

END-TO-END SUPPLY CHAIN COLLABORATION BEST PRACTICES

CREATING SUPPLY CHAIN VALUE BY WORKING TOGETHER

A WHITE PAPER BY THE UNIVERSITY OF TENNESSEE, KNOXVILLE,
HASLAM COLLEGE OF BUSINESS SUPPLY CHAIN MANAGEMENT FACULTY

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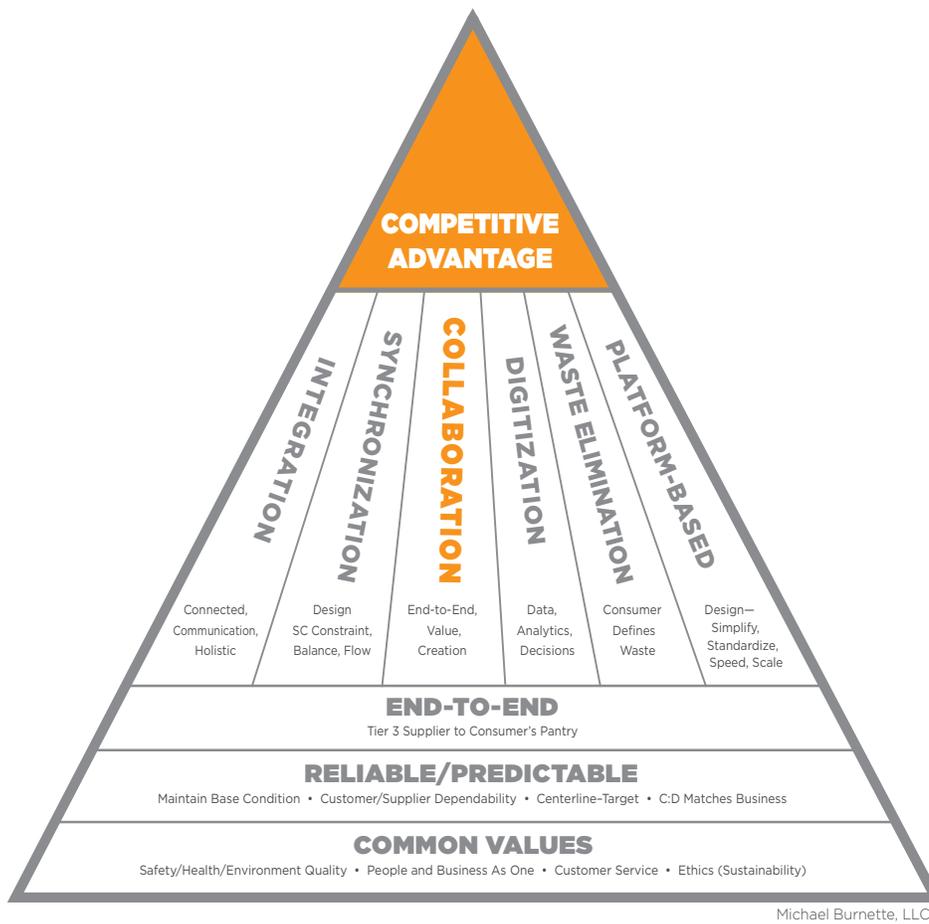
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TABLE OF CONTENTS

Executive Summary	3
Introduction	5
End-to-End Supply Chain Collaboration	8
Supply Chain Improvement Model	17
Best Practices	22
Case Study	36
Conclusion	49

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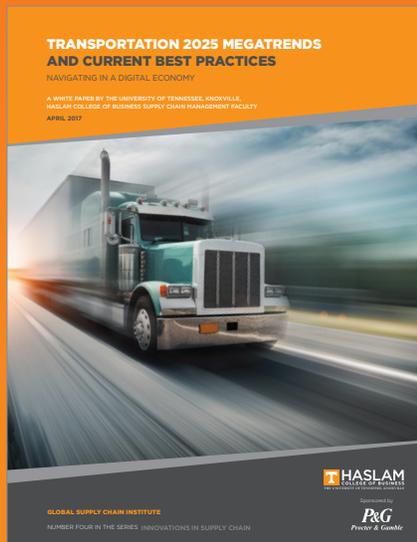
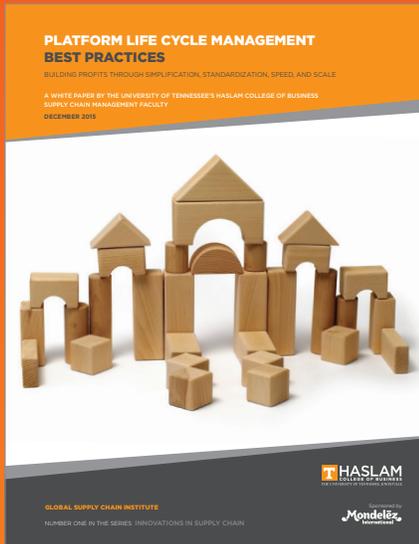
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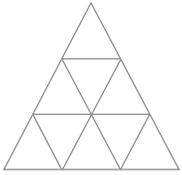
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The importance

of end-to-end supply chain collaboration has changed dramatically in the last two decades.

Executive Summary

The importance of end-to-end supply chain collaboration has changed dramatically in the last two decades. As the expectations of both shareholders and consumers have soared, the collective brainpower, capability, technology, resources, and scale of most supply chains have become insufficient to meet them. The companies that served as benchmarks for this research are responding by renewing their supply chain approach and prioritizing collaboration across every major organizational boundary—internal and external.

The past five Global Supply Chain Institute (GSCI) white papers in the Innovations in Supply Chain series addressed the need for supply chain innovation to meet complexity, cost, and customer service challenges through sustainability, third party logistics, platform life cycle management, new product initiatives, and transportation best practices. This end-to-end collaboration paper will address the need for innovative ways to bring supply chain disciplines, company functions, suppliers, and customers in sync—admittedly an arduous task, but possibly the most impactful of the initiatives addressed thus far in the Innovations in Supply Chain series.

Developing collaboration drives improvement across all elements of the supply chain scorecard metrics, but our research highlights two impact areas that are pivotal to supply chains seeking further improvement, including:

- Managing complexity, and
- Cost savings fatigue.

Exponential complexity growth is arguably the greatest current challenge facing the supply chain. The surge in complexity has been fueled by challenges such as supply chain globalization, acquisition pace, new retail channels (i.e. omni-channel), regulations, and a rapid increase in the pace and complexity of new product introductions.

Cost savings fatigue—another major challenge—is the result of supply chain managers spending decades in the relentless pursuit of cost savings. At this point, the opportunities to improve appear to be dwindling. Common business strategies to deliver profit goals by offsetting inflation or driving a competitive cost advantage by being the low-cost provider have been increasingly difficult to support.

This white paper

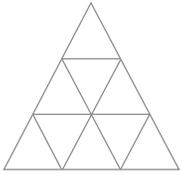
provides supply chain leaders with in-depth external benchmarking insights on collaboration best practices, examples of applying best practices, and insights as to the supply chain leader's role in creating a collaboration culture.

The GSCI research team conducted best practice interviews with 17 leading companies across eight industries to develop the insights for this white paper. The results provide improved understanding of how the best supply chains are expanding their knowledge and capabilities by renewing approaches to working with supply chain partners. Benchmark interviews of top supply chain leaders provided seven collaboration best practices that increase value creation across the supply chain. Two key examples of these best practices include:

- Supply chain leaders expect collaboration to improve results
- Total-value-based business and supply chain measures

Additionally, the GSCI research team studied multiple examples of successful end-to-end collaboration, with success ultimately being driven by teamwork that increases the value creation of the supply chain. Later in this white paper we include a major case study on achieving breakthrough results through the optimization and integration of procurement, operations, and logistics, which provides important insights on improving results through collaboration.

Overall, this white paper provides supply chain leaders with in-depth external networking and benchmarking insights on collaboration best practices, examples of applying best practices, and insight on the supply chain leader's role in creating a collaboration culture.



A key point

is that business is dynamic, and that the make versus buy decision can and does change over time with evolving business needs and market factors.

Introduction

Historically, supply chains have focused on delivering products and services by one of the two following internal or external approaches:

- Make—doing it yourself or,
- Buy—negotiating support from other parties.

A key factor in the decision to make rather than buy typically revolves around whether the capability is a core competency, meaning that performing the work provides a competitive differentiation. In their classic *Harvard Business Review* article, C. K. Prahalad and Gary Hamel shared three tests that identify whether an activity is core or not.¹

First, a core competency provides potential access to a wide variety of markets. Prahalad and Hamel use the example of an electronics company needing to have a core competency in display systems. Second, a core competency should make a significant contribution to perceived customer benefits of end products. For example, it is easy to see how a display screen can impact end users' perceptions of electronic items, such as cell phones. Third, a core competency should be difficult for competitors to imitate. Thus display screens that might have once been difficult to imitate began to be outsourced to suppliers as the technology evolved. This is likely why Apple chose to work with Corning, which had developed competencies in advanced glass technologies like the Gorilla Glass® for newer models of the iPhone™.

When an organization performs work that is not a core competency, inefficiencies drive up cost structures. For this reason, visionary Peter Drucker encouraged CEOs to “sell the mailroom” in his 1989 *Wall Street Journal* article of the same name.² Others, such as Peters and Waterman and Prahalad and Hamel, encourage companies to outsource activities that are not core competencies.³

A key point is that business is dynamic, and that the make versus buy decision can and does change over time with evolving business needs and market factors.

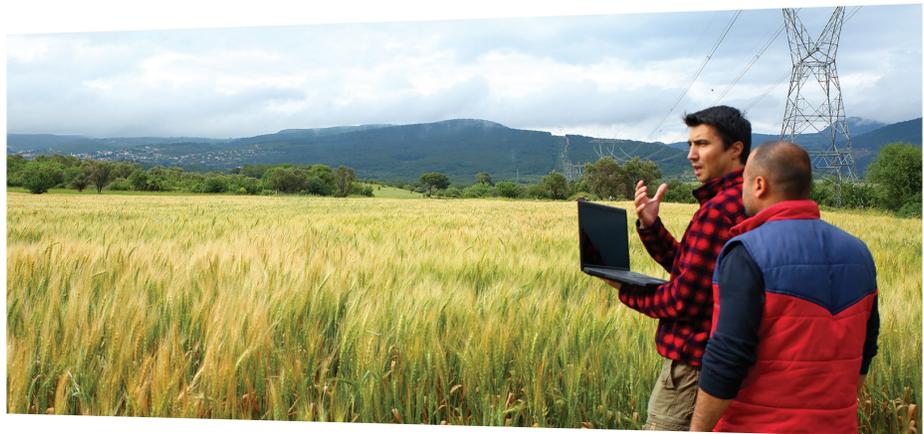
When you choose to buy you are in essence choosing to negotiate with a supplier.

NEGOTIATION—A process in which two or more parties resolve or come to a mutual agreement (the objective is to come up with an agreement that benefits all parties but sometimes parties must give up some things).

Unfortunately, many organizations realize that traditional negotiation approaches are falling short. We often hear, “All of the low hanging fruit has been picked!” when it comes to trying to negotiate with suppliers. As a result, organizations are turning to collaboration as an answer to help unlock supply chain optimization.

As organizations make the shift to more collaborative efforts with supply chain partners, the foremost focus of collaboration should be on enhancing value creation, not simply on value exchange or value extraction. Simply put, companies should not say collaboration and then turn to the same old approaches for negotiating with suppliers.

Take for example an old story about a landlord and a poor farmer. The farmer is a hard worker who is continuously looking for ways to improve his farming business. Unfortunately, the farmer has limited income and a tight budget. The farmer recently considered adding a second crop to his business but does not have enough money to support the investment. He dreams of the new business venture and the pride his family would have expanding their work.



The farmer decides to meet with his landlord to determine if they could develop a funding solution. His landlord is a tough negotiator, but she is the type of person who will work together to find creative solutions. The landlord and the farmer come up with an agreement where the landlord will loan the farmer the money to plant the new crop upfront—at a premium interest rate. The farmer gains the pride of a new business opportunity and the landlord gains a new investment.

Both parties agreed that the new crop would likely not add revenue or profit to the farm, at least not for a long time. It was a high risk and in fact several other farmers tried the same expansion and failed. Unfortunately, after giving this venture his best effort for several years, this farmer eventually experienced the same result.

***The business
need for cost savings has
continued to increase.***

Taking the farm as a supply system with both parties working together to align on a plan—is this an example of good supply chain collaboration? The answer is no. Why? This is an example of value exchange. Yes, both parties tend to create value from their agreement. The landlord is getting by earning a premium interest rate and the farmer is getting value by having access to expand his business. The interest rate may be negotiated by the parties, but the interest rate will most certainly fall into an acceptable rate as defined by market forces.

Simply put, supply chain collaboration is a waste of time and resources unless it creates enterprise value—value for both the farmer and the landlord beyond what the market and negotiating can bear. The point here is that despite the best intentions of collaboration, unless the collaborative efforts create value for all parties they should not be pursued. They should not be viewed solely as exercises in good business practices or good neighbor relations.

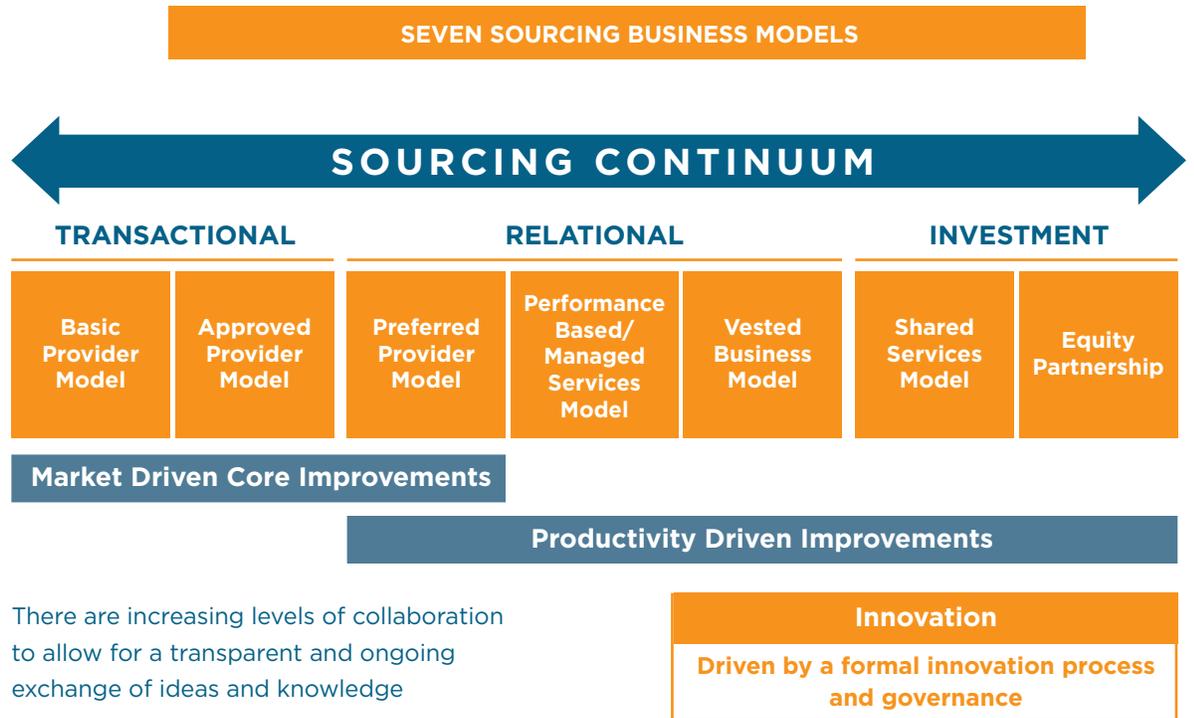
Many organizations confuse value creation with value exchange or value extraction. But there is a difference that is essential to understand if you want your collaborative efforts to work. Value exchange takes place when organizations simply trade value. For example, an organization agrees to hire a 3PL and pay them to perform their services. Market competition and negotiations help organizations determine what is a fair value exchange, or price in the marketplace for goods and services. Value extraction is what occurs when an organization seeks to shift value from one player in the supply chain to itself. For example, an organization's procurement team uses its power to negotiate a better deal for itself. By negotiating a price reduction, it is able to take profit from the supplier and shift its own bottom line.

Unfortunately, negotiations are frequently over utilized, insufficient, and focus on value exchange or value extraction. Traditional negotiation approaches by managing supply chain partners fall short in today's more complex and dynamic economy, because negotiation by its very nature creates winners and losers. In this win/lose environment, total supply chain value is rarely optimized.

A shift to a more collaborative approach is needed, with supply chain partners focusing on value creation—either through continuous improvement or innovation efforts that are designed to optimize the supply chain. Thus, the optimization can and does result in a win-win for the supply chain partners.

In the past several decades, supply chain professionals have started to shift to more collaborative approaches to drive holistic improvement with a few critical suppliers or business challenges. Figure 1.0 shows an example of a range of supplier sourcing business models from the book *Strategic Sourcing in the New Economy*.⁴

Figure 1.0



As mentioned earlier, traditionally organizations have used a simple make versus buy analysis to determine if they should invest in their internal capabilities. Those keeping the work in-house would create their own internal operations to service the needs. If the organization chooses to buy, it typically relies on the left three sourcing business models—the basic provider, approved provider and preferred provider models. The basic and approved provider models focus on using competition to drive lower costs across standardized goods and services. A firm’s more strategic supplier relationship might shift to a preferred provider model with a longer-term contract with the goal of negotiating value-added services. Each of these models are rooted in a traditional transaction-based economic model where the buyer negotiates a price per transaction (e.g. price per mile, per shipment, per unit, per labor hour).

As supply chains have become more complex due to globalization, expanded consumer channels, and increased government regulations, organizations are strategically choosing to shift to more strategic sourcing business models designed to create value. If they are choosing to buy versus make, this means

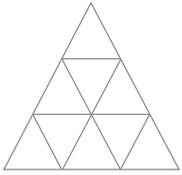
shifting to more strategic and longer-term relationship with suppliers that shifts the focus from transactional needs to one that is focused more on the supplier making investments in optimizing their performance (performance-based agreements) or even in collaborating to create value to achieve business outcomes (Vested outsourcing model). If they are choosing to make or invest in themselves, this often means purposefully collaborating internally to drive value through shared services organizations or making strategic investments such as joint ventures.

One of the primary reasons for the shift to more collaborative approaches is that the business need for cost savings has continued to increase. Traditional internal sources of savings are drying up and increased expectations for customer service and satisfaction have created a higher standard of supply chain performance. These challenges and more have made it very difficult to gain traction through traditional transactional approaches.

To overcome the complexities of today's supply chain challenges, supply chain professionals need to master the art, science, and practice of tapping into more strategic sourcing business models specifically designed to motivate investment in supply chain optimization and create a true win-win for all parties in the supply chain, whether that is with suppliers or with internal organizations. Success will require overcoming two primary gaps in collaborative efforts:

1. Internal collaboration within supply chain activities and between the firm's other business functions
2. External development of partners across all elements of the supply chain (suppliers, IT providers, 3PLs or perhaps even competitors).

The supply chains benchmarked for this research have recognized these gaps and their leaders are laser-focused on seeking new internal and external collaboration processes to drive breakthrough results.



Most supply chain leaders would agree that investing in collaboration is not a good use of resources unless there is a clear return.

Achieving End-to-End Supply Chain Collaboration

The unique nature of the end-to-end supply chain must be clearly understood to establish how to deploy collaboration initiatives to accelerate value creation. Most supply chain leaders would agree that investing in collaboration is not a good use of resources unless there is a clear return. Value creation is a core element of effective collaboration.

SUPPLY CHAIN COLLABORATION—The process of identifying and working issues/opportunities with specific business objectives between two or more parties in a way that increases overall supply chain value. Supply chain collaboration is typically created across the following organizational interfaces:

- Within the supply chain disciplines (e.g. between procurement, logistics, and manufacturing)
- Between the supply chain function and the other business functions (e.g. between supply chain and marketing)
- Between the enterprise's supply chain members and another enterprise in the end-to-end supply chain (e.g. between the supply chain and a 3PL)
- Between two different enterprises or supply chains to create scale advantages (e.g. sharing warehouse and transportation assets between two non-competing companies)



Supply chain managers'

ability to define and create value is the biggest challenge in collaboration work.

Value Creation

Supply chain managers' ability to define and create value is the biggest challenge in collaboration work. An end-to-end total value process should be used to determine how much supply chain value is created or lost.

The benchmark supply chains we interviewed discussed the challenge of aligning to a value methodology, educating the organization/partners, and resourcing the analysis work. The process is developed further later in this white paper. Figure 2.0 provides an example list of different activities and areas on which total value could be derived across the business.

Figure 2.0

EXAMPLE OF TOTAL VALUE ANALYSIS ELEMENTS	
Total Value Elements	
Product Design	Capital
Materials (cost/transportation)	Quality/Obsolescence
Supplier Expense/Investments	Rework>Returns
Supplier Inventory (both cost and cash)	Non-Compliance
Manufacturing	Risk (currency, stoppage, etc.)
Warehousing	Payment Terms
Transportation	Cost of Customer Service
Responsiveness	Customer Inventory (both cost and cash)
Inventory (both cost and cash)	Customer Shelf Management

The benchmark companies revealed that the supply chain could not undertake these initiatives alone and still derive optimal value across the business. Rather, interfacing across internal functions and with external partners is required. Significantly, supply chain leaders must partner with finance to provide the various supply chain disciplines and related business functions the best tools to measure and access value creation. The advent of activity-based cost has created a platform to begin this work.

SUPPLY CHAIN LEADER'S ROLE—Partner with finance leadership to ensure the diverse set of teams working on driving supply chain value have aligned metrics and robust tools to do the work.

Collaboration Interfaces

As we mentioned in the introduction, some supply chain organizations collaborate with a strategic external partner more effectively than with internal partners (other supply chain disciplines or business functions). Yet the spirit and value-creation focus of collaboration needs to be internal as well as external. Misaligned functional silos cause waste and lost value in many firms.

The first critical interface area is within the supply chain disciplines. The following supply chain definitions illustrate the potential disciplines in the end-to-end supply chain.

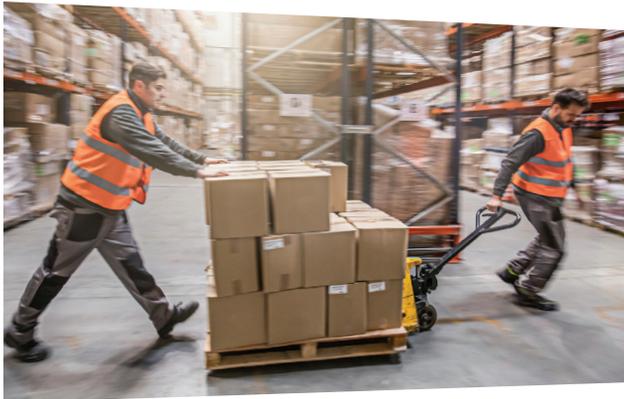
DEFINITIONS

Supply Chain—The end-to-end, integrated system of processes and activities required to deliver product or service from the supplier's supplier to the consumer's shelf.

Supply Chain Organization—The holistic resources and teams required to deliver valued products and services to the consumer with excellence. This includes, but is not limited to, procurement, manufacturing, engineering, process control, quality, safety/environmental, innovation program management, warehousing, transportation/distribution, and logistics.

It is important to collaborate on the value-added work, work processes, and strategies between these disciplines. Examples of value creation when the work is done collaboratively include:

- Engineering designing equipment that is easy to maintain, clean, and operate, saving on operating labor costs and spare parts
- Quality teams leading continuous improvement initiatives to reduce material scrap, rework, and problem-solving teams, reducing operational labor and scrap cost
- Warehouses following truck loading best practices to avoid product damage in transportation to the distribution centers and cause less rework and scrap cost
- Manufacturing running shorter cycle times to reduce inventory, creating less cash investment, product scrap, obsolescence, and holding cost
- Procurement selecting a high-quality supplier based on value and not just price



The second key interface area is between other business functions like sales, marketing, or finance. One of the best examples of an opportunity to create value is in new product introductions. In the last GSCI white paper in the Innovations in Supply Chain series, we laid out best practices for new product initiatives and supply chain leaders' role in influencing multi-functional work processes and decisions.⁵ Examples of value creation through collaboration with multi-functional business partners include:

- Product development designing new products using existing platforms to reduce design, supplier, manufacturing, and warehousing costs.
- Marketing utilizing new product introduction S&OP data to determine the amount of marketing dollars to invest by month and mirror demand with supply, reducing customer service outages and lowering supply chain premium costs.
- Finance working with procurement to find new material suppliers for new products that deliver the best value-based value for the supply chain.

These examples focus on new product introductions but apply to many other business work processes challenges including S&OP, new information systems, and changes in business strategy.

The third key collaboration interface area is with external providers. Partnerships with suppliers, customers, carriers, and 3PLs in general have become more common over the last four decades. Our interviews found that the benchmark supply chains have focused on expanding the number of these external relationships. They base this growth on current collaborative relationship success and the realization that the complexity of the supply chain is growing exponentially. Complexity growth reduces the amount of the end-to-end supply chain that the internal organization fully understands, and therefore increases the need for partners. Figure 2.1 shows an example checklist of activities where collaboration partners could be utilized.

Figure 2.1

COLLABORATION CHECKLIST		
Area	Supply Chain	Collaborative Partners
Suppliers	Tier 2 Suppliers	
	Tier 1 Suppliers	
	Developmental Materials	
	Minority Suppliers	
Manufacturing	External Manufacturing	
	Product Manipulation (promotions)	
	Equipment Maintenance (i.e. HVAC, robotics)	
Warehouse/ Transportation	Warehouses	
	Distribution Centers	
	Picking	
	Returns	
	Carriers	
	Distributors	
Information Systems	Provider	
	Maintenance	
Joint Ventures/ Alliances	Scale-Common Materials	
	Scale-Equipment Development	
	Scale-Distribution	

The fourth interface area is with enterprises that are external to a firm’s own supply chain. Significant supply chain value can be generated from collaboration with such external enterprises to create scale. For example, a firm that is the second largest user of a particular material could seek to partner with the largest user of the same material, which could be in a different business category, to create scale in procurement.

If the two parties can agree on a common specification for the material, the parties’ procurement teams can act as one, leveraging significantly higher volumes for material pricing. Creating volume scale for material, external manufacturing, 3PL, and carrier contracts is the most obvious scale opportunity, but partnership in technology development, influencing governmental regulations (lobbying), and employee benefit programs are examples of other types of value creation through external collaboration.

To drive supply chain value through collaboration, supply chain leaders must understand and manage the system end-to-end.

End-to-End

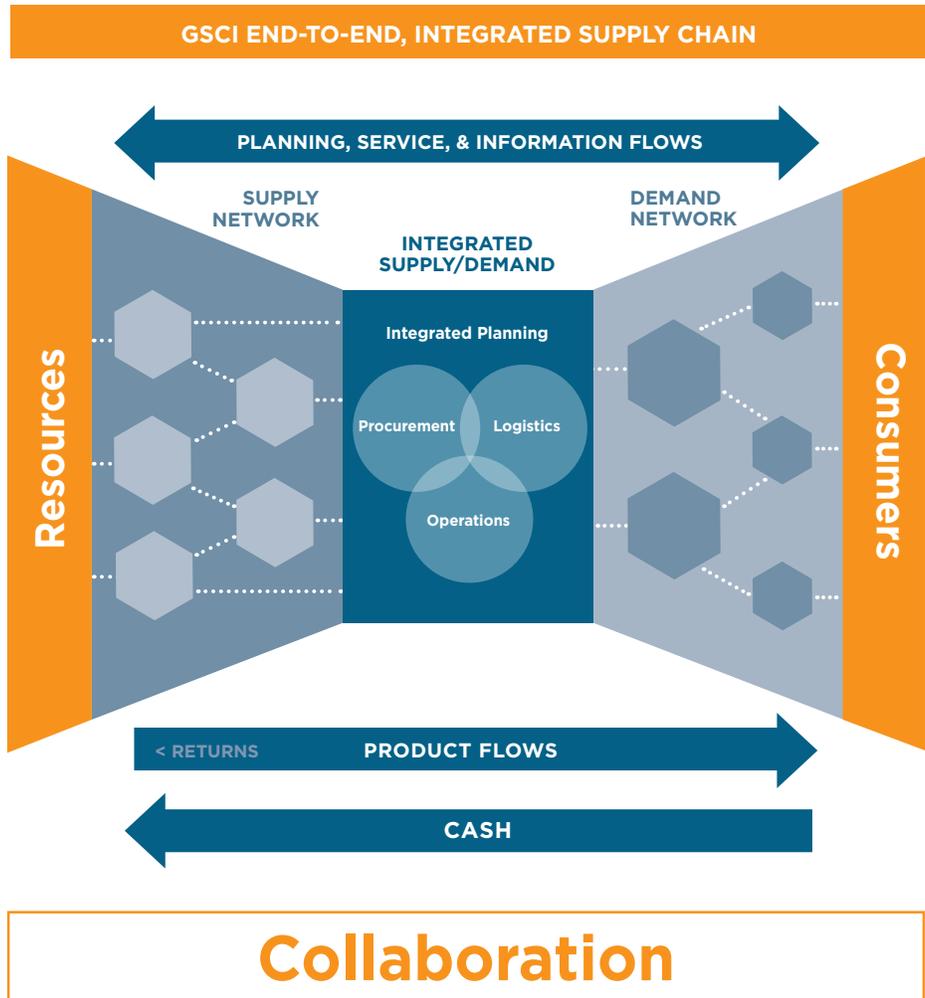
The final element for successful supply chain collaboration is to approach the work with a holistic, end-to-end perspective. Decisions in one part of a supply chain system impact results and processes in multiple other areas. To drive supply chain value through collaboration, supply chain leaders must understand and manage the system end-to-end.

Historically, supply chains have struggled with understanding the entire process required to produce/supply a product or service. Without an end-to-end perspective, failures in tier-three suppliers, customer master data tables, and 3PL employee contracts can cause cost or customer-service problems.

Frequently, a lack of understanding of the end-to-end supply chain is rooted in a propensity to view the supply chain from the perspective of one focal firm as opposed to the series of source, make, and deliver processes required to source a product from its raw material origins all the way until an end-customer consumes the product. Attaining this end-to-end view, of course, will mean crossing multiple enterprise boundaries. Figure 2.2 shows a graphical representation of the end-to-end supply chain.

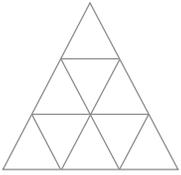


Figure 2.2



A typical supply chain may have thousands of suppliers and distribute through thousands of customer outlets. Both ends of the supply chain are complex and absolutely critical to supplying with excellence.

Collaboration across procurement, logistics, and operations to optimize total value creation stands at the heart of the GSCI end-to-end supply chain model. Major product supply and demand transformations occur when companies are able to successfully integrate across these disciplines. This end-to-end integration is highly complex and requires high levels of collaboration. We will explore the steps involved in accomplishing it more fully in a case study at end of the white paper.

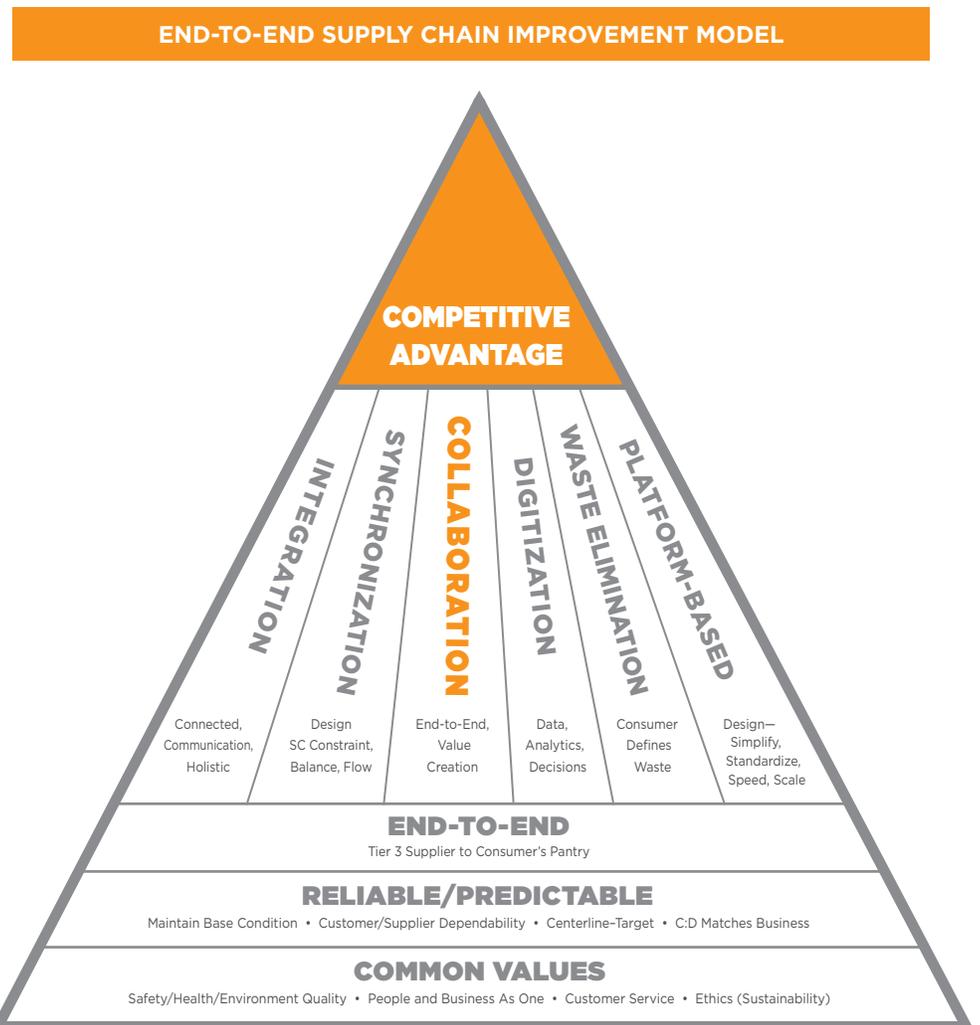


Supply Chain Improvement Model

The GSCI currently has more than 60 companies that sponsor our work, and we interface regularly with hundreds of other businesses and supply chain leaders through our research. Almost all ask us at some point, “What are the current key supply chain improvement strategies and how will organizational capabilities need to change with the strategic changes?”

Before reviewing the best practices leveraging collaboration to improve the supply chain, it’s important to try to answer this question and demonstrate where collaboration falls within the context of improving your supply chain.

Figure 3.0



Michael Burnette, LLC

End-to-End

supply chain improvement starts with a solid foundation.

The aspirational supply chain creates a competitive advantage for the business. When a firm's supply chain creates clear competitive advantage, it becomes a business multiplier delivering the highest level of total value for the firm. Competitive advantage is the goal supply chain improvement should build toward.

It is important to note that many supply chains do not create a competitive advantage and may not need to in order to deliver the business goals. The concepts in the supply chain pyramid model can still improve efficiency and reliability in all types of supply chains.

SUPPLY CHAIN COMPETITIVE ADVANTAGE—The creation of a capability (i.e. cost, quality, customer service, sustainability, flexibility) that is significantly better than all your competitors. The enterprise can leverage this capability for increased shareholder value. Examples include:

- Significantly better quality, at the same supply chain cost, that enables the company to charge a premium price to consumers
- Significantly lower supply chain cost that enables a superior profit margin
- Sustainability capability that enables a unique product endorsement for which the consumer pays a premium price

End-to-end supply chain improvement starts with a solid foundation. Maintaining a solid foundation requires ongoing work, but leadership should not progress beyond the foundation if major issues are present. There are three primary areas in the foundation:

1. Common Values—Supply chain leaders need to create a culture with common values. Common values prevent significant conflict and rework in the organization. They allow the organization to focus on supply products/services as opposed to non-value-added issues. This focus is vital in the supply chain, which typically employs the largest number of the people in the organization.

Effective supply chain leaders utilize organizational communication, rewards, recognition, pay/benefits, promotions, discipline, and assignment planning systems to re-enforce—and change if needed—the values of the organization. Effective supply chain leaders strive to have 100 percent of their organization thinking about safety, quality, customer service, ethical behavior, integrity, and the environment in the same way. Values should not be treated like priorities. Priorities can and should change regularly based on business needs. Values do not change. For example: we have a value to prevent all personal injuries. This does not change with business priorities.

Collaboration

is critical to enhancing the impact of integration, synchronization, digitization, waste elimination, and platform management on competitive advantage.

2. Reliable/Predictable/Zero Waste—A typical supply chain has thousands of activities and transformations. The system is only as reliable and predictable as its weakest link. Due to the number of activities and transformations, even a high level of reliability may not produce a predictable supply. If a system had 100 dependent steps and each step delivered its product on time 98 percent of the time, the total system would deliver its product on time only 13 percent of the time. Having a reliable and predictable supply chain enables leadership to work on more strategic capabilities. Conversely non-reliable/predictable systems prevent development of more strategic capabilities.

A zero-waste mindset directly follows the work to create predictability. The highest levels of waste are typically observed at the ends of the supply chain, including poor product design, and lack of integration, information, and synchronization with suppliers and customers.

3. End to End—We outline the importance of viewing, understanding, and managing the supply chain from end-to-end in an earlier section. The supply chain cannot be integrated unless the end-to-end supply chain activities that must be integrated are fully understood.

After establishing a solid supply chain foundation, leadership can begin renewing the supply chain strategy. Paul Dittmann outlines the strategy renewal process in *Supply Chain Transformation*.⁶ The renewal process includes assessments of the current supply chain capability, business strategy/goals, and competitor capability.

The Supply Chain Improvement model focuses on six important supply chain strategic enablers. It is important to make progress across all of these enablers to deliver competitive advantage, however, each of the first five can be enhanced by improvement in collaboration—the sixth strategic enabler. Below we define the five choices and focus on how collaboration impacts each.

Supply Chain Integration—The process and work to connect all activities in the end-to-end supply chain. Each supply chain activity must be able to communicate with the other supply chain activities. Decisions can be implemented across the entire supply system quickly and accurately. Cost, reliability, inventory, and time can be measured at each activity in the supply system. Non-value work and waste are eliminated for each activity. Supply chain integration strategies help systems with responsiveness issues and businesses with needs for major cost savings that might be cost fatigued. Chad Autry and Mark Moon discuss this in detail in their book, *Achieving Supply Chain Integration*.⁷

Supply Chain Synchronization—The process and work to balance the capacity and workflow between every supply chain activity. Synchronization focuses on the principle that too much or too little capacity (both average and instantaneous)

Creating value

through integrating, synchronizing, platforming, and utilizing the digital capabilities of the supply chain requires not just knowledge of the system but the ability to leverage the full brain power of each resource.

between supply chain activities is waste. Customer service risk and issues with too little capacity are obvious. Too much capacity is a lost opportunity as the cost of this unused capacity is wasteful and creates unhealthy organization behavior. The highest supply chain value is created from a balanced, 100 percent reliable and predictable supply system. Managing the flow of materials and information for your supply chain constraint is critical to a synchronization strategy. Synchronized supply chain activities flow seamlessly without creating inventory. Additionally, an organizational focus on creating the shortest possible supply chain time becomes a significant enabler to synchronizing your supply chain, eliminating non-value-added activities in the system.

Supply Chain Digitization—The movement of supply chain decisions, processes, and systems into a connected, intelligent, and orchestrated environment. This includes the real-time collection of both structured and unstructured data through the internet-of-things, integrated, and often real-time, decision-making across the end-to-end supply chain using advanced analytics, and the use of cognitive systems that learn and adapt over time. Digital supply chains also unlock the potential of advanced robotics, autonomous vehicles, and crowd-sourced business models to change the way supply chains are conceptualized and operated. Supply chain digitization offers the promise of a transparent, integrated, and responsive supply chain.

Waste Elimination—The relentless process to identify and eliminate all non-value added materials, equipment, processes, systems, and resources. The determination of “value added” is made from the consumer’s viewpoint. This supply chain strategy is effective for enterprises whose business model requires significant cost savings to deliver margin goals or in businesses that have driven cost savings aggressively for decades and suffer from cost savings fatigue.

Platform Life Cycle Management (PLCM)—The integrated system to design, develop, and supply a family of products. This system takes into account consumer needs, products (formulas, packages), materials, process, equipment, and operations. Due to the cost and resources required to support a platform, it needs to be managed from a life cycle point of view, including:

- Developing the platform
- Managing and improving the platform
- End-of-life for the platform.

The concepts and best practices of platform life cycle management are further detailed in a recent GSCI white paper on the topic.⁸

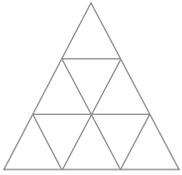
Collaboration—the sixth enabler—is critical to enhancing the impact of integration, synchronization, digitization, and platform management on competitive advantage

by facilitating improved economies of scale and scope in utilizing end-to-end system resources, knowledge, or creativity. An organization must have knowledge of all elements of its supply chain system, and this knowledge is difficult to obtain without solid collaboration with suppliers, customers, carriers, and 3PLs. Creating value through integrating, synchronizing, platforming, and utilizing the digital capabilities of the supply chain requires not just knowledge of the system but the ability to leverage the full brain power of each resource.

Collaboration contributes to each of the other five strategic enablers. For example, platform life cycle management is based on a strong partnership between manufacturing, logistics, procurement, and engineering with R&D and the commercial community. Similarly, digitization requires a strong partnership between the supply chain and finance regarding the use of data with suppliers, customers, and external partners.

Given its importance in enhancing the impact of other strategic enablers, the research conducted for this white paper sought to generate insights into how collaboration may be used as the focal point for improving supply chain contribution to competitive advantage. These best practices are presented in the next section.





With the demands of today's supply chain, it is virtually impossible to be successful without fully utilizing the brainpower and capabilities of everyone involved in supplying products/services.

Best Practices

While the end-to-end supply chain model and improvement model we present provides a broad perspective on the critical elements of effective collaboration, we determined that a deeper dive into the best practices being used to drive value creation was required. As a result, we interviewed managers from 17 benchmark companies and one industry expert to generate greater depth of understanding and identify collaboration best practices. This diverse set of individuals represented companies from food/beverage, retail, defense, CPG, chemicals, cosmetics, and electronics/information industries.

Throughout this process we recognized the importance of end-to-end supply chain collaboration and how it has changed dramatically in the last few decades. With the demands of today's supply chain, it is virtually impossible to be successful without fully utilizing the brainpower and capabilities of everyone involved in supplying products/services.

We identified 95 recommendations through our interviews, but in this paper, we discuss the seven best practices that garnered the greatest number of mentions and deepest insights among the participants.

Several best practices merit further discussion, which we explore via case studies.

BEST PRACTICES

1. Supply chain leaders drive collaboration to improve results
2. Supply chain leaders have end-to-end experience and capability to influence both other internal functions and external enterprises such as suppliers or strategic alliance partners.
3. Create a collaboration culture
4. Total-value-based business and supply chain measures
5. Collaboration tools, systems, and data
6. Robust external team structures to facilitate collaboration
7. Effective S&OP

1. Supply Chain Leaders Expect Collaboration to Improve Results

The number one best practice discussed by the benchmark companies involved leadership expectations. Supply chain leaders need to drive their organization to:

- Collaborate effectively across the supply chain disciplines
- Collaborate effectively across business functions (this includes resolving tough S&OP, new initiative, platform, budget, and resourcing challenges)
- Collaborate with important, strategic suppliers, customers, and carriers—shifting along the sourcing continuum to more strategic win-win sourcing business models where appropriate
- Improve results through the investment in collaboration.

The number one best practice discussed by the benchmark companies involved leadership expectations.

The methods used by supply chain leaders to communicate their expectations varied by company but included one-on-one discussions, leadership meetings, performance reviews, organizational information meetings, monthly scorecard reviews, and strategic action plans.

Beyond communications, in benchmark companies supply chain leaders model the collaboration behaviors to the organization. Their interactions with other business functions serve as an opportunity to demonstrate collaborative capabilities. How the supply chain leader behaves in top-level S&OP meeting decisions, new initiative stage gate approvals, strategy decisions, and priority settings sends a strong message to the organization on the importance of improving business results through collaboration.

SUPPLY CHAIN LEADER'S ROLE—Drive investments in collaboration to improve results.



Benchmark supply chains

develop their top talent through multiple supply chain assignments and projects that span the supply chain, from working with the supplier's supplier to product consumption.

EXAMPLES:

- A global food supply chain EVP created a clear and concise expectation document for his supply chain leaders detailing the importance of collaboration with suppliers, farms, other business functions, and customers. This overt action created immediate organizational attention on how the global food supply chain intends to operate.
- A global eye care supply chain executive clarified to the organization that the consumer is the boss. Supply chain projects should always 'start with the consumer.' A major part of their business is direct-to-consumer delivery. Mapping out all the supply chain activities of the end-to-end supply chain was step one. The executive expected supply chain managers to create the most value for the consumer. Since the supply chain is complex and requires strong external partnerships to succeed, collaboration across all internal and external boundaries to drive consumer value has become the basis for their work.
- A procurement executive at a leading high-tech firm championed the firm shifting to from a preferred supplier relationship with their reverse logistics supplier to a more highly collaborative, win-win Vested model—reducing the company's cost structure for reverse logistics by 44 percent in just three years.

2. Supply Chain Leaders Have End-to-End Experience and Capability to Influence Other Functions and Enterprises

The last few decades have witnessed significant changes in the supply chain leader's role driven by exponential growth in supply chain complexity that has heightened the importance of supply chain leaders' understanding of a broader view of the supply system as well as their ability to influence other business functions to achieve greater value creation.

The benchmark supply chain interviews re-enforced these points in the collaboration best practices. Effective supply chain leaders understand the end-to-end supply chain. Benchmark supply chains develop their top talent through multiple supply chain assignments and projects that span the supply chain, from working with the supplier's supplier to product consumption. Working on projects and assignments across the system enables leaders to understand that changes in one element of the system impact other elements of the system. This is the basis of viewing issues from an end-to-end perspective and creating total system value.

Additionally, the role of top supply chain leaders has shifted to a balance of internal and external priorities. The benchmark companies expect strong supply chain leaders to have strong skills in managing the boundaries. For example, supply chain leaders must be able to:

- Drive tough decisions to balance supply and demand in S&OP
- Work proactively with external enterprises to find scale and volume leverage in like materials, processes, and systems
- Influence the design of new products consistent with platform structure
- Make holistic business decisions based on total value creation including the impact of inventory, responsiveness, and quality.
- Shift from “price” focus to “value” focus with suppliers, incorporate total value into supplier decisions that foster end-to-end supply chain optimization across the supply chain.

SUPPLY CHAIN LEADER’S ROLE—Ensure that high-potential, future supply chain leaders have roles and project experience across the end-to-end supply chain.

EXAMPLES:

- A global CPG supply chain now requires that all of its top-talent have multiple assignments across supply chain disciplines and at least one developmental commercial assignment in order for them to be eligible for supply chain executive roles. This company has found that supply chain leaders without these real-life experiences cannot effectively lead the end-to-end supply chain work and the work influencing all business functions that is so critical in today’s supply chain executive’s role.
- A global packaging supplier utilizes experienced supply chain leaders (network managers) to push the organization to collaborate with key internal and external partners. The organization has a strong do-it-yourself culture. This company has found that when pushed, the organization will work effectively with its customers, but a push is needed. To help enable the work, the network managers have helped create new online, real-time, integrated data systems to communicate and problem solve with their customers.



Human resources

and supply chain leaders build the collaboration culture by modeling the culture in every visible activity.

3. Create a Collaboration Culture

Creating a collaboration culture is not easy. Everyone has heard the expressions, “It is easier to do it myself,” and, “If I do it myself there is no one else to blame.” Collaboration does take more upfront time and, in many cases, the biggest value creators can be in other areas of the supply chain.

In many ways collaboration goes against a supply chain department’s short-term goals. A manager assigns resources to work on a great project for the holistic system, but has nothing to show for the effort on their scorecard.

Creating a collaboration culture starts with the first best practice we discussed, that supply chain leaders must drive collaboration to improve results. The supply chain leadership must support the expectation for the culture to form.

A second critical element of establishing the culture is trust. The supply chain must flip their position to trusting first instead of expecting partners to earn their trust. This means believing in other supply chain disciplines, business functions, suppliers, customers, until an issue arises and then working to fix the trust issue.

Human resources and supply chain leaders build the collaboration culture by modeling the culture in every visible activity: strategy, pay/benefits, rewards, problem solving, action planning, reviews, tours, picnics, hiring, promotions, and assignment planning.

EXAMPLES:

- A large, regional business recruited a top executive to lead its supply chain. The supply chain executive strongly valued collaboration. Over the years, results in cost, working capital, and customer service improved dramatically. Then, when the supply chain executive found a better career opportunity at another company, the replacement did not openly communicate collaboration expectations and the improvements fell sharply. Note: in this example the collaboration culture was not mature/strong enough to sustain through leadership changes.
- A large, global food company’s supply chain executive moved their office adjacent to the R&D executive. This visible change helped the supply chain leader to implement platform life cycle management, but more importantly provided a great cultural example of the type of cross-functional collaboration that is vital to platform life cycle management.
- A global electronic and information system company noticed that the quality of its team’s collaboration skills increased dramatically in a crisis. Supply chain

leaders pushed to determine what characteristics were present in a crisis that could be integrated into the organization's culture. In crisis, they found that a clear business objective (with a lack of competing reward systems), dedicated resources, and a clear tie to the success of the business were three elements that could be re-applied to the culture.

- Several of the benchmark companies used vendor managed inventory (VMI) as a strong collaboration example. The idea is to use the most effective VMI relationships—most companies have at least one successful VMI partner—to train teams on what is required for effective collaboration. These traits include joint trust and respect for the partner's commitment, technical mastery, and communication skills.
- A global food supply chain company strongly believed that supply chain leaders create positive, collaborative culture. This company had strict talent systems and guidelines to create their culture which included:
 - a. Establishing supply chain human resources positions focused on staffing supply chain talent to build long-term people and culture management skills
 - b. Supply chain new hires were interviewed and approved by a multi-functional leader to build collaboration across the business
 - c. Supply chain executives were required to have developmental assignments in other business functions
 - d. Supply chain managers were required to focus on building personal relationships across all functions during the first three months of employment.
- A large health care organization and a key supplier developed a formal shared vision and statement of intent as part of a project to shift from a preferred provider to a Vested model. They also co-created a collaborative governance structure to help them move from a culture of micromanaging the supplier to one of managing the business with the suppliers. Both companies worked with their respective legal functions to embed these relational practices formally into their contract, creating the first ever relational contract for both organizations.
- The State of Tennessee worked with UT researchers on how to customize UT's request for partner method to meet highly regulated government procurement requirements. The result was adopting a Collaborative Value Development (CVD) process to allow for more collaboration and supplier solutions during the bidding process. The CVD process was piloted with success and the state updated their procurement laws and policies to enable them to use more collaborative bidding practices.



Supply chain

leaders understand that the organization achieves what is measured.

4. Total-Value-Based Business and Supply Chain Measures

Extensive metrics are common in virtually all supply chains, because supply chain leaders understand that the organization achieves what is measured. In interviews with the GSCI, most businesses included safety, cost, quality, reliability, and customer service elements in supply chain measures. The benchmark supply chains take their scorecards one step further. Their scorecards include the value of inventory, quality, and responsiveness. When dealing with external partners, they also include proactively measuring relationship health as well as the effectiveness of driving end-to-end business outcomes—regardless of who did what activity in the supply chain. Benchmark company scorecards also include the importance of time with measures like overall supply chain time, material cycle time, production cycle time, and new initiative launch timing.

Earlier we discussed the importance of total value creation. Traditionally financial systems measure hard costs in the areas that businesses understand best. Over the last few decades, new accounting concepts like activity-based accounting broaden financial understanding to assess and measure the true value of projects and decisions. In an end-to-end supply chain, collaboration improves total value creation. This is why the benchmark supply chains we interviewed partner with finance leadership to develop total value measures, including the process to assess projects and decisions. Figure 2.0 provides examples of the types of issues that need value assigned to them for these measures.

Beyond making total-value based business and project decisions, the process of attributing value to non-traditional accounting costs like inventory, responsiveness, and quality is a great leadership exercise to align business elements.

SUPPLY CHAIN LEADER'S ROLE—Expect projects and supply chain decisions to be assessed using total-value-based analytics.

EXAMPLES:

- A global information technology company uses internal supplier selection consultants to review supplier decisions. This has significantly changed the reward system. In the rapidly changing information technology business, mistakes created by narrow piece price decisions can make or break annual corporate profit goals.
- A global beverage company found that the lack of assessing end-to-end cost caused its external manufacturers and label suppliers to make sub-optimized decisions. The external manufacturer ordered labels based on current inventory space and to optimize its production runs. The label supplier created minimum order quantities to optimize its production runs and profit margin. The beverage supply chain created a team to review how this part of the supply chain could reduce inventory and cost. The team found that the demand data was not clear to the label supplier and external manufacturer. By working together the team implemented improved demand data sharing processes and total-value-based concepts to optimize minimum order quantities, label inventories, and cost.
- A leading high-tech company shifted to a fully transparent pricing model with incentives for the supplier to reduce total cost—not just price. Previously the company operated under a non-transparent, transaction-based economic model with the focus being on “cost per box” to perform a repair. Under their Vested mode, the parties co-created a joint P&L where they could transparently see the total cost of repairing a device—regardless of which organization was doing which part of the work. The transparent focus on total cost versus price enabled the company to implement 55 transformation initiatives which would not have been uncovered before as they were only looking at costs within each organization’s four walls.

In order to collaborate with other supply chain disciplines, business functions, and external partners, teams must have the tools, systems, and data to enable the work.

5. Collaboration Tools, Systems, and Data

In order to collaborate with other supply chain disciplines, business functions, and external partners, teams must have the tools, systems, and data to enable the work. These tools and systems must be efficient and the data easy to understand.

Within the supply chain, disciplines need to have processes to interface regularly and solve problems. If warehousing and manufacturing are working to change how a finished product is shipped from the plant to the warehouse, both disciplines may need each site's labeling/palletizing/scanning cost/capability, supply chain capacity, supply chain constraint, and customer label requirement data. This information, along with processes to support the team's improvement work (i.e. meeting rooms, staffing support), is required to enable teamwork.

In global enterprises, multi-functional collaboration systems and tools can be very complex. Supply chain resources are frequently located in different places than the other corporate functions. Multi-functional collaboration teams may need virtual tools to enable meeting and data sharing.

When collaborating with external enterprises, partners need the tools, systems, and data to solve problems. If suppliers, logistics, manufacturing, and procurement are working to improve material quality, the supplier and all internal supply chain disciplines need access to the same data (i.e. supplier quality data, supplier's contract, plant supplier quality data, logistics inventory and service data, quality capability at the supplier). Additionally, there needs to be a system to enable the collaboration (i.e. monthly reviews, project meeting structures, meeting space, alignment to facility tours). This sounds simple, but is rarely available to these teams.

Benchmark supply chains assess the ability of teams to collaborate and adjust to enable the work.

EXAMPLES:

- A global food supply chain leadership team assessed the barriers to increasing the level of internal and external collaboration. The team found that the organization was naturally collaborative. The major issue was a sharp rise in complexity due to acquisitions, globalization, new product introductions, and SKU complexity, which forced resources to short-cut work processes. The leadership team decided to initiate a simplification strategy jointly with commercial leaders to drive out all unproductive complexity. This strategy has worked well. Information system improvements, SKU reductions, reduced initiative pace, and creation of common product platforms to reduce the impact of regulations have reduced the number of transactions managed by the supply organization.
- A global electronics company is using artificial intelligence (AI) to speed up collaboration on major global issues. The company was facing a shortage of a critical material in Asia. The AI tool searched all similar issues in Asia and the decisions companies made to resolve it. This data was utilized by the team to speed up the process and determine the possible options to resolve the issue. This allowed the team to utilize their precious time and brainpower to select the appropriate action for their business. The company feels that the use of AI tools reduced the response time to the issue by 50 percent. These types of collaboration tools eliminate time-consuming data collection and focus the collaboration on decision making.
- A global beverage supply chain faced data challenges with its key customer partnerships. Both companies had data, but they could not agree on the integrity of the information. The joint team decided to look at data integrity on point of sale information first. The team was able to agree on what information would be used to measure point of sale. This has now enabled the team to focus on improving shelf productivity.
- A global eye care supply chain created a cost-to-serve tool to enable multi-functional teams to manage SKU complexity. Data tools with transparent and aligned information are critical in emotional challenges such as the number of profit-effective SKUs.

Collaboration with external partners can be more complex than with internal partners.

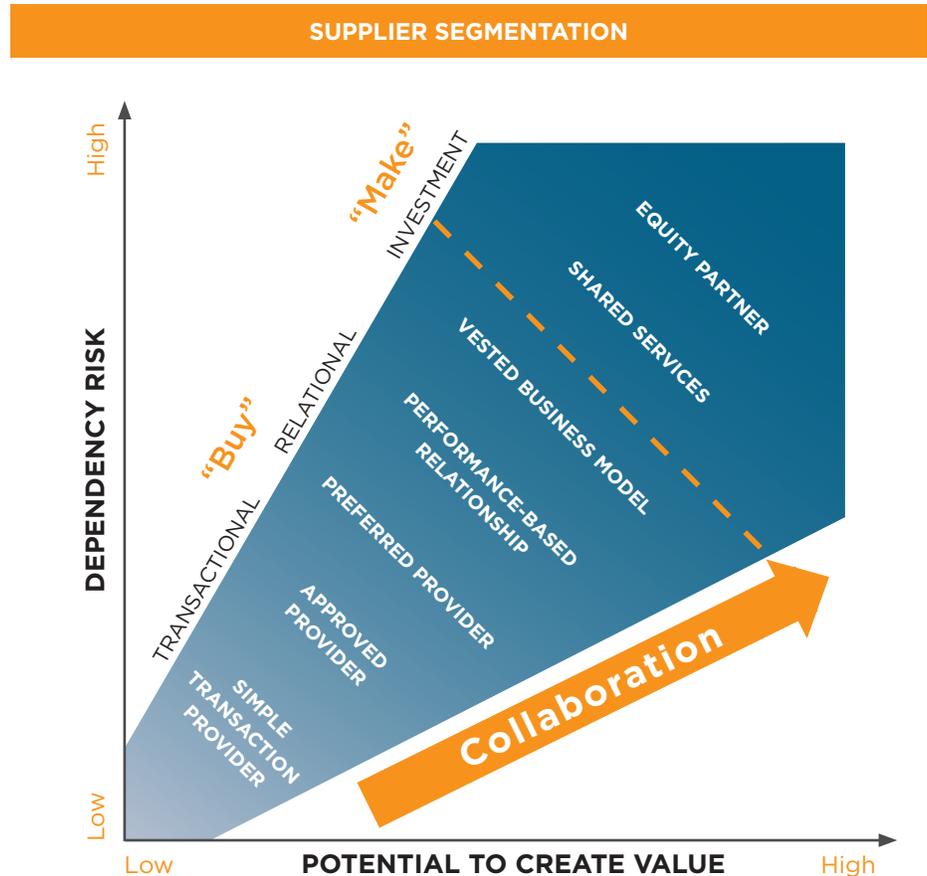
6. Robust External Team Structures to Facilitate Collaboration

Collaboration with external partners (suppliers, customers, contract manufacturers, carriers, maintenance providers, IT partners, joint ventures, etc.) can be more complex than with internal partners. The first and most important question to ask is what level of collaboration, if any, is desired. This question can be answered by segmenting your suppliers/customers.

Recall the seven sourcing business models outlined in Figure 1. As an organization shifts along the sourcing continuum they need to work more collaboratively with their supply chain partners to unlock potential improvement opportunities or even collaborate on innovations. As collaboration increases, the level of transparency and investment in time, resources, and often asset dependency increases. Thus, it is imperative that there is potential value that outweighs the collaborative efforts.

Figure 4 graphically illustrates how dependency and value are interrelated across the continuum.⁹

Figure 4.0



An organization's ability to create value increases as it shifts along the continuum. In the graphic, the arrow starts in the lower left corner and moves to the upper right quadrant, showing the correlation between dependency and value. When a company chooses to buy, a properly structured longer-term supplier relationship encourages suppliers to invest in process improvements and/or make commitments to drive efficiencies.

However, longer-term contracts also have a downside because it further increases its dependency on the supplier. Although risk increases due to supplier dependency, a well-structured relational agreement can be designed to reward the supplier for mitigating and reducing risk, making the relationship a much more palatable option and mitigating the risk associated with what is commonly referred as lock-in associated with a high degree of supplier dependency.

As companies shift further along the continuum to investment-based models they will further be able to create value with highly strategic investments and collaborative models such as shared services or joint ventures.

A key point to recognize is that there is no single right model. Most organizations will need to use most, if not all, of the models for the hundreds or thousands of relationships they share with their suppliers/partners. Think of your organization as a baseball team that needs different skills for each position: catcher, pitcher, outfielder, and so on. Your job as a supply chain professional is to pick the right model that gets the job done for your specific and unique situation. The more potential value and more dependency/risk, the more you will need to collaborate.

Once the organization has decided which model is most appropriate for working with which external partners, the next step is to set the stage for how the parties will collaborate. We recommend holding a top-to-top meetings to align and approve the strategic direction for the collaborative efforts.

When the parties are aligned, the supply chain leadership should enable the teams to begin work on collaboration enablers. Some examples of collaboration enablers include:

- Staffing
- Team facilities (virtual tools or travel may be involved)
- Confidentiality agreements
- Approvals for joint tours
- Approval for information exchanges
- Project testing budgets
- Leadership reviews (scorecards/action plans)
- Cost/saving sharing principles

Benchmark supply chains

*have collaboration partners
across virtually every element
of the supply system.*

Benchmark supply chains have collaboration partners across virtually every element of the supply system (see Figure 2.1). They realize the global supply chain is extremely complex and requires every ounce of the organization and its strategic partnership knowledge, expertise, and creativity to win in the marketplace.

EXAMPLES:

- A global defense contractor jointly created a demand data system to enable key suppliers to review their total demand (all customers). The system and data convinced the supplier's leadership to quickly fund capacity increases that support the defense contractor's production requirements.
- A global CPG company initiated a requirement for all its customer partnerships. The top-level CPG supply chain leader and the customer's logistics leader have a joint review to agree on all staffing for joint improvement projects. The process of actually committing resources from both companies has forced better definition of project objectives, scope, and goals. This has created better alignment between the CPG and its customer partners.
- A global food company built long-term strategic partnerships with all of its critical, strategic suppliers. The organization believes that these collaborative relationships increase the speed of trust when working on complex or urgent problems. There is no need to have a join-up phase in a new project. Everyone knows each other, understands the business, and is ready to drive value creation.
- A pharmaceutical company had over 100 logistics and transportation suppliers around the world to meet its various needs. The company used the University of Tennessee's open source Business Model Mapping toolkit to segment its suppliers, determining which would be good candidates to create more strategic supplier relationships. The result was to pick two key global suppliers and develop more formal governance structures that would enable the company and each of the suppliers to view their interactions more strategically versus tactically.

S&OP has all the attributes of a challenge worthy of applying the best collaboration skills and practices.

7. Effective S&OP

Arguably, demand and supply Integration (DSI, S&OP, IBP) is the ultimate collaboration opportunity. It requires all the business functions to collaborate (often in ways counter to functional reward and cultural systems) for the benefit of the total enterprise.

Simply put, businesses with an effective S&OP process deliver better results than those without it. S&OP requires standard information/analysis, collaboration, and joint decision making from virtually all the business functions.

The S&OP process is only complete once important decisions have been made and communicated. The organization's general manager leads the process, with demand plan ownership by a sales executive and supply plan ownership by a supply chain executive. In our interviews, benchmark companies with an effective S&OP highlighted demand-supply integration as the best example of collaboration. Benchmark companies without an effective S&OP highlighted demand-supply integration as their best example of poor collaboration.

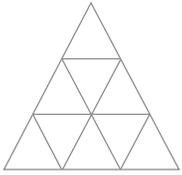
S&OP has been implemented in supply chains across all industries over the last four decades with mixed results. All functions typically agree that driving the organization to operate from a single volume number will create the highest value for the company (less inventory, fewer customer service defects, less premium expense, more profit).

So why has S&OP failed in so many companies? The short answer is that in many companies, functional reward systems motivate dysfunctional behavior and undermine the single operating number culture that S&OP requires. This topic will be the focus of a future GSCI white paper.

S&OP has all the attributes of a challenge worthy of applying the best collaboration skills and practices. It is strategic and important to the business. It is not an easy process and requires every function's best thinking. It is an opportunity for top leaders (GM, sales VP, supply Chain VP, finance VP) to model collaboration. The decisions from S&OP can optimize value creation or conversely sub-optimize value creation.

EXAMPLE:

- A global CPG company has had issues driving decisions in its top-level S&OP meetings. As a way to educate the leadership team on the importance of demand and supply decisions, the supply plan leader has begun to review examples of how the S&OP data was utilized in the supply chain to make decisions. As you might expect, top leadership second guessed some of these decisions. The supply plan leader re-enforced that without top-level S&OP decisions, the functions would have had to make decisions at a lower and possibly sub-optimized level.



The bottom line

is simple. Effectively collaborating to create value can and does drive bottom line benefits for all parties. Together, purchasing, logistics, and operations are responsible for well over 80 percent of the cost in most companies

Case Study

Achieving Breakthrough Results through the Optimization and Integration of Procurement, Operations, and Logistics

Supply Chain Excellence Drives Shareholder Value

If your procurement, operations, and logistics functions aren't world class or aren't aligned to work together seamlessly to delight your customers while minimizing excess cost and working capital, you may be leaving money on the table. Even worse, your company may be at risk.

In *The New Supply Chain Agenda*,¹⁰ Dittmann, Mentzer, and Sloane use numerous examples to demonstrate how supply chain excellence drives economic profit (earnings before interest, tax, depreciation, and amortization minus the cost of capital), and how that in turn creates shareholder value. The book further introduces five pillars of supply chain excellence, two of which are collaboration within the firm and collaboration with supply chain partners outside the firm. The emphasis on collaboration as an essential component of supply chain excellence is consistent with the best practice found in our interviews: clear end-to-end collaboration is driven and personally promoted by the senior supply chain leaders.

Our previous white paper, *Bending the Chain*,¹¹ also discusses the problem of internal collaboration among functions within the firm. That white paper focused specifically on integrating logistics and procurement. Based on a survey of 180 companies, we found that for most companies, procurement, logistics, and operations exist in separate organizations. They each supported their piece of the overall firm business strategy, but were not necessarily aligned to each other. Ironically, the study found that some of the greatest areas of disintegration were across functions traditionally thought of as supply chain functions. We have met the enemy, and it is us.

We have done extensive work in the area of how to improve collaboration with suppliers. *Unpacking Competitive Bidding*¹² white paper discusses issues that can arise from using highly competitive bidding practices in an environment where there is limited supply options. *Unpacking Collaborative Bidding* does a deep dive into a process UT researchers have coined "Request for Partner"

Functional
*excellence can only be
achieved through integration.*



and profiles how the Canadian government is successfully using the process to select and create Vested outsourcing relationships. Lastly, *Unpacking Relational Contracts*—written in conjunction with the International Association for Contract and Commercial Management and Lindahl Law Firm—unpacks the concept of relational contracts and shares a simple to use five-step process for developing relational contracts with suppliers that are essential to lay the foundation for a transparent and trusting supplier relationship.

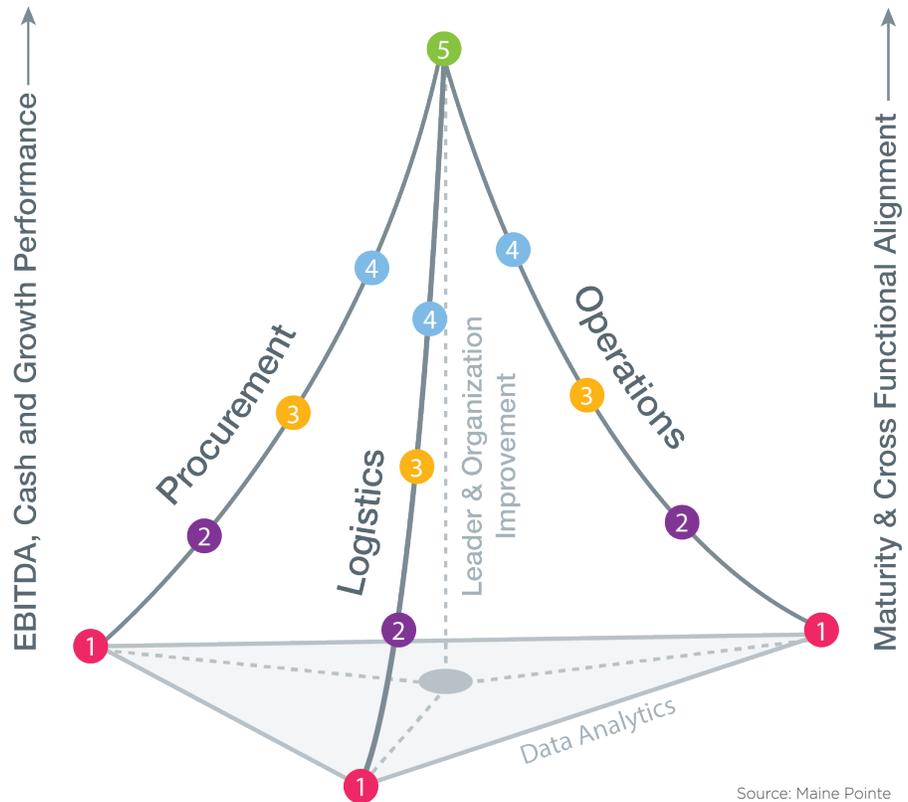
The bottom line is simple. Effectively collaborating to create value can and does drive bottom line benefits for all parties. Together, purchasing, logistics, and operations are responsible for well over 80 percent of the cost in most companies, and influence at least that much of the working capital and cash flow. Within that 80 percent, most organizations spend over half with external suppliers. To achieve supply chain excellence and drive shareholder value, a firm must achieve excellence in the supply chain both in the functions of purchasing, logistics, and operations and externally when working with suppliers. To do that requires not only functional excellence individually within these critical functions, but also integrated excellence collectively.

In the past years we have conducted over 800 one-on-one, one-hour interviews as part of our supply chain audits. At the end of every interview we ask a wish-list question: If you could make anything happen with one wish for your company, what would it be? By far the most common answer was the desire for a utopia where all of the functions in the company work together and are perfectly aligned to a common purpose. People pine for an environment where the functional silo walls have come down. They intuitively know that these disconnects are the real reason things are not improving faster. Functional excellence can only be achieved through integration.

Examples of Supply Chain Excellence, a Case Study

Maine Pointe is an implementation-focused consulting firm founded in 2004 that specializes in driving excellence in procurement, operations, and logistics, and then integrating these functions into a Total Value Optimization (TVO) framework. They are experts in helping companies break down functional silos and driving measurable value across the end-to-end supply chain. The value created accelerates improvements in earnings before interest, tax, depreciation, and amortization (EBITDA), cash, and an enhanced demand-driven supply chain that enables growth.

Total Value Optimization™



Source: Maine Pointe

Maine Pointe has developed a TVO supply chain model that describes how companies can assess their supply chain maturity. It also helps them understand the value potential as they start their journey towards achieving excellence across their buy, make, move, fulfill supply chain. Their TVO model is a good representation of how to see a path clearly to the utopia of all functions working together with alignment clarity. Implementing key elements highlighted drives collaboration as described in the Supply Chain Improvement Model (Figure 3) discussed earlier in the paper.

As an illustration of how value can be created, this TVO approach has been used consistently by one CEO across three corporations, both public and private equity owned. The change implemented enabled him to generate \$290M in EBITDA, \$310M in cash, and growth through improved customer responsiveness.

An assessment tool allows any company to determine its level of maturity (levels one through five). Using the model, they can also estimate the benefits of moving to higher levels of maturity. Of course, achieving the highest levels

of maturity requires organizational synergy among the functional areas. The performance of the whole tends to sink to the weakest link.

The maturity assessment breaks each functional area of logistics, procurement, and operations into five sub-processes, including data analytics and leadership maturity attributes. Some highlights and examples of level four and five performance are:

Logistics

- 3PL and transportation carrier contracts developed in a partnership setting and include clearly understood service-level agreements
- Score carding with proactive feedback for third parties
- Optimal asset utilization
- Dynamic demand forecasting with predictive analytics
- Use of data and optimization tools to reduce logistics cost, improve customer service, and control inventory
- An engaged workforce with clearly defined roles and objectives and a plan to acquire, develop, and retain top talent
- Fully aligned with procurement and operations
- Network optimization
- Dynamic routing, load planning
- Inventory optimization
- Customer-based metrics
- An engaged workforce, with the right tools and training
- Optimized asset utilization
- Excellence in inbound freight management

Procurement

- Long-term partnerships with suppliers focused on delivering end-customer needs, supported by metrics that drive the right behavior
- A synchronized and aligned supply chain operation
- Mature total cost of ownership metrics
- Deep visibility across the supply chain
- Advanced analytics and optimization technology utilized
- An engaged workforce with suppliers working closely with internal teams
- Full alignment with operations and logistics



Operations

- Advanced S&OP in place, with event triggers
- Raw materials arrive just in time, minimal work in process on the shop floor
- Full use of appropriate automation
- A primary focus on velocity (speed to customer)
- Preventative and predictive maintenance programs in place
- Simulation modeling and predictive analytics utilized
- A highly empowered, engaged workforce
- Full alignment with logistics and procurement
- Advanced analytics and modeling

Overall: The data also confirm that it is much more likely to achieve level 4-5 performance if all three functions have aligned objectives.

Note that the above practices are very consistent with the best practices found in the interviews for this white paper, especially in the areas of:

- Effective S&OP
- Collaboration tools, systems and data
- Total-value-based business and supply chain measures

Benefits

According to the Maine Pointe data, moving from level one to two can generate up to a 5 percent savings. Level three could then give an additional 8 percent savings. Level four adds up to 6 percent more, and level five yields 8 percent more. All together the journey from level one to level five would yield a 20-30 percent gain, moving a company to a clear competitive advantage. Additionally, the factors related to cash or working capital and growth need to be analyzed for each company and their given situation.

Firms can achieve such benefits only if there is collaboration among the supply chain functions. When you have so many factors internally that can cloud this collaboration, as mentioned earlier, one can think that statement is a nice platitude, but wonder what it really means in practice. There are many examples of supply chain functions working together to improve overall performance. The next section includes a few illustrations.

Each of the high performing companies had a very disciplined project change management process.

Examples of Cross-Functional Supply Chain Synergy

As noted earlier, it is much more likely to achieve best practice performance in each supply chain function if all three areas have aligned objectives and are working toward a common goal of providing outstanding customer service with world class efficiency. We searched the GSCI best practice data for examples of situations where these three functions collaborated to achieve outstanding results. Before we describe several of those situations, it's important to set the foundation. We found that best-in-class logistics, procurement, and operations functions had several characteristics in common.

- Executives in operations, procurement, and logistics were able to speak the language of the C-suite. They had a seat at the table, when setting overall corporate strategy. They focused their conversations on how they could be integral players in not only driving down cost and working capital, but also supporting top-line revenue growth with outstanding customer service. They were able to communicate to the CEO and the board the key role they played in creating shareholder value. This is consistent with the best practice found in the research done for this white paper: supply chain leaders have the end-to-end supply chain experience and capability to influence other functions and company leaders.
- Each of the high-performing companies had a very disciplined project change management process. They got things done on-budget, on-schedule, and on-benefit. They were also very good at the soft areas of communication and achieving cross-functional buy-in and active support across the company. Supply chain initiatives are often more difficult because they have a highly cross-functional nature, as well as a global component. Constant communication and engagement are essential.
- In each case, we saw significant collaboration with both suppliers and customers and a philosophy of working toward win-win partnerships.

With these principles as a foundation, let's review some real-world examples describing how each supply chain function can have a major impact on how well the other two operate. These examples are consistent with the best practice found in doing the research for this white paper: supply chain leaders create and enable a collaborative environment across the supply chain.

LOGISTICS-PROCUREMENT SYNERGY EXAMPLES

Procurement Selection of Logistics Providers: In more and more companies, corporate procurement is taking over the responsibility for the selection of third party logistics providers. Instead of that being done by warehouse and transportation management, it is now the responsibility of corporate procurement. Clearly, logistics operations must be an integral part of that process; but sadly, that's not always the case.

At one company we audited, 3PL selection became purely a corporate procurement process. Corporate procurement was concerned that there were too many "buddy relationships" in place, and made it a point to select all new providers, without much input from the company's logistics function. Over the next six months, on-time-delivery rates fell from 99.5 percent to 96.3 percent, with a similar drop off in customer satisfaction - their customers noticed and were upset. In addition, there was a constant struggle to procure enough equipment to transport the company's goods due to the low-price contracts negotiated and the shortage of transportation assets in the marketplace. Manpower had to be added in logistics to deal with a situation that, on many days, took on near crisis proportions.

In addition, a number of collaborative relationships had been painstakingly built over years and were yielding dividends. Those ended overnight. The carnage was not limited to the transportation operations. In the distribution centers, damage rates increased from a Six Sigma level of three pieces damaged per million handlings to a 1 percent damage level (10,000 pieces damaged per million handlings), resulting in millions of dollars of scrap. Also, in one distribution center, a union campaign was very narrowly defeated after the expenditure of significant resources.

In spite of stories like this, the involvement of corporate procurement has been a growing trend. One best practice is to have a dedicated procurement function within the logistics function. This preserves the use of good procurement practices while also keeping the business closely involved in the process. And there are a growing number of examples of procurement and logistics working together successfully. In one Maine Pointe example, procurement and logistics teamed up to write new contracts with existing carriers, and select several new carriers, all resulting in a double-digit improvement in the freight spend. In another success story, procurement leveraged its extensive global connections to help logistics successfully select more efficient global ocean carriers and freight forwarders. In more and more companies, procurement is working with logistics to co-develop a leading sourcing strategy for third party logistics providers.

These examples are consistent with a best practice found in doing the research for this white paper: supply chain leaders create and enable a collaborative environment across the supply chain.



Whether corporate procurement is involved in 3PL selection or not, our white paper *Best Practices for Selecting and Managing a 3PL* specifies a detailed best practice process that should be followed. Some high-level highlights include:

- Start with an internal assessment of current and future needs.
What 3PL services will you need now and in the future?
- Plan in detail the 3PL selection process that will be used. Select several 3PLs to evaluate that have a realistic shot at the business but not too many
- Gather and cleanse the data that the 3PL will need in constructing an accurate cost bid. Often front-end data are inaccurate, and that always leads to major problems down the road
- In developing RFI/RFPs, be as specific as possible. Set a schedule and stick with it
- Evaluate, interview, and select

Inbound freight: (i.e. transportation of materials from a supplier to the firm) Procurement is often responsible for negotiating the method of component materials delivery and whether it will be freight prepaid or collect. In other words, will the firm or the supplier be responsible for inbound transportation. If internally controlled, logistics must supply and schedule the transportation assets for on-time pick-up and on-time delivery. We discuss this topic in detail in the following pages. It's a classic intersection of operations, logistics, and procurement.

Packaging: Package design for materials coming from a supplier can be a critical factor in the efficiency of warehousing and transportation operations, and even manufacturing operations. It could also impact the firm's sustainability efforts. Package design should be negotiated by procurement, with heavy input from logistics and manufacturing. In warehousing operations, package design can determine stackability, the amount of de-trashing effort required, and be critical for damage prevention when using the material handling equipment. In transportation operations, packaging can impact the ability to provide a damage-free ride and also be able to fill the truck cube.

One large retailer had a product designed so that it would be cubic in form rather than irregular. This helped to fill the cube in the trucks and reduced transportation costs. There are about 3,400 theoretical cubic feet in a 53-foot trailer. By working with their suppliers to resign packaging, they were able to increase the average cube of their shipments from 2,250 to 2,980. This was a 32 percent increase in the cube of the trailer filled, with a corresponding reduction in freight costs.

Automated Shipment Notices (ASN): Procurement negotiations should make sure suppliers can meet the requirement for advanced shipping notices (ASNs). World-class receiving is highly enhanced through the use of ASNs. An advance shipping notice notifies the DC of a pending delivery, and is usually sent in an electronic data interchange (EDI) transmission. Suppliers use ASNs to list the contents of a shipment as well as additional detailed information describing the shipment's composition and configuration. By transmitting the ASN before delivery, receiving cost can be reduced, and accuracy improved.

ASNs make labor planning much easier since DCs know in advance the shipments that will be hitting their docks. ASNs eliminate most data entry (and data entry errors) at the time of receiving. DC receiving operations can do quick scans of barcodes on shipping labels and electronically match that to the ASN information. This improves inventory accuracy, a critical factor in managing inventory and customer service. Cost reduction in the receiving process according to our benchmark data is in the 40-50 percent range.



LOGISTICS-OPERATIONS SYNERGY EXAMPLES

Inventory Management: Logistics is often the supply chain discipline that has production planning and inventory management responsibilities within the firm. It sets the production schedules for operations hopefully in a way that optimizes manufacturing efficiency while maximizing customer service and inventory turnover. The volatility and granularity of production requirements greatly influence cost in operations. Customer service needs must be met but not with unnecessary cost and inventory. Customer and SKU segmentation can be very helpful. Not all customers and SKUs are equal.

We interviewed several people in the factory operations at a large durable goods manufacturing company and heard that they were being asked to build more and more SKUs every week. This resulted in shorter runs, and more changeovers, causing more overtime. We asked if they were sure all of these SKUs were needed. They responded that it wasn't their place to question it. They simply needed to be good soldiers and get the job done. Later we heard that a tipping point had been reached, and in spite of a tremendous effort by the operations team, costs kept climbing. They missed their productivity goals badly. They told us that they were caught in a death spiral of working longer and longer hours and seeing worse and worse performance; not a good place to be.

Logistics can and should help operations with a situation like this. Having the inventory management responsibility, they should challenge marketing regarding

the need for new SKUs. They should be the ones asking the hard questions: What is the return on the added investment of more SKUs? Can we get by with less? When a new supply chain leader came into the company described above, she asked these questions and more. She was horrified to discover that 38 percent of the total SKUs did less than one-percent of sales. A subsequent SKU rationalization program was a big part of turning things around in manufacturing operations.

Inbound Transportation: Logistics often manages inbound transportation of raw materials to the manufacturing operations. If raw material and components are not delivered on time and damage free, Lean manufacturing operations struggle, causing costs to increase and raw and work-in-progress inventory to rise. As noted above, we fully address inbound transportation opportunities later.

PROCUREMENT-OPERATIONS SYNERGY EXAMPLES

On Time, Damage Free: Procurement negotiates supplier agreements to deliver raw material from the supplier on time as well as damage and defect free. Procurement administers the supplier scorecard and conducts supplier reviews to ensure this performance. Procurement must hold suppliers accountable, and take rapid action when there are problems that disrupt operations. If factory operations have any chance of operating close to Lean-Just In Time, inbound material must be on time and damage free. In more than one case, we have seen on-time and damage-free requirements take a backseat to the purchase price variance (PPV) goals of procurement.

Quality: Similarly, the quality of raw material components in a manufacturing operation must be close to perfect. Procurement must negotiate a world-class quality standard, and hold the suppliers accountable. In a Maine Pointe example, this meant devising and implementing sourcing quality protocols, which virtually eliminated non-conforming product from arriving at the plant.

Risk Management: Procurement must work with operations to manage risk. Should a component be single-sourced to maximize the leveraged buy, or should it be dual sourced? In one company, corporate procurement found that they could realize a 3 percent price reduction by concentrating all of the volume in one supplier. Needless to say, procurement was highly incentivized to reduce PPV. When asked if they considered risk, they said it was no problem. The supplier had enough capacity in two locations to more than cover their needs. Later we learned that a perfect storm had ensued. The supplier signed on a new customer stretching their capacity, and then a fire destroyed one of their facilities. Single sourcing in this case proved to be disastrous.

Based on a GSCI study, 26 percent of component parts are single-sourced. In some cases, there is no choice. Manufacturing operations and procurement should collaborate on an acceptable risk profile when deciding whether to single source materials.

Supplier Lead-Time Management: Procurement must help operations manage lead times (both mean and standard deviation) from suppliers. This is especially true for international suppliers. Lead time and lead-time variability from Asia to the US can be extremely challenging. Managing lead time is one of the most underutilized levers to manage cost and inventory in operations, according to the findings from our supply chain audits.

In one of those audits, we asked an interviewee from procurement if they truly managed lead time from the suppliers. After some initial confusion, the interviewee told us that they had lead-time data loaded into their advance planning and scheduling and material requirements planning systems. We asked them how the lead-time data were obtained, and eventually found that an IT analyst, based on several qualitative conversations with operations, simply inserted some placeholders into the system.

This lead-time information was expected to be temporary until accurate data were obtained. That was two and half years ago. It was obvious that lead time from suppliers was not being managed. To management's credit, when confronted with this situation, they created a process that eventually resulted in aggressive lead-time goals per component (goals for both mean and standard deviation). Furthermore, aggressive targets for continuous improvement were set. Three years later, they credited lead-time management with helping them take \$57 million, or 31 percent, out of their raw and work in process inventory.

A FINAL EXAMPLE OF COLLABORATION: INBOUND TRANSPORTATION SITS AT THE INTERSECTION OF LOGISTICS, OPERATIONS, AND PROCUREMENT

Inbound transportation, as mentioned earlier, is a great opportunity for logistics, procurement, and operations to collaborate. All three areas should be involved. Procurement needs to negotiate the responsibility for inbound transportation with the suppliers. If inbound transportation is managed internally, the logistics function must control transportation and delivery. And finally, manufacturing operations must have an excellent inbound transportation process to assure a consistent parts supply.

Inbound transportation may not be an exciting topic in the boardroom of a typical corporation, but it perhaps should be. It is a critical link, and sometimes the missing link in the supply chain. But, it's surprising how little some companies



know about their inbound transportation link. As one supply chain executive told us, “We cut a PO and the material shows up, and that’s about it.”

Many line groups don’t know their inbound cost in detail, and don’t have visibility to inbound flows. That lack of visibility negatively impacts their ability to manage inventory. This is an area where there could be a lot of low hanging fruit.

There are a number of factors that make it advantageous to control the inbound transportation flow from a firm’s suppliers to its DCs.

- Separating freight cost from product cost allows each to be controlled in an independent, disciplined way. Controlling inbound makes it impossible for a supplier to make an excessive profit on the freight portion.
- Control of inbound freight provides better visibility of your transportation flows. This has the direct benefit of helping reduce inventory by knowing that a load will arrive in time to serve your customers. Companies have told us that this inventory reduction benefit was actually the greatest benefit of controlling their own inbound transportation. On the other hand, some firms achieve plenty of visibility with prepaid flows by requiring their suppliers to provide current information, and with disciplined must-arrive-by dates.
- Firms can better leverage their private fleet to pick up supplier loads and avoid empty backhaul miles.

The best practice is for procurement to ask for two prices from their suppliers: the price with freight included—freight prepaid—and the price without freight included—freight collect. But, there are plenty of cases where this is not feasible, and the parties need to go through a process to unbundle the unit price from the freight cost.

We would be remiss at this point if we don’t take a step back and point out that it may make a lot of sense to allow the suppliers to continue to manage certain aspects of the inbound operation. Large suppliers may be able to manage freight better than their customer can. Also, once the firm takes on inbound delivery responsibility, it assumes the responsibility for the inventory in transit, the liability for cargo loss and damage, and the responsibility for on-time delivery. That said, many companies have achieved huge savings from taking over inbound freight management responsibility.

A FINAL NOTE: LOGISTICS, OPERATIONS, AND PROCUREMENT COLLABORATION WITH THE DEMAND SIDE

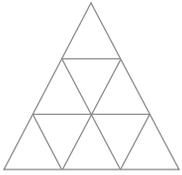
The supply chain functions of procurement, operations, and logistics must interface and integrate with demand-side functions (sales and marketing) as well as finance. Often this is done in an integrated business plan or S&OP process. In many companies, the supply chain organization manages the S&OP process.

When we survey our Supply Chain Forum sponsors (65 leading companies), S&OP is always high on the list of topics they want to discuss. They continue to want to hear about best practices, even though S&OP has been around for more than 30 years. This speaks to the difficulty of cross-functional integration. In one company, we were told that the sales function was no longer being invited to the S&OP meetings because the meetings “took too long.” This firm had an “&OP” process, not an S&OP process. Only with full cross-functional integration can a firm provide outstanding, breakthrough customer service with minimum cost and working capital.

Case Study Conclusion

It’s been shown repeatedly that shareholder value depends on supply chain excellence, which can only be achieved if the supply chain functions—procurement, operations, and logistics—are individually excellent and also work in an aligned, collaborative manner to achieve the full potential of organization. Too often, supply chain professionals point the finger at sales, marketing, or merchandizing as the reason real change can’t be achieved.

But, perhaps we supply chain professionals should look in the mirror, and know that we first have to align with our fellow supply chain functions before we can address the broader issues of full cross-functional collaboration. Once we optimize and integrate the procurement, logistics, and operations, we have the foundation in place to deliver breakthrough results in cost productivity, working capital productivity and cash flow, and most importantly, outstanding customer service.



Supply chain

leaders must expect the organization to collaborate both internally and externally to win in today's complex business and supply chain environment.

Conclusion

Are the brainpower, capability, technology, resources, and scale of your supply chain sufficient to deliver your shareholder and consumer expectations? Do you need the full capability of your suppliers, external manufacturers, customers, 3PL's, and other partners to succeed? Are the supply chain disciplines and company functions working together in a way that delivers your best performance?

Most supply chain professionals are not satisfied with the honest answers to these questions. Benchmark supply chains are renewing their approach and priority for collaborating across every major organizational (internal and external) boundary to ensure they are driving the most value possible.

Creating an end-to-end collaboration culture is not easy. Collaboration takes an investment in time and resources. Collaboration can improve value in the supply chain, but it may not show up on your department's scorecard. It requires us to listen to other supply chain disciplines, business functions, and external partners. It requires us to trust these partners to grow our business.

Supply chain leaders must expect the organization to collaborate both internally and externally to win in today's complex business and supply chain environment. Further, supply chain leaders must expect the investment in collaboration to increase overall system value.

Finally, there is personal benefit in this collaboration work. Managers' leadership capability will grow from the diverse perspectives of suppliers, customers, carriers, and joint ventures. Benchmark company leaders that experience this culture do not want to return to the days primarily consumed by solving problems in isolation.

Benchmark supply chains

*are renewing their approach and
priority for collaborating across
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(internal and external)
boundary.*



End Notes

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Acknowledgement

We would like to acknowledge our Global Supply Chain Institute sponsors, more than sixty corporations representing over \$1.7 trillion in annual revenue, and our advisory board, forty senior executive supply chain officers, for their proactive support, including networking, benchmarking, coaching, financial, and project partnerships. These leading companies are dedicated to delivering world-class supply chain innovation.

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INNOVATIONS IN SUPPLY CHAIN

A FINAL NOTE

We hope you have found the material in this white paper helpful and useful. We at the University of Tennessee's Haslam College of Business are committed to translating our top-ranked position in academic research into information useful for practitioners. We believe the real world of industry is our laboratory. It's why we have the largest Supply Chain Forum in the academic world, with over sixty sponsoring companies. We are always looking for industry partners to assist us in this journey. Let us know if you are interested in being one of our valued partners.

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