (Daugherty et al, 2006). What can firms do to ensure SC collaboration dissolution, or at the very least evolution, after goals are met or the original partnership is deemed no longer useful?

Finally, understanding, what additional initiators to collaboration exist is a potential valuable research area for researchers and practitioners alike. For instance, a majority of the initiators to SC collaboration in the literature were internal, relational, or technological in nature. Some impetuses for collaboration may be a stronger bonding agent than other collaborative initiators specifically affecting commitment. For example, collaborations based upon technology complementarity or shared electronic platforms may see interactions between firms take place electronically limiting human involvement. When the technology becomes obsolete or through limited employee interaction, it may be easy to lose sight of the value partners are providing. Relational initiators to collaborations can see partnerships based on personal communication, cooperation, and relationships. Losing even one employee to termination, promotion, retirement, or other career forces can severely impact the functioning of the

collaboration. Rather market forces such as uncertainty have an impact or tangible influence at the organizational level. The effect these forces have can be seen or felt and may encourage firms to collaborate with more emphasis on success. Multiple parties may be committed to positive outcomes because of the shared realization of the impact potential market forces possess. These forces may act as a synergistic agent bringing companies together. In this example in particular, one can see the need for a dynamic capability of SC collaboration that develops from market needs, but also evolves due to the collaborative partner(s). More work can and should be done to analyze various market factors and their impact on SC collaboration formation and performance.

#### **LIMITATIONS AND CONCLUSION**

Limitations exist within the current research. One of the goals of the current research was to provide an objectively developed review of SC collaboration in order to provide a research agenda on how to proceed in collaboration's study. This is not a refutation of traditional or subjective based literature reviews. More often the standard literature reviews are completed to ensure research projects proceed in a timely manner, not because researchers are afraid of in-depth analysis (Strauss and Corbin, 1998). However, when using an objective method of literature review on an established phenomenon (i.e. an SLR on SC collaboration) bounds may need to be created to keep research progressing. This had us tightly define SC collaboration which prevented a subjective review on other related topics like SC integration or more formal partnerships. Further, ten academic journals were considered for the SLR which means some articles from other disciplines and other supply chain journals were not included in the current literature review. Third, because of the focus on SC collaboration, articles dealing with different forms of collaboration (i.e. public sector, service provider only, interpersonal

relationships) were omitted from the SLR. Future research should integrate findings from other disciplines to see if this furthers understanding on SC collaboration. Lastly, the intent of the current research was to provide a focal firm view of SC collaboration because the decision to collaborate results at the firm level. However, a review of SC collaboration from a SC perspective (multiple organizations) may be beneficial to examine if any differences exist between the two perspectives (Provan et al., 2007).

This study aspires to begin the further discovery of issues in and around SC collaboration. The systematic literature review serves as a grounding and synthesis of previous work on SC collaboration. After years of attention to SC collaboration with mixed reviews (Min et al. 2005), it seems that collaboration is both active and understudied. Firms are choosing different levels of collaboration with their partners. Now is the time for deep and detailed studies of firm collaboration, the strategy behind collaboration, and what can reasonably be expected from collaboration. What contributes to new and continued success from SC collaboration? The hope is not that time will tell, but rather a renewed emphasis towards exploring issues pertinent to SC collaboration will lead to new knowledge to benefit both researchers and practitioners alike.

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Figure I: Supply chain collaboration model based upon a synthesized literature review

