

Coordination, Cooperation, and Collaboration: Defining the C3 Framework

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Student's Name: Breanna Weaver
Faculty Sponsor: John Visich
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ABSTRACT

The term C3 refers to the framework of coordinative, cooperative and collaborative relationships within the realm of external supply chain partnerships. Each unique partnership offers both benefits and challenges within a supply chain and must be aligned with company and supply chain strategy in order to achieve maximum effectiveness. This paper aims to fill the current void in supply chain literature concerning C3 by defining each term based upon current supply chain research as well as give the most prevalent characteristics and differences between each “C” in this phase model. This research is then compared to the industry through a case study of a major international retailer. Finally, we propose a set of propositions that organizations can use to assess at what level their external relationships reside within the phase model as well as how companies move and evolve their relationships between the levels and what the trigger mechanisms are in this evolution.

Key Words: supply chain partnerships, supply chain relationships, cooperation, coordination and collaboration

INTRODUCTION

The first modern supply chain has its roots in the planning and control of military supplies in World War II, as both the Allied and Axis Powers began to analyze the most efficient way in which massive amounts of vital resources could be produced and transported throughout the globe (Barclay, 2005). Formed as a generic concept by Houlin in 1984, the field of supply chain management has grown and morphed into what many argue is the new core competency for companies of the twenty-first century, with competition changing from what was once a “firm versus firm perspective” to a “supply chain versus supply chain perspective” (Whipple & Frankel, Pp. 26, 2006).

While the world saw strategic advances in the movement of resources throughout this period, what did not evolve was strategic relationship management or partnerships. This posed great challenges to Europe during rebuilding as those suppliers who had once come to Europe’s rescue, no longer considered them a top priority. Due to this, the rebuilding process saw great stalling, not from a lack of funding, but rather by an inability to acquire goods from their suppliers (Tulip, 2010).

As companies have developed and honed their skills, strategies and competencies in supply chain management, new disciplines within the field have emerged. This emergence has intensified the competition in the field, and advanced the power and influence a company’s supply chain is able to have on their financial performance as well as their long-term sustainability. Yet as these new disciplines emerge and gain attention from practitioners and academics alike, significant research and literature is still lacking in many of these “hot button” disciplines.

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One of these such disciplines is the framework C3: Coordination, Cooperation and Collaboration, which has become popularized in order to define the strategy that companies within a supply chain employ in order to approach their external partners. Based upon this framework, current literature commonly refers to a partnership within a supply chain being markedly coordinative, cooperative or collaborative in nature and behavior. After seventy years of evolution, nearly all supply chain relationships can be classified as using one or a multiple of three processes for approaching their external supply chain: Coordination, Cooperation and Collaboration (C3). However, little research has been conducted to give finite definitions to these descriptions, nor has any research been completed to our knowledge to determine what characteristics classify a supply chain under one phase, rather than another.

When examining the current literature, one finds that the definitions of C3 vary based upon the source of the article. To the best of our knowledge, no research currently exists in academic or practitioner journals, the usage of C3 varies between the few pieces of literature that do currently exist, most of which focus on the frameworks of strategic partnerships. While the majority of such research clearly references a phase model in developing strategic partnerships, this phase model does not always link directly back to C3 or is the same terminology cited.

Due to these gaps in the current body of literature, this paper aims to fill this void by examining the current body of literature surrounding external supply chain partnerships and strategic alliances. In doing so, it binds together both academic and practitioner focused journals in order to examine the common characteristics and definitions used to define the phase model of C3. Therefore, it not only gives a new, unified definition for each of these partnerships but also

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defines each “C” by looking at common characteristics prevalent in all three phases and distinguishing how such characteristics morph depending on the phase of the external supply chain relationship. Lastly, it examines a current international retailer in order to determine how this phase model is utilized in the modern day supply chain and what applicability this phase model has in correlation with current practitioners in the field.

LITERARY REVIEW-C3

As previously discussed, there is currently a lack of literature surrounding the definition of the C3 framework. However, when looking more deeply one also finds that distinguishing these terms is not only lacking in the field of supply chain management, but in the field of literature overall. The following are the definitions for the three terms give by well known dictionaries:

Merriam-Webster

Coordination: the harmonious functioning of parts for effective results

Cooperation: the harmonious functioning of parts for effective results

Collaboration:to work jointly with others or together especially in an intellectual endeavor

Cambridge Dictionary

Coordination: the act of making all the people involved in a plan or activity work together in an organized way

Cooperation: to work jointly with others or together especially in an intellectual endeavor

Collaboration: when two or more people work together to create or achieve the same thing

MSN Encarta

Coordination: coming or working together: the combining of diverse parts or groups to make a unit, or the way these parts work together

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Cooperation: working together: the act of working or acting together to achieve a common goal

Collaboration: a working together: the act of working together with one or more people in order to achieve something

It can be seen in these references, that many definitions are used to describe multiple terms, and even when such definitions do differ, they fail to offer finite characteristics of one term versus the other. This is equally true when applying such terms to the field of supply chain management, as the lines between what should be a phase model or evolutionary process have been greatly blurred. Therefore this literature review is designed to introduce each of the partnership types by outlining the current literature in the field, and then unifying such literature under one common definition. Such definitions apply most accurately to relationships between buyers and sellers, although they can in certain situations apply to other types of supply chain relationships.

Coordination

This literature today still bears resemblance to the fact that coordinative relationships existed as the first type of partnerships, and includes this term as a defining supply chain characteristic in many cases. For example, Mentzer et al (Pp. 18, 2001), defines supply chain management as “the systemic, strategic *coordination* of the traditional business functions across businesses within the supply chain” while in other research Lummus and Vokurka(Pp. 12, 1999) specify supply chain management as “*coordination* of all activities into a seamless process.”

Through coordination, supply chains aimed to gain alignment and fluidity throughout a supply chain by informing each partner within the supply chain of the desired behavior for a

single transaction. This desire to coordinate supply chain activities and align the supply chain gave rise to the earliest form of supply chain contracts. While these contracts have evolved to become a part of more cooperative relationships, in their earliest form they were used for (the) better management of supplier buyer relationship and risk management (Arshinder, 2007). Such contracts merely sought to communicate expectations, rather than gain efficiencies and did not require investment into technologies such as electronic data interchange, advanced shipment notice (ASN), radio frequency identification (RFID) or elaborate connections between enterprise resource planning (ERP) systems.

The purpose of fostering relationships were not in fact to create a relationship at all but rather to decrease the relative amount of risk within a supply chain by formulating strict contracts which could guarantee a shipment date or product quality level (Mann, et. al., 2011). In recent definitions a supply chain contract is the set of many clauses that offers suitable information and an incentive mechanism to guarantee that all the firms in the supply chain to achieve coordination and optimize the channel performance (Liu *et al.*, 2005). Through the use of contingencies through contracts, such relationships set high penalties for short-term failures.

Contracts of this nature provided benefits for both downstream as well as upstream partners, although such benefits were often more favorable to the firm with the greater bargaining power. Viewing these contracts from the perspective of the downstream partner, they allowed this company to guarantee the price, quality level, and delivery date for their order. In the case that the upstream partner violated any of these contingencies, the downstream partner had the ability to reject the shipment under the Uniform Commercial Code domestically and now under CISG for international signatories. Furthermore, such contracts gave rise to requests for

proposals and reverse auctions which drove down the overall price for goods in fiercely competitive supplier markets.

From the upstream partner's perspective, these contracts allowed this partner to reduce the risks associated with a downstream partner's forecasting errors. Contract contingencies such as minimum purchase agreements, or penalties for returns, became included in contracts in order to protect manufacturers against a buyer's opportunistic behavior and allow manufacturers to plan capacity ahead and ensure a consistent sales level (Park *et al.*, 2006). Based upon the literature examined, coordinative relationships can therefore be said to be marked by a partnership's focus on aligning supply chain operations in order to maximize fluidity of transactional purchases.

Cooperation

According to contingency theory, depending on their particular circumstances and environment, supply chains need to be customized to address the challenges involved in effectively and efficiently matching supply and demand (Aitken *et al.*, 2003; and Chopra and Meindl, 2007). Upon this idea, the creation of cooperative relationships has evolved in which companies gain more flexibility and place a higher emphasis on a long-term supplier relationship. However, the term flexibility is not intended to mean that the contract is in fact overtly flexible but rather that the partners have specified certain parameters which can lead to mutually beneficial tradeoffs if flexibility is needed. One example of this would be seen in flex fencing manufacturing in which a timeline can be given for changing the order quantity and cost tradeoffs are associated with such changes (Iyer, *et. al.*, 2009).

Cooperative relationships are marked by the incentivizing of one partner to invest resources or increase the profitability of another partner in the supply chain. Often, this incentive

is offered in the form of a long term contract or in other situations as merely the continuation of business. The majority of these partnerships provide more benefit to the downstream partner of the supply chain, who wields greater bargaining power (Munson, et. al., 1999). Again, in these relationships one sees structure and control from one partner, however both partners benefit from the relationship as they have the security of guaranteed business and behaviors. In addition, given the long-term nature of the contract or financial investment involved a certain level of trust is implied.

In the simplest of cases, cooperation refers to long-term contractual relationships, such as outsourcing or subcontracting (Ketchen, et al., 2006). However, as these relationships have evolved over time, certain cooperative partnerships have pushed the envelope to incentivize their partners to increase their profitability. For example, in a true cooperative relationship these contracts would be created after some level of sharing of forecasts and conversations concerning demand, whereas in a coordinative relationship these contracts would more likely be short term and demand forecasts and other pertinent information would not have been shared.

In recent years, many researchers have observed that companies who play a leadership role in their supply chain tend to transfer risks, for example, demand and supply, to upstream/downstream supply chain members rather than sharing risks with them via various contractual settings (Mann, et. al., 2011). In one example of this phase, Whirlpool, a large appliance manufacturer offered a highly profitable and long-term contract to the supplier who could reduce the most amount of waste, while raising the quality of their component parts nearly tenfold. Looking to consolidate suppliers, this company used its relationships with its suppliers mainly to benefit itself and reduce its own costs, but they also offered the incentive of a long-

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term contract to Stanley, the company who could interface with them the most effectively and increase both companies efficiency (Roethlein and Mangiameli, 1999).

Collaboration

As a collaborative relationships marks the final phase of the C3 model, its functioning requires the establishment of a previously coordinative and then cooperative relationship. Therefore, its definition includes coordination, as this is required to lay the groundwork for collaboration. Therefore, a collaborative supply chain is best described as the “integration and management of supply chain organizations and activities through cooperative organizational relationships, effective business processes and high levels of information sharing to create high-performing value systems that provide member organizations a sustainable competitive advantage” (Handfield and Nichols, 2002). In order to achieve such a business state, information must succeed in flowing seamlessly in between participants in the supply chain. Overall, collaborative supply chains which utilize best practices, act as a central element of strategy for all partner firms, rather than a means to simply move materials (Ketchen, et. al., 2008).

Ideally, a collaborative supply chain operates in order to find favorable opportunities to both firms, while finding solutions to manage a supply chain which is agile, adaptable and aligned to create consistency (Ketchen, et. al., 2008). The overall purpose of the relationship aims to strengthen the supply chain as a whole and leads to better outcomes for both partners. While the prior two frameworks stressed a means in which the two could work together in agreement, collaboration is markedly different in the fact that it is not about agreement but rather focused toward creation (Schrage, 1990).

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Collaborative partnerships begin to shed away the notion of a stronger bargaining power and rather focus on constructive disagreement to build the strongest supply chain possible. Overall, collaborative supply chain partnerships are marked by one partner's voluntary investment of resources in the other partner or joint venture, in order to strengthen the partnership as a whole. These types of relationships are viewed as a long-term investment, rather than a short term tactic in which to reduce costs. Collaborative relationships are marked by the voluntary investment of resources (capital, training, consulting) by one of the supply chain partners into the other. As seen below, Table 1 summarizes the majority of the body of C3 literature in academia today. It is important to note that only recently did academia begin to be more specific in its definitions and analysis of external supply chain partnerships. Therefore, prior to 1999 the majority of the literature does not reference different levels of strategic partnerships or alliances.

Table 1: Summative Table of C3 Literature

Relational Phase	Supporting Sources	Summary of Content
Coordination	Lummus and Vokurka, 1999	• Defines SCM as the coordination of activities into a seamless process

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	<p>Liu et al., 2005</p> <p>Park et al., 2006</p> <p>Arshinder, 2007</p> <p>Mentzer et. al., 2008</p> <p>Mann et. al, 2011</p>	<ul style="list-style-type: none"> • Discusses SC contracts as a guarantee of performance which leads to coordination & optimization • Contracts as a way to reduce risk for both partners • Describes contracts as a better way to manage risk and information in relationships • Defines SCM by the coordination of business functions • Relationships as a mechanism to decrease relative amount of risk through guarantees
Cooperation	<p>Roethlein, et. al, 1999</p> <p>Munson, et. al., 1999</p> <p>Aitken <i>et al.</i>, 2003</p> <p>Chopra and Meindl, 2007</p> <p>Ketchen, et al., 2008</p> <p>Mann, et. al., 2011</p>	<ul style="list-style-type: none"> • Case study of cooperative behavior through incentivizing. • Discusses the unequal benefit provided to one partner • Cooperation leads to Efficiently and effectively matching supply & demand • Discusses long-term contractual relationships • Stronger partner transfers risk to weaker partners, unequal benefits
Collaboration	<p>Schrage, 1990</p> <p>Handfield and Nichols, 2002</p> <p>Ketchen, et al., 2008</p> <p>Jabbie, 2009</p>	<ul style="list-style-type: none"> • Collaboration is about creation, not agreement • Collaboration leads to sustainable competitive advantage through a variety of processes • Collaborative relationships act as a element of strategy, not just to move materials and finds opportunities for both partners • Case study discussing collaborative successes

KEY CHARECTERISTICS

Traditionally, the status of a supply chain’s partnership has been cooperative or coordinated in nature. Under this construct, relationships were based upon contractual obligations such as outsourcing or subcontracting. These relationships hold a high level of structure and are often complex, requiring extensive negotiation among partners in order to decrease the relative amounts of risk within an agreement and in turn increase the net sum of profitability from the partnership’s interaction. Collaboration on the other hand, is trust-based and centers upon a sense of shared purpose. Therefore collaboration is much more sophisticated, requiring extensive time and energy due to its ambiguous nature.

However, we felt it important to not only describe the C3 model as a whole, but to also look at the key functions within supply chain partnerships. In doing so, we evaluated coordinative, cooperative and collaborative partnerships within the frameworks of product development, planning and forecasting, contracts, capital and resource investment, and information technology.

Product Development

Product development refers to the process which includes the creation of products with new or different characteristics that offer new or enhanced benefits to the customer. Product development may involve modification of an existing product or its presentation, or the formulation of an entirely new product that satisfies a newly defined customer want or market niche (BusinessDictionary.com, 2012).

In a coordinative supply chain partnership product development exists as a singular function of each partner, with no information sharing or joint development occurring throughout the process. Under this construct, the partnership exists under a pure demand system in which they are not able to offer advice or guidance for reduced costs and merely manufacture the product or deliver the service as it was ordered. Therefore, the downstream partner carries the full risk of this new or augmented product failing in the marketplace. The benefit of such an arrangement is that the product is able to be rapidly procured for the lowest market price with the drawback being a possible missed product characteristics which would have better improved market performance.

As a relationship moves into a cooperative process, this framework begins to change in which both partners carry some risk of the new or augmented product failing in the marketplace.

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As seen in the previously discussed in the case of Whirlpool and Stanley (Roethlein and Mongianeli, 1999), in a cooperative relationship the upstream partner does bear some burden and in this case bore nearly all of the burden of creating a new product which met Whirlpool's cost and quality initiatives. In this example, Stanley was rewarded with a long-term supplier contract due to its high performance in its engineering. However, despite this benefit, product development did not exist as a collaborative process but rather one in which Stanley was required to fulfill the needs of their customer, though they were aided by communication between the two firms. The benefit of such an arrangement is the long-term contract for the upstream partner and the increased product success for the downstream partner. However, the partners lose out on developing the long-term strength of the supplier as well as capitalizing on new market opportunities. In addition, Whirlpool faced the risk that none of their suppliers would comply, or would be able to comply with their requests through this business deal. In this case, the company would have to find new suppliers or abandon their objectives.

In a collaborative relationship, product development occurs jointly, allowing each firm to suggest where market potential exists and act as consultants for one another. One example of this has been used by the aerospace firm, Northrup Grumman, in which all members of the supply chain are involved in product development by creating product development alliances years in advance of government proposals for new aircraft. On average, supply chains which practice early supplier involvement achieve a 20% reduction in material cost, a 20% improvement in material quality and a 20% reduction in deployment time (Ketchen et. al., 2008).

Planning & Forecasting

The planning and forecasting of the demand for a product or service is an integral function within supply chain management in order to reduce inventories, while increasing customer service (Danese, 2011). These initiatives to further integrate the supplier and manufacturer or customer and manufacturer in order to jointly manage supply and demand include vendor managed inventory (VMI), continuous replenishment (CR) and collaborative planning and forecasting (CPFR) (Barratt and Oliveria 2001, Danese 2006, Sma° ros 2007).

However, the adoption of these techniques varies greatly depending on the company's desired level of integration. At the coordinative level of interaction, such an investment into the implementation of such technologies could not be rationalized given the transactional nature of the relationship. Rather, the downstream partner conducts the planning and forecasting internally, with the communication of such planning and forecasting be done through the placement of orders.

As relationships progress into the phase model, such investment becomes more realistic given the longer nature of the relationships, and therefore the higher benefits which can be garnered through increased levels of integration. In the cooperative stage, some limited information sharing may occur between partners. Furthermore, in this stage you see the emergence of contractual clauses which cause a sharing of risk between the partners, incentivizing the partners to share information to increase the accuracy of the forecast.

Finally, in collaborative relationships the use of these techniques become commonplace with high-performing companies such as Wal-Mart, Procter and Gamble and Dell Computers adopting such techniques with high value suppliers (Seifert 2003, Sridharan et al. 2005). In this

stage all forecasts are conducted jointly, with forecast being generated from both partners and risk being shared throughout the supply chain given the increased sense of accuracy through information sharing.

Contracts

Contracts act as a key item which wields major influence in the nature of an external supply chain relationship. Within the C3 phase model, contracts in many ways are the quickest and easiest manner in which a relationship can be analyzed. Coordinative relationships which are transactional in nature require contracts in order to exist. In fact, the relationship essentially does not exist outside of the contract, which mandates required behavior and actions for both parties (Park *et al.*, 2006).

However, as relationships move into the cooperative phase, these contracts evolve to involve more strategic characteristics such as long-term agreements and technology investments. Under these types of contracts partners may be required to invest in electronic data interchange (EDI) or radio frequency identification (RFID) in order to enable them to better serve their customer. While this provides some benefit to the supplier in general the benefit is slanted toward the downstream partner (Munson, 1999). Overall, both partners benefit to some degree in these partnerships. However, in the case where there exists a large power disparity between the two, the situation often provides much greater benefit to the downstream partner and there can be exploitations in the short-term (Roethlein, 1999).

In a collaborative relationship the focus shifts from contracts, which in the previous two phases acted as the main basis for operations and business. Through collaboration, contracts are used to lay a basic framework in which both partners acknowledge that working together jointly

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will be required to reap the benefits of the partnership (Grandmaison, 2010). Due to the nature of these types of relationships, items which lead to incentive alignment replace the lengthy contracts which were previously emphasized.

Incentive alignment is a term used to describe the process by which companies incentivize their external partners in order to encourage behavior which is advantageous to their firm. This type of behavior is most characteristic of collaborative relationships. One example commonly found in such relationships is shared profit, in which companies such as Raytheon split their additional profit or savings with their partner if one of their partner's actions allows them to save money while maintaining quality. (David J. Ketchen, 2008). In the collaborative mindset, short-term losses ought to be ignored in order to see long-term benefits and such strategies help to enforce this philosophy.

Another example of incentive alignment can be seen through the use of improvement goals or benchmarks. In one example of such benchmarks being used, two partners agreed that despite the rising cost of the downstream partner's operations, if certain goals could be met they would not request additional price decreases (Slone, et. al., 2007). Overall, the nature of the agreement changes in a collaborative relationship in which bargaining exists for the mutual benefit and furthering of the supply chain as a whole, rather than just the betterment of one firm in the short-term

Procurement

The process of procurement within a supply chain includes all activities surrounding the acquisition of materials for consumption by the company. Effective procurement acts as a key strategy in reducing the overall cost within a supply chain and directly benefits the company's

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profitability when it achieves this goal (Park et al., 2006). In a coordinative supply chain, procurement is handled by a purchasing department in which agreements are designed as single transactions. In doing so, the department is able to administer requests for quotes or develop reverse auctions in order to achieve the lowest possible market pricing as seen later in the case study provided.

However, as these relationships advance among the phases of the C3 model, they become increasingly complex and begin to take into account factors such as quality, performance and long-term viability. In cooperative relationships, the procurement department designs long-term contracts which can meet both short and long-term objectives for the company, acting as a central element in the company strategy (Ketchen et al., 2008). Finally, as the firms move into collaborative relationships you see the adoption of strategies such as vendor managed inventory, in which a level of trust has been established which allow the continuous replenishment. Through these relationships, costs are constantly reevaluated.

Communication & Feedback

The mechanism of communication and feedback acts as an integral part of executing the C3 model, as this characteristic in the later phases has an overarching effect on the partnership's success or failure. However, you do not see the rise of such metric until you move into the cooperative phase, as it is non-existent in coordinative relationships. Through coordinative relationships, no formal evaluation is ever given or discussed. Rather, a company's positive performance often results in a future order, and poor performance nearly always guarantees that no future orders will be placed.

However, as a partnership moves into the cooperative phase the existence of effective communication and feedback becomes an important aspect of business. In this type of relationship, feedback usually occurs at the end of a contract cycle or at predetermines interval throughout the contract. Feedback in this type of relationship is highly structured and formal, touching only on aspects that have an effect on the contract (Jabbie, 2010). Collaborative relationships are markedly different however, in the fact that communication and evaluation is given consistently throughout the relationships. While formal intervals and meetings are set-up, the close interaction of the partners allows for evaluation to be continuous building a stronger relationship and consistently finding new opportunities and efficiencies (Grandmaison, 2011)

Information Technology

The topic of information technology (IT) is concerned with technology to treat information. This includes the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based combination of computing and telecommunications are its main fields. Some of the modern and emerging fields of information technology are next generation web technologies, bioinformatics, cloud computing, global information systems, large scale knowledgebase, etc. Advancements are mainly driven in the field of computer science (Longley, et. al, 2012).

In a coordinative supply chain, the small amount of information technology used relate closely to the high emphasis placed upon contracts and the faithful execution of such contracts. Due to the nature of such relationships, technology initially had little place in such contracts during the beginning of the supply chain movement (Lummus & Vokura, 1999). However, as supply chains have evolved, technology has arisen even in the simplest of relationships in order

to electronically submit request for proposals or participate in reverse auctions. In these types of relationships the mutual investment into technology is not needed and not warranted as they are transactional in nature and do not have guaranteed long-term viability.

In a cooperative relationship the use and importance of technology changes substantially. Due to the presence of long-term contracts in these types of relationships, as previously discussed, technology becomes a more valuable investment as the relationship exists over a longer period of time in which the overhead costs of such investments can be more easily covered. One such example of a recent technology growing in many industries today is that of radio frequency identification (RFID). With the use of RFID many retailers have required all suppliers to begin using such technology on their incoming shipments, allowing the inventory to be tracked in real time by both the supplier and the customer (Min et. al., 2005). While this benefits both partners to some degree, it is classic of the cooperative relationship in that the advantages are more heavily slanted toward the customer who can now operate on lower inventory levels.

As this relationship evolves more closely to that of a collaborative relationship, inventory information begins to be shared with all partners within the supply chain, giving entire visibility throughout the chain. This leads to echelon inventory management where one entity in the supply chain manages all partner's inventory in order to reduce inventory levels, meet demand, and mitigate the bullwhip effect (Lee, et. al., 1997). In doing so, visibility throughout the supply chain is which increases each partner's ability to react to unforeseen changes or delays (Ketchen et. al., 2008).

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Another area for investment under collaborative relationships includes integrating or sharing information systems with supply chain partners. Under this recommendation, the integration of company's software allows all partners access to vital information such as product data management, bills of material (BOM), the automatic generation of product planning and orders, as well as the management of drawings and other more complicated information involved with the order (Bjørn Andersen, 1999). However, in order to make this advantage of collaborative relationships a reality significant investment in information security must be made in order to assure partners of their information security (Jabbie, 2010).

Capital & Resource Investment

While information systems allow coordinative relationships to effectively manage payments and the financial supply chain, they do not allow the cash flow within a supply chain to be maximized to serve the chain as a whole. Under a coordinative relationship, the exchanging of capital or resources occurs only in the case of the trading of goods and services, with loans and financial assistance being left to the banking industry.

However, in a cooperative relationship this begins to change as partners are increasingly found to loan money to their partners or include them in training. In these types of relationships, training is merely required by one of the partners with a larger bargaining power and the weaker link must comply, usually the upstream partner. While occasionally a technician will be sent to a partner's location for assistance, this is usually to check for compliance or fix a problem which is having a direct negative effect on the company, not their partner.

Collaborative partnerships however, see investment in the skills and training of partners as of vital importance (Fawcett, 2005). In these types of arrangements partners recognize

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continuous improvement within a firm as a benefit to all members of the supply chain and will often send in their own technicians to their supplier's locations in the event that problems are occurring with a specific process or machine (Bjørn Andersen, 1999). Often, companies will invite their partners to participate in trainings at their facilities in conjunction with quarterly meetings or other business which must be attended to (Jabbie, 2010).

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Table 2: Summary of Key Characteristics

	Coordination	Cooperation	Collaboration
Product Development	No product alliances or communication exists between partners	Product development communication and input occurs late in the process	Product development occurs jointly between partners beginning in early stages for maximum effectiveness
Planning & Forecasting	Demand planning and forecasting is conducted by the downstream partner with errors have little to no effect on the upstream partner	Demand planning is conducted by the downstream partner and shared with the upstream partner after completion. Contractual obligations often require upstream partner to share some risk of error	Demand planning and forecasting is conducted jointly, with both risk and reward being equally shared by partners.
Contracts	Strict, short-term contract, little to no flexibility, no rewards for success, high penalties for errors. Contract acts as the law	Long-term contracts, outline communication expectations and what flexibility if any is offered. Contract acts as the main guide unless both parties agree that something should be changed	Contract acts as a starting point for the relationship. It offers an exit strategy if the relationship fails and is open to change as needed for the joint success of the businesses as well as the customers
Procurement	Procurement is handled by a purchasing department in which agreements are designed as one-time transactional processes.	Procurement is viewed as a strategic process in which a long-term contract is designed based upon proven performance and financial criteria	The firm adopts Vendor Managed Inventory, relaying trust in their partner in terms of forecasting and delivery.
Communication/ Feedback	No formal evaluation is given or discussed. Rather positive performance may or may not result in a future transaction, while negative performance will likely lead to no future transaction.	Evaluation and feedback occurs at the end of the contract when the firm is deciding to whether or not to renew. This evaluation may exist if one party attempts to void the contract early as well.	Continuous feedback is given at both previously set intervals but also continuously as needed
Information Technology	Little/none/ automated payments used solely for the tracking of payment and fluidity for a singular partner	EDI, requires investment which is unequally advantageous to one partner, some inventory insight	Full insight into partner's inventory in production, warehouses and pipeline. Also incorporates ERP systems.
Capital or Resource Investment	No investment of resources or capital are made by either partner for anything other than the cost of the goods or services exchanged	Partners may extend short-term loans or financial assistance to their partners in exchange for interest on such loan, however there is little to no exchange of expertise unless one partner's performance is negatively affecting the other and it is in their best interest to remedy	Partners share expertise in their given field to enhance each partner's operation. Joint training is often conducted for both firms and financial investments are common

NARRATIVE OF METHODOLOGY

The research conducted for this paper began with a meta-analysis of current supply chain research and literature on C3 for supply chains spanning all industries. We placed an emphasis on current literature in supply chain and operations management journals, specifically those with a focus on practitioners. Given the rapidly evolving nature of this field of study, our research emphasized literature completed in the past ten years. In order to maintain the validity of the research the research avoided dependency on later dated research as it could compromise the integrity of the research and literature reviewed.

Following this review of the literature, we selected the literature which addressed the C3 phase model in order to utilize the descriptions within such literature to provide a concrete and unified definition of each “C”. A summary table was utilized in order to provide a quick reference to the reader as to the literature analyzed for each phase. We also carefully utilized such literature to determine common key characteristics which arise in each phase and demonstrate the evolution of the supply chain relationships based upon these characteristics. In doing so, we were able to provide both the literature, as well as a quick reference through a summary chart which allows businesses and supply chain leaders to determine which phase their external supply chain partnerships are currently at and determine what the next steps would be to advance to a more evolved relationship.

In order to determine the applicability of the model for practitioners in the field, we then analyzed the current operating procedures of an international. In doing so, we utilized a case study model in order to outline the company’s current supply chain relationship management practices. Based upon this analysis we found that their external supplier partnerships have seen

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proven success throughout the past decade. When comparing their operations to the C3 phase model, it was found that the two methods carry many of the same characteristics. In doing so, we are able to better offer propositions as to the future of C3 as a phase model for external supply chain relationship management.

CASE STUDY

Based on our literature review we can conclude that companies and supply chains spanning any industries or geographic region are able to utilize this C3 phase model in order to better manage and measure their external supply chain partnerships. However, in order to gain validity as well as see where the model and practical application may vary our research was compared with the current operating practices of an international retailer, who has requested anonymity.

This case in point was developed through personal correspondence as well as documents used internally by the company. Throughout this communication it was found that the company utilizes a “Continuum of Vendor Approaches” depending on the partnership model for which they have selected for their external supply chain partner. Under this continuum there are three different approaches to external relationships competitive negotiation, collaborative negotiation and finally, partnership and planning. This framework began being constructed in 2002 and as of 2008 has gained stability in this approach.

Competitive Negotiation

Under competitive negotiation the company saw large initial saving which resulted from pulling a lot of the waste out of the system as well as ensuring the company was getting a fair market price for its purchased goods. This approach was most often utilized by the company for

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items in which they garner the lowest margins or the products are not a core part of their business. Under this approach, the company saw the most success and therefore utilized this the most when there was fierce competition among vendors in which a reverse auction or request for proposal process forced down the price of the goods.

Much like that of the coordinative phase in the C3 model, this approach sought to reduce costs as well as risk through secured contracts at the absolute lowest price. The success of this approach as well as the short-term approach associated with it is seen in the company's instant savings of fifteen to thirty percent, with continuing savings equaling only one to two percent.

Collaborative Negotiation

Second, the company also employs a collaborative negotiation approach. Under this approach the company selects suppliers where there is not strong competition among vendors and therefore the company is motivated to build a partnership with the strongest vendor currently on the market. This approach is also favorable in situations where the rising cost of products is decreasing margins or the company has previously utilized a competitive negotiation approach but feels that stronger value can be created with this partner. Under this approach, the company saw a lower initial savings of five to fifteen percent, but an increased continual saving of two to three percent after the fact. Therefore, this could be deemed a mid-term approach which is longer in scope than the previous phase. Much like the incentivizing of partners discussed in the cooperative phase of the C3 model, this phase for the case in point is an opportunity for the company to evaluate their supplier for further opportunities. However, their desire to do so is very much self-serving in nature in which they can drive down the rising cost of products through long-term partnerships and contracts that are able to guarantee prices.

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Partnership & Planning

Finally, in the partnership and planning approach the company considers such partnerships as those with the highest potential to drive long-term value. While the company's initial estimates may vary, divisions throughout the company identified an additional \$6 billion dollars in sales as well as \$1.5 billion in margin. On the more conservative side, the company estimates at least 1.5 billion in increased sales and \$0.5 billion in incremental profit. However, in order to reach this level of success the company requires a focus and leadership commitment from suppliers in order to develop these relationships with what they deem "tier one" vendors."

While these types of relationships were introduced in 2002 for the company and provided some structure, overall there were some limitations to their success due to the manner in which they were executed. In the early stage, such partnerships were supported by only one person that only ran reporting and was often overtly one-sided. These plans were also not always consistent or effective in the review and execution process, while financial goals were not linked to strategy and system deficiencies led to satellite tools and inconsistencies in process. Therefore, in 2008 the company made a unified effort in order to better manage such relationships.

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Table 3: Continuum of Vendor Model

	Simple		Complex
	Divided Value		Creates Value
	Competitive Negotiation	Collaborative Negotiation	Partnership & Planning
Type of Procurement	E-Sourcing	Key Negotiation	Joint business planning, joint strategy creation & opportunity identification
Initial Company Savings	15-30%	5-15%	2x sales and groww margin growth
Continuous Savings	1-2%	2-3%	Potential \$6b in sales and \$1.5b in margin

While the above graphic demonstrates the impact of each company within the continuum, what it does not note is how companies are strategically placed into each of the phases. This process is conducted by the senior level executives within the company, demonstrating the top-down support for strategic vendor management. Through these negotiations vendors are classified based upon the impact they have on the company’s daily operations as well as their past ability to meet financial goals. Also important is the commitment of top level executives from the company to manage this relationship in order for both partners to effectively manage their relationship and gain strategic advantages. Below is an exhibit of this external vendor hierarchy, demonstrating the highly selective nature of the company, and the scarcity of Tier One vendors.

Table 4: External Vendor Hierarchy



PROPOSITIONS

Based upon both the literature discussed as well as the case study identified, we selected propositions by which I company ought to follow when implementing strategic vendor management through the C3 or any similar model. These propositions outline the overlying themes of this research in order to give applicability to practitioners.

Proposition 1: Supply chains must not and should not use only one model in their operations

Proposition 2: Collaboration is the most time as well as financially intensive investment

Proposition 3: Due to the intensive investments of time and financials, collaboration should be reserved for a handful of partners

Proposition 4: Collaborative partnerships should be selected based upon the financial strength of the vendor being analyzed and;

Proposition 5: Collaborative partnerships should be selected based upon the strategic opportunity or importance of the vendor

Proposition 6: Companies who follow the C3 model or some version of this are better able to manage their relationships and gain strategic advantages from their relationships

Proposition 7: The C3 model is adopted in phases, with partnerships evolving in complexity
From coordination, to cooperation and finally to collaboration

These propositions provide a summative outline of the results of this compilation of research. While this case study demonstrates the current benefits made possible through collaborative partnerships, it is also important to note the small percentage of suppliers which reach this collaborative stage. As seen through this case, as well as through the literature, the value of every supplier is not always maximized through a collaborative partnership. Rather, companies must determine which partners pose a strategic advantage to their company through collaboration and which can be better managed and utilized at lower phases of the model.

Through following such a model, companies are better able to analyze the methods in which they manage their supplier's. As seen in the defining characteristics, the optimal phase for each partnership can determine not only contract negotiations or communication, but the justifiable and optimal amount of investment a company ought to be willing to expend for any one partner.

Finally, it is imperative that this framework is examined as a model, in which partnerships are placed at optimal levels for which they are built. It is unreasonable, to assume that a partnership can jump drastically from a coordinative phase to that of a collaborative phase. Rather, trust must be earned, performance proven and interactions phased form those of

coordinative to cooperative and then finally to collaborative. Furthermore, based upon both the financial and strategic analysis of each partner, a company may choose to select collaborative behavior in the majority of characteristics but reserve a cooperative framework for areas in which they feel the partner cannot pose a strategic advantage.

CONCLUSIONS

The purpose of this paper was to address the current gap in supply chain literature which failed to adequately define the C3 phase model. In doing so, we utilized current literature in the field to find the common definitions of coordinative, cooperative and collaborative external supply chain relationships or strategic partnerships. At the same time, we also used these descriptions to determine what the key characteristics were which defined each “C” such as forecasting and demand planning, information technology and contracts and communication.

Such analysis provides value to the academic community as it provides a common definition which was formulated based upon the unification of the current research which addressed these types of partnerships. From a practitioner standpoint however, the cumulative research expressed in the two charts provided within the literature review allow them to analyze the current stage of each of their supply chain partnerships. In doing so, it also offers the ability to determine where growth or evolution is needed for a partnership and what the desired goal or outcome should be for each phase of the supply chain relationship.

As often heard in the field of management, if you can't measure it, you can't manage it. In this case, such literature allows businesses and supply chain professionals to evaluate and measure their relationships outside of a stringent performance scorecard which may fail to recognize why a relationship is struggling. In this manner, this literature is able to act as a root

cause analysis in determining what areas may be lacking in a relationship or what areas in which a partnership may be overinvested therefore allowing the company to gain fluidity in the relationship based upon their desired outcome.

However, such research is not without some flaws. Throughout this paper the majority of articles and current literature used was based within the United States and therefore does not include large overtones of international perspective. As the world becomes increasingly global, such international relations will play a greater role in the management of external supply chain partnerships as issues such as contract negotiations, inventory planning and many other aspects become much more complicated in international business. Therefore, a further review of the literature containing an analysis of the current research based upon the geographic origin of the literature could be useful to those companies largely engaged in international business, especially those looking at directly selling or manufacturing abroad.

Secondly, in order to gain further validity of this model future research could include the testing of this model. In order to conduct such testing, it would be suggested that this model would be presented to current supply chain practitioners who would then have the opportunity to analyze the model in relation to their company. The researcher would also have the opportunity to analyze many more cases than the one offered in this paper. Given the time limitations of this research and the necessary desire to present such research while the literature examined is still relevant, the testing of this model was not feasible for this paper.

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