

The Buzz About Supply Chain

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Does it mean to you what it means to your organization, suppliers, and customers?.

Points of Interest

At a glance, here are the main points covered in this article. By reading it, you will learn:

- The characteristics of supply chains and supply chain management
- How to map a supply chain
- That supply chains exist in both the manufacturing and non-manufacturing environment
- Uses for a supply chain map

Supply chain. Supply chain management. These words are used often and in a variety of places, but do they mean what you think they mean? Maybe.

"Supply chain" is often defined as the reach from the supplier's supplier to the customer's customer, but many other examples and definitions of supply chains exist. Most are similar, and most are not incorrect. But because of the number of references to "supply chain" and "supply chain management," it is important to understand the context in which the words are used in order to understand their meaning. More importantly, it's critical that the same working definition be understood and used by members of a supply chain in order to coordinate efforts, find savings and greater efficiencies, and positively affect the chain.

Defining and mapping the supply chain may uncover opportunities for quick cost reductions, but supply chain management provides a different type of cost reduction opportunity. It's a sustained-over-time means to savings. It's what happens after the quick cost-saving initiatives have been tried. When the CEO asks for more savings, supply chain management is what comes next. It takes time to put into practice, but continuously applied, supply chain management has the potential to yield sustainable savings sought by CEOs.

When looking for ways to manage and improve the supply chain, begin by defining and understanding the characteristics of supply chains and supply chain management. Then, map the supply chain. The mapping activity helps supply professionals identify links and gaps causing inefficiency and increased cost, and the map shows, graphically, where an organization's time and efforts would be best spent. This article illustrates a hypothetical supply chain and walks through the questions and steps for mapping a supply chain.

Supply chains exist in every organization whether they're recognized or not. In a manufacturing environment, it's straightforward to trace the material and product flows that link a supply chain. In non-manufacturing organizations, information flows and services may be traced in addition to product flows. Every organization has unique chains tracing distinct flows, and all organizations, regardless of sector, benefit by tracing their own chains and determining the supply chain management strategies that will fit best.

Use this article to define supply chain characteristics, map supply chains, and apply supply chain information in manufacturing or service organizations.

What is a Supply Chain?

Although "supply chain" and "supply chain management" are popular business buzzwords, differing opinions of what a supply chain is may actually hinder the ability to manage it.

Understanding the characteristics of supply chains and supply chain management enables an organization to customize its initiatives to fit its business. Characteristics of supply chains and supply chain management are described in the following statements.

- Supply chains are multi-tiered - they span beyond an organization's immediate suppliers and customers.
- Supply chains are customer driven.
- Supply chains exist externally and internally, requiring cross-functional effort.
- Supply chain management is an ongoing journey - not a destination.
- Supply chain management activities include good purchasing activities, but good purchasing activities are not necessarily true supply chain management activities (such as logistics or distribution).

Multi-tiers. An important characteristic of supply chains is the involvement of multiple tiers of suppliers and customers - both internal and external. Every organization has suppliers and customers; therefore, any firm that an organization does business with will also have links to suppliers and customers.

It is not logical to focus on each tier extensively. In some cases, a fourth-tier supplier might not even be known. However, understanding that the supply chain has multiple tiers - beyond just a supplier and a customer - will help supply professionals know what to focus their efforts and time on while making good decisions that do not negatively affect other tiers.

Customer driven. Supply chain management refers not only to how an organization obtains supply but also to how it supplies its customers. To be effective, a supply chain must be customer driven. This is why some people may refer to a supply chain as a demand chain. The customer's demand is the catalyst to the supply chain.

In their 2001 CAPS Research report, "Achieving World-Class Supply Chain Alignment: Benefits, Barriers, and Bridges," Stanley E. Fawcett, Ph.D., and Gregory M. Magnan, Ph.D., state that "world-class supply chain companies never lose sight of customer needs. They have effectively identified key customers, evaluated critical customer success factors, and begun to build processes back into suppliers to deliver quality and responsiveness at the lowest possible cost."

Managing customer-driven supply chains may be challenging as supply professionals may not frequently interact with external customers. As such, it may be hard to determine customer needs. But internal sources such as salespeople, customer service representatives, market researchers, and people involved in operations are more familiar with customers and can provide valuable information and insight that benefit the whole supply chain's ability to service the customer.

Not just external. Much of this article focuses on external supply chains. However, it is important to also examine internal supply chains and the need for cross-functional effort in supply chain management. Consider a hypothetical example in which an organization needs to lease an office in a new location. Various experts within an organization may be involved in this process. Perhaps an operations group is involved to determine whether possible offices will accommodate the work to be done. Executive management is involved, determining that the office is in a strategic location. Salespeople may give input as to the proximity to their sales areas. The legal department is involved

in setting up the contracts together with supply management which may lead the build, buy, or lease decision. Human resources may be involved in learning the regulations associated with doing business in the particular area as well as hiring or relocating employees to work there. For a process like this, the internal supply chain must work together, considering the needs of each link, to find the best solution.

Ongoing journey. Supply chain management is challenging because it requires extensive time and the collaboration and cooperation of many internal and external parties. It's also challenging because as organizations change, suppliers change, and as internal and external contacts change, supply chains change. Management support is needed and strong relationships need to be in place for effective supply chain management to work. For these reasons, supply chain management is a continuous journey.

Is it really supply chain management? It is common to hear of supply departments called "supply chain management" or to hear of supply professionals called "supply chain managers." However, not all supply chain management departments or supply chain managers actually conduct true supply chain management activities. Supply chain management includes good purchasing, but good purchasing activities are not necessarily true supply chain management activities.

Supply chain management involves integration and consideration for other links in the supply chain. Many activities such as strategic sourcing, supply base reductions, supplier alliances, etc., are great purchasing practices, but may not be supply chain management activities. If the activity is conducted internally with no thought of the impact on any other organization besides the immediate customer, then it is not a supply chain management activity. These activities are elevated to a higher level when consideration is given to the impact on other links of the supply chain. For instance, how will single sourcing for a commodity affect other parts of the supply chain? If the single-sourced supplier has a holdup in production or can't provide a service in a timely manner, how does it impact the internal supply chain or the customers that are one tier or two tiers downstream? Robert Parker, ISM instructor and former executive director of the National Initiative for Supply Chain Integration (NISCI), wrote in an NAPM 84th Annual International Purchasing Conference Proceedings article that much of the waste in supply chains comes as a "result of unintended consequences of a decision that looked optimal within the link making the decision, but created greater inefficiencies or other problems elsewhere in the chain."

To gauge how integrated an organization is with its supply chain, Fawcett and Magnan have created a diagnostic tool with questions to make that determination. The tool comes from their 2002 study, "A Supply Chain Diagnostic: Is Your Supply Chain Fully Integrated?" View the diagnostic tool: [Supply Chain Diagnostic Elements](#).

Understanding the characteristics of a supply chain makes it easier to take the next vital step in supply chain management - mapping the supply chain.

Hypothetical Internal Supply Chain



Each unit in an internal supply chain shares information with the other units. Each has a relationship to varying degrees with every unit. On the left side of the diagram are those elements most closely related to supply issues in this example, and on the right side are those elements most closely involved with customer issues. Other units may be included or omitted according to an organization's structure, and the nature of the business determines where each unit is positioned.

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Download a [Hypothetical Hotel Supply Chain](#)

Supply Chain Mapping

It's been said that to achieve goals, they must be written down. Applied to supply chain management, to achieve an optimized supply chain, the supply chain must be documented - or mapped. How can a supply professional know where to look for inefficiencies without seeing it? How can a professional make business decisions, ensuring that no part of the supply chain is negatively affected, without knowing who the other members of the supply chain are? Mapping helps to generate an awareness of the other members and how directly they're impacted by an organization's decisions.

When mapping a supply chain, it may be helpful to rely on a model. The model can be used as a framework for getting started, and then an organization can plug in its own elements.

Most supply chains, when mapped, look quite complex with many elements. The resulting supply chain is not a concise, linear graphic. In fact, this is why some organizations refer to their supply chains as supply networks with all elements pointing in the direction of the end customer.

See the sample supply chain above, which maps a hypothetical chain in the hotel industry. While many elements are captured in this one graphic, other organizations may find it more valuable to map their own generic templates to apply to individual supply chains, or they may map several supply chains within their organization. Supply chains can be mapped by commodity (such as the supply chain associated with temporary labor), by the product or service that is provided by an organization (such as the supply chain associated with providing hotel service to the leisure traveler), or by relationship (such as the supply chains associated with physical, financial, relational, and/or informational flows). In the sample, many of these components are combined on one diagram.

This model is just a hypothetical example, but it includes a few of the types of supply chain relationships that may exist within the chain. For example, the chart depicts an outsourcing relationship and a distribution relationship.

Supply chain maps may also demonstrate a lengthy chain of suppliers (fourth- and fifth-tier suppliers) that eventually reach the customer. In the sample chart, the example of lumber to build a new facility is used.

Supply chain maps may also reflect the way a business is organized. In some cases, a conglomerate of organizations is an active supply chain member, creating contracts with large suppliers for all organizations under its umbrella to use. Other conglomerates may own franchises, chains, or other organizations, but play little or no role in the operation of those organizations. The sample map depicts some involvement by the hotel conglomerate, but more of the contracting is conducted by the individual location or by the hotel chain or brand. Mapping your own supply chain, or modifying a model from a book or magazine, allows you to customize it and make it work best for your organization.

A significant part of the sample map denotes the physical, financial, relational, and informational supply links using colored lines. These four linkages are actually sub-supply chains within an organization's complete supply chain. Joseph L. Cavinato, Ph.D., C.P.M., director of ISM's Center for Strategic Supply Leadership (CSSL) and ISM professor of supply management at Thunderbird, The American Graduate School of International Management, defines these four supply chains in the following way:

- Physical - the actual movements and flows within and between firms, transportation, service mobilization, delivery movement, storage, and inventories
- Financial - the flows of cash between organizations, incurrence of expenses, and use of investments for the entire chain/network, settlements, and accounts receivable and accounts payable processes and systems
- Informational - the processes and electronic systems, data movement triggers, access to key information, capture and use of data, enabling processes, and market intelligence
- Relational - the appropriate linkage between a supplier, the organization, and its customers for maximum benefit, including internal supply matter relationships throughout the organization

After an overall supply chain is drawn, these links can be added, as in the sample, or some organizations may find value in actually mapping the entire informational supply chain or the physical supply chain for increased focus. To map the flows for each of the four sub-supply chains, trace the flow of materials, money, information, or relationships.

When mapping, it can be useful to ask questions and diagram the answers, suggests Anna E. Flynn, Ph.D., C.P.M., vice president and ISM associate professor for ISM. Questions may include:

- Who is the final customer?
- Where do products or services end up after each element?
- Who are the major players in each chain?
- Who is paying whom?
- Whom does each member sell to?

Because an organization may end up with an enormous supply chain map if it considers every customer and every supplier, Flynn suggests using an ABC, Pareto, or 80/20 analysis to determine which customers and suppliers to include in the map. Perhaps, initially, those suppliers and customers involved with the greatest amount of spend for an organization would be mapped.

The Service Supply Chain

Because a tangible product can be traced through a supply chain in the manufacturing environment, there is sometimes the perception that the term "supply chain" applies only to the manufacturing sector. However, the service supply chain, as described in the Winter 2003 Stanford University newsletter, *The Supply Chain Connection*, "encompasses service parts, the infrastructure, the service personnel, and the associated knowledge." Cavinato describes the service supply chain industry this way: "In service firms and organizations, supply chain management deals with satisfaction of mission imperatives (delivery of medical advice, communications services, financial transactions, research and development, entertainment, etc.). Nearly every service involves the use of people, something physical (whether it be an asset or part of something performed), an action, and a time element."

John MacLean, vice president of purchasing for American Airlines, Inc. in Dallas, with experience in both manufacturing and the service industry, notes that manufacturing supply chains and service supply chains are not different. He says every organization has supply chains that enable it to provide products or services to a customer.

To demonstrate his point, MacLean uses the example of food served on an airplane. In the case of chicken fillets, the airline contracts with a meat-packing company for a quantity of chicken breasts with a certain weight and quality. The chicken is delivered to a distribution center unique to the airline industry. The distribution center stores the chicken, and then distributes it to the catering kitchen for preparation and cooking. It is then delivered to the airplane. To provide this service to its customers, the airline is concerned with time to market as well as cost-effectiveness within that supply chain.

During difficult economic times, it's tempting to look only for sweeping ways to slash costs. While supply chain management is not the next big thing to immediately trim costs, it is something that will, in the long run, make organizations more competitive through a focus on customers and a focus on cutting supply chain inefficiencies. Organizations and professionals may not know exactly how to start when managing supply chains, but the organizations that excel are those that are willing to improve and innovate, as MacLean suggests, and those that will simply get started - experimenting and figuring out what to do along the way. ism

EXAM ALERT MODULE 2

"Box page 28"

After a supply chain map is complete, what should supply professionals look for? How is the map used?

Pay attention. Look first for the areas that deserve attention. Again, because time and resources may not be available to devote effort to everything right away, look for ways to prioritize what will receive dedicated attention first. Rely on the organizational strategy. If time is important to an organization, then look first at elements of the supply chain where time may be saved. Could a first-tier supplier provide a service that has been performed by a second-tier supplier in an effort to save time? If an organization is concerned with cost and/or quality, look at parts of the supply chain that could be optimized to improve on these areas.

Areas of significant expense are other parts of the supply chain to which attention may be devoted. John MacLean, vice president of purchasing for American Airlines, Inc. in Dallas, notes that his organization pays close attention to its jet fuel supply chain. Because it is such a significant expense to the organization and so critical in being able to deliver its service to the end customer, the organization involves itself early in this supply chain - all the way back to the crude oil in Venezuela. It pays attention to the efficiency of each step in the supply chain as well as the cost to deliver that product. Contrast that with office supplies - a far less critical product for which the organization consciously chooses to focus only on the distributor, a first-tier supplier.

For elements that are worthy of attention, but perhaps not extremely critical, supply managers might instruct and reinforce the idea of supply chain management with suppliers and then trust them to look for inefficiencies. It is impossible to control every facet of a supply chain, so strategic sourcing and supplier selection become even more important in supply chain management. The goal is to find suppliers that are not only committed to supplying your organization but also committed to supply chain management and finding greater efficiencies in their supply chains. Find inefficiencies. In

addition to identifying what to focus attention and resources on, the map provides a great visual for locating inefficiencies. In a June 2002 CAPS Research PRACTIX article, Robert Handfield, Ph.D., suggests that teams using supply chain maps can uncover opportunities for better supply chain performance as they relate to:

- Areas of low inventory turns in specific areas of the supply chain.
- Potential areas of cycle-time improvement across supply chain members.
- Delivery reliability across the chain. In production supply chains, manufacturers are dependent on having materials ready when they need them; downed production lines are costly.
- Quality issues.
- Flexibility.
- Information requirements to help alleviate the problems detected during analysis.

Use technology. Seeing a visual depiction of the supply chain also assists supply professionals and others in the organization in determining technology needs - specifically, identifying what processes could be automated (links in the financial and informational supply chains are good places to start looking). Organizations may consider supplier relationship management (SRM) and customer relationship management (CRM) systems or electronic sourcing tools to streamline processes, or they may identify ways to use the current tools better - particularly for better information sharing. Organizations may also identify more basic uses for technology throughout the chain, encouraging suppliers upstream in the chain to use Web-based ordering instead of manual ordering. Organizations may also make more use of electronic scorecards that capitalize on real-time information. Suppliers then have an opportunity to correct defects before they flow too far downstream.

Think lean. A complex supply chain map with numerous links and elements encourages leaner thinking. Look for places to reduce the size of the supply chain by consolidating suppliers where possible. Look at those parts of the supply chain that are not competitive, examine the parts that do not satisfy the customer's needs, and then improve, replace, or eliminate those elements and links.

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YoURLinks

Check out the Web sites below. These URLs provide additional information related to topics covered in this article.

www.ism.ws

Institute for Supply Management™

www.capsresearch.org

CAPS Research

www.supply-chain.org

Supply-Chain Council

www.stanford.edu/group/scforum

Stanford Global Supply Chain Management Forum