CHAPTER 1
The Supply Chain: Past, Present, and Future
James A. Tompkins, Ph.D., President, Tompkins Associates

Much has been said and written about the supply chain and various attempts to optimize the way it functions. It seems appropriate in this introductory chapter to first improve what is meant by the term “supply chain” before identifying the path to supply chain excellence. The term “supply chain” is used to visualize the relationship, or linkage, between trading organizations. Typically it involves the flow of goods, services, and information from the raw materials level through to processing, distribution, consumption, and disposal. Each level is represented by a link, and together the links form the total supply “chain.” Although materials may generally flow in one direction, starting at the raw material level, information in an effective supply chain flows in both directions.

Throughout the years, organizations and companies have viewed the supply chain through two perspectives. The first is the logistics perspective, which focuses on the internal coordination of materials. The second is Supply Chain Management (SCM), which focuses on the optimization of individual links while trying to control change. The future of the supply chain, however, does not lie in either of these limited perspectives.

How Business is Changing
The way we view business has changed. Today’s supply chains face many challenges. Stock-keeping units (SKUs) continue to grow, boundaries between manufacturing and distribution are blurring, and deverticalization—a de-layering activity that creates the opposite of a vertical industry—is becoming a reality. These factors have also brought about the major supply chain challenges of the present: channel structure and relationships, customer satisfaction, information systems and technology, the global economy, and the shift from company vs. company to supply chain vs. supply chain.

To gain competitive advantage in the supply chain vs. supply chain wars, an organization must develop a strategy that first encompasses today’s best supply-chain practices, and then provides a bridge for attaining best practices in the future. The strategy advocated here is to pursue the journey of the Six Levels of Supply Chain Excellence: 1) Business as Usual, 2) Link Excellence, 3) Visibility, 4) Collaboration, 5) Synthesis, and 6) Velocity.

To understand why the Six Levels of Supply Chain Excellence can ensure supply chain success today and tomorrow, it is necessary to look at the limitations of the past. This chapter discusses logistics, why SCM is not enough, what is happening today, and finally the promise of success today and tomorrow represented by the Six Levels of Supply Chain Excellence.
The Past: Logistics, Approaches, and Boundaries

Logistics focuses on the internal coordination of materials management (raw materials), material flow through production (work in progress), and physical distribution (finished goods). In other words, logistics begins with the need to order raw materials and ends when the finished goods are shipped. Change or turbulence in the supply chain from either suppliers or customers is viewed as a major irritant and efforts are put forth to minimize the effects. Historically, logistics has never looked at true integration or the issue of change. Its focus is internal.

Approaches

It is much easier to grasp an approach than it is to understand and implement a process. Therefore, many organizations have looked to approaches to help them meet supply chain challenges. An approach focus, rather than a process focus, unfortunately creates Management by Fad (MBF). When a technique or method failed, people often looked for the next new thing and grabbed that latest fad approach for industry woes. First one thing, then another. First they did it, then they re-did it, then they were beyond re-doing it. They engineered, re-engineered, re-re-engineered, and then they were beyond re-engineering. They tried on a new technique and insisted that it fit—until the seams finally burst.

Some of the approaches they used (and may still be using) are Demand Chain Management, Demand Network Management, Demand Network Integration, Value Chain Management, Customer-Driven Demand Network, Supply Chain Coordination, Supply Chain Integration, and Demand/Supply Chain Management.

Demand Chain Management handles order management, distribution logistics, inventory replenishment, and demand planning. Its focus is the link. Demand Change Management looks downstream and focuses on only the demand aspect of the supply chain.

The Value Chain Management mindset goes a bit further, examining both the demand and supply requirements of the supply chain. Unfortunately, Value Chain Management is still an approach, not a process. It pursues optimization instead of meeting the true needs of continuous improvement.

Supply Chain Coordination is an integral component of supply chain design. Also, well-coordinated discrete activities are more efficient than disjointed independent action. However, Supply Chain Coordination still allows the slowest or weakest link to determine overall operating efficiency and speed of the supply chain. Most importantly, Supply Chain Coordination does not mean Supply Chain Integration, as it is still based upon link optimization.

Supply Chain Integration is viewed as producing greater technological innovation, leveraged knowledge, shared business risks, shorter cycle times (both production and design), and integration of production planning. However, like all the other approaches, it does not provide the tools for meeting today's supply chain challenges.

Demand/Supply Chain Management is similar to Value Chain Management in that it is the combination of what is seen as traditional supply components (e.g., purchasing, inventory management, MES, MRP, and process control) with what is seen as traditional demand
components (e.g., demand management, planning, scheduling, sales, order fulfillment). Like SCM, Demand/Supply Chain Management is a logistics concept, and it still focuses on link optimization.

**Boundaries**

All the approaches described above share one characteristic: Each has boundaries.

To succeed today and tomorrow, supply chains cannot have boundaries. There have to be partnerships, not only link-to-link, but within the total chain, in order to accomplish the objective common to both present and future supply chains. That objective is the answer to the question all organizations ask: “How do we keep our customers happy, grow our business, and increase profitability?”

**Today’s Supply Chain Challenges**

As discussed under the above section, “How Business is Changing,” supply chain members face a number of crucial challenges today. These challenges, described below, require new ways of thinking, new strategies, and new ways of organizing business.

**Channel Structure and Relationships**

In today’s business climate, channel structures are blurring and relationships are fluid. Industry is removing links from the supply chain, and alternate channels such as catalogs and the Internet are growing tremendously. The partnerships that corporations are establishing represent a leap over one of the highest hurdles in business: the “us versus them” mentality of supplier/customer relationships. Recent trends in commerce, such as supplier certification, are providing added value to the end product and strengthening the supply chain as a result.

Because channel structures and relationships are changing; de-layering, outsourcing, and deverticalization are now a reality. The impact these strategies have is unbelievable. Sometimes they add links to the supply chain, and sometimes they remove them. Whether they are adding or subtracting links, these strategies affect how businesses are organized.

**Customer Satisfaction**

*Customization, customer choice, customer control, customer relationship management,* and *customer-centric* are terms that are increasingly being used to describe the new supply chain focus. This view is a change from the enterprise-wide focus that characterized organizations just a few years ago. Basically, customer needs and desires are dictating what manufacturers produce—and any manufacturer that does not listen will be left behind. Thus, customer satisfaction is paramount.

**Information Systems and Technology**

Information Technology has moved forward faster than anyone has imagined. Ten years ago, voice mail and e-mail were rare. Intrarnets and extranets, video conferencing, whiteboarding, streaming, and Webcasts were nonexistent. The Internet has connected people and information more quickly and easily, and at minimal cost. The World Wide Web has evolved into a place for dialogue, relationships, and the streamlining of processes.
This levels the playing field among competitors, accelerates margin pressures, reduces the value of branding, and increases the importance of providing quality service.

Off the Web, Automatic Identification, communications technology, and business software are being standardized. Systems integrators are writing custom interfaces to allow the exchange of data between various applications. Also, middleware is creating ways to tie disparate programs and systems together, through the use of enterprise application integrators (EAI) and Web application servers.

Global Economy
The success of firms now depends heavily on their ability to reach foreign markets. Business no longer ends at the border of a particular country or continent. Politically, events of the last two decades have greatly decreased much of the isolationism that has plagued business. Trade agreements now ease the tensions and reticence between once-competing nations.

Technology also plays a role in our global economy. The Internet has made the world a much smaller place. With the speed of information and the shrinking distances that it creates between markets, the supply chains we are competing against are just as likely to be halfway around the world as they are to be across town. In many cases, when we are using the Internet to disseminate information, we may not even know its destination.

Supply Chain vs. Supply Chain
In today’s marketplace, the thinking is no longer company vs. company. Today, it is “my supply chain vs. your supply chain.” To deliver maximum value, customization, and satisfaction to the ultimate customer, while at the same time reducing inventory, lead-times, and costs, the supply chain must be integrated and synthesized to function as a single entity. The goal of this entity should be to satisfy the ultimate customer. If it fails to do so, each link, one by one, will go out of business by default.

Today, supply chains must make sure that they are flexible, modular, and scalable, thus being ready to change direction or reinvent themselves as the business climate changes. Supply chain leadership should ask, “How can we work with our supply chain’s systems and processes to ensure that our customers receive what they want?” The answer begins with SCM, goes beyond it, and takes us into the future with Supply Chain Excellence.

Limitations of SCM
The vision of the future requires us to move beyond logistics, limited approaches, and outdated boundaries. It also requires us to examine SCM closely to see how it may be used as a building block for a process—the process of achieving Supply Chain Excellence. In other words, SCM does have a place in the supply chain and is a tool that can be used to start the process of achieving Supply Chain Excellence.

A commonly accepted definition of SCM is “the delivery of enhanced-customer and economic value through synchronized management of the flow of physical goods from sourcing to consumption.” The way SCM is practiced is to view the flow of physical goods from sourcing to consumption from the viewpoint of a link in the chain.
For many years, SCM has tried to be the panacea for curing deficiencies in customer service, communication, and relationships. Yet, despite all of our SCM efforts, we are still losing ground. According to a recent article in Supply Chain Management Review, “Companies are investing in software, hiring consultants, and reconfiguring their physical supply chains in order to capture the promised returns from lean supply chain management. Yet the returns from these investments can be elusive.”

This failing is not due to neglect of the supply chain. Instead, the reason that SCM has not yielded the desired results is because it has been treated as the only and ultimate way to make customers happy, grow business, and increase profitability when, in reality, it is part of a much bigger solution: Supply Chain Excellence. SCM is about optimizing individual links, and this is very important in the process of constructing a supply chain. However, it is not sufficient.

SCM’s limitations begin with its name, which can be broken down into three parts:

1. Supply—indicates a push-only approach to production
2. Chain—indicates individual and discrete links
3. Management—implies a static environment of control and measurement

Problems are inherent in all three. “Push” no longer gets the job done, because it gives control to suppliers rather than the ultimate customer. Viewing the supply chain as individual links is also problematic. Like the practice of medicine in the past, it treats symptoms but does not try to discover a cause. For example, optimizing warehousing without taking into account other elements, such as sourcing, purchasing, production, inventory planning, transportation, and customer satisfaction may not yield the desired results. The cause of warehousing problems might not actually be related to the warehouse itself, but to something else entirely. As for management, the static, controlled environment implied by the term also suggests containment. A healthy, flowing supply chain is not contained. It cannot be, as that would make it resistant to change instead of anticipating and harnessing the power of change.

Furthermore, SCM often does not include transportation costs, link costs, customer satisfaction, quality issues, and manufacturing costs. One of the more unfathomable aspects is the exclusion of manufacturing costs. The blurring boundaries between distribution and manufacturing do not justify this exclusion. The omission of manufacturing implies little or no concern for value-adds and mass customization. Manufacturing must be part of the supply chain.

The final limitation to SCM is how it is approached—as a finite solution, when in reality it is just the beginning in the process of achieving Supply Chain Excellence. Too many companies have missed that point and implemented SCM practices and technology to operate at Level 1 of Supply Chain Excellence—Business as Usual. From several important perspectives—trust between a company and its suppliers, external teamwork and partnerships, integration of external business processes, and customer satisfaction—this approach falls short. SCM should be used as a stepping stool to climb to Level 2 of the
Six Levels of Supply Chain Excellence—Link Excellence. Why? Because Link Excellence is part of the focus of today’s supply chain, along with Business as Usual and Visibility.

The Present: Business as Usual, Link Excellence, and Visibility

Business as Usual
Attaining Supply Chain Excellence is a process. As mentioned above, it has six steps, or levels. It is not important where an organization is in the process, as long as it moves up level-by-level. Level 1, the lowest level, is Business as Usual. At this level, a company works hard to maximize its individual functions. The goal of each individual department, such as finance, marketing, sales, purchasing, information technology, research and development, manufacturing, distribution, and human resources, is to be the best department in the company. Overall organizational effectiveness is not the emphasis. Each organizational element attempts to function well within its individual silo.

It is important to remember that Business as Usual is just the first phase in the six-level journey. After the dot-com to dot-bomb phenomenon, it is easy to think that Business as Usual is the only thing that works. Organizations must avoid this mindset. Many dot-coms have failed, not so much because their processes were wrong, but because the companies themselves did not consider the entire supply chain. Business as Usual must be left behind once an organization starts its climb toward Supply Chain Excellence.

Link Excellence
A common mistake that organizations make is to try to achieve Supply Chain Excellence without scrutinizing their internal operations first. In actuality, no organization should approach its suppliers with the aim of developing partner relationships until it has evolved its individual link into the most efficient, effective, responsive, and holistic one that it can possibly be. Only after one’s link achieves performance excellence can the pursuit of Supply Chain Excellence truly begin.

To achieve Link Excellence, companies must tear down their internal boundaries until the entire organization functions as one entity. Companies usually have numerous departments and facilities, including plants, warehouses, and distribution centers (DCs). If an organization hopes to pursue Supply Chain Excellence, it must look within itself, eliminate any boundaries between departments and facilities, and begin a never-ending journey of continuous improvement. It must have strategic and tactical initiatives at the department, plant, and link levels for design and systems. At this point, some of the initiatives can use logistics and SCM, as long as the organization remembers that neither approach will take it beyond Link Excellence. To make the leap successfully, continuous improvement initiatives are necessary.
Visibility
Supply Chain Excellence requires everyone along the supply chain to work together. However, partners in the supply chain cannot work together if they cannot see one another. Visibility, the third level of Supply Chain Excellence, brings to light all links in the supply chain. It minimizes supply chain surprises because it provides the information that links need in order to follow the ongoing status of orders. Visibility, then, can be considered the first “real” step toward Supply Chain Excellence.

Through Visibility, organizations come to understand their roles in a supply chain and become aware of the roles of other links. An example is an electronics company with a Website that allows its customers to view circuit boards, and then funnels information about those customers to suppliers. Visibility thus requires sharing of information, which requires trust and technology.

Because Visibility is not possible without technology, selecting the right technology is critical. A business application that is suitable for Ford may not work for IBM. If someone has a wooden ladder, a metal rung will not fit it. Therefore, it is important to develop a strategic plan to acquire the right application, so that the mesmerizing bells and whistles do not distract the links to the point that they forget their true needs.

Once a supply chain achieves Visibility, it can move to Collaboration, the fourth level that is described below. Through Collaboration, the supply chain can determine how best to meet the demands of the marketplace. The supply chain thus works as a coherent whole to maximize customer satisfaction while minimizing inventories.

The Future: Collaboration, Synthesis, and Velocity
The supply chain of the future relies on innovative thought while monitoring the changing needs and desires of its customers. If it is nimble and treats even adverse events as opportunities, its future is assured. Each organization within the chain seizes the day and goes forward, secure in the knowledge that it has achieved ongoing Supply Chain Excellence. Collaboration and the levels that follow form the path to achieving this state of excellence.

Collaboration
Collaboration is achieved through the proper application of technology and true partnerships. Various Collaboration technologies exist, and, as with Visibility software, the supply chain must choose the right technology or if it hopes to collaborate properly.

True partnerships require total commitment from all the links in the supply chain. They are based on trust and a mutual desire to work as one for the benefit of the whole.

Characteristics of a true partnership are:

- A commitment to long-term relationships based on trust and a true understanding of partners’ businesses.
- A belief in sharing information, planning, scheduling, risks, rewards, problems, solutions, and opportunities.
- A commitment to working together toward improvements in quality, lead-times, new product development time, and inventory accuracy and management.
- A resolution and agreement to build on each other’s strengths, increase partners’ businesses, and invest in the long-term partnership relationship.
- A commitment to systems integration and organizational interdependence, while still retaining individual identities in order to ensure innovation and creativity.
- The consensus that frequent and open communication at all levels of the organization must occur.
- A commitment to involving partners early in any innovations.
- A commitment to the flexibility required to ensure the best overall performance of the partnership.

Forming a true partnership requires discarding the traditional relationships common between organizations today. The objective of creating true partnerships is to create the same synergy between organizations that the Level 2 process created within an organization. This means first understanding that the term “relationship” is not synonymous with partnership. Instead, a relationship must be transformed into a partnership. This transformation requires an understanding of the following factors:

- No two relationships develop the same way.
- Relationships evolve as comfortable bonds between individuals.
- A positive chemistry must exist between two parties to create a relationship.
- Partnerships evolve from understanding hopes and dreams, and anticipating a bright future.
- Each party must know itself and understand what it is seeking from the partnership.
- Acceptance by indirectly involved parties (e.g., stockholders, government) is as important to the perpetuation of the partnership as acceptance by directly affected parties.
- The relationship, at its core, has interest in the well-being of the individual parties as well as the well-being of the partnership.
- Expectations of how the relationship will develop must be articulated.
- Compatibility is key to a long-term relationship.

Identifying potential true partners should be based on the opportunity for additional contribution to the growth and profitability of the supply chain. This applies to both a customer looking at its suppliers and a supplier looking at its customers. The focus should be on building trust, then communicating clearly, and, finally, adopting a continuous improvement process.

**Synthesis**

Once Collaboration is achieved, the supply chain then pursues the continuous improvement process of Synthesis so that it can harness the energy of change. It is from Synthesis that
true Supply Chain Excellence is achieved, and therefore it deserves particular attention in this chapter.

Synthesis is the unification of all supply chain links to form a whole. It creates a complete pipeline from a customer perspective. The results of Synthesis are:

- Increased return on assets (ROA)—this goal is achieved by maximizing inventory turns, employee participation, and continuous improvement, while minimizing obsolete inventory.
- Improved customer satisfaction—Synthesis creates companies that are responsive to the customer’s needs through customization. They understand value-added activity. They also understand the issue of flexibility and how to meet ever-changing customer requirements. And, they completely comprehend the meaning of high quality and strive to provide high value.
- Reduced costs—this goal is achieved by scrutinizing the costs of transportation, acquisition, distribution, inventory carrying, reverse logistics, packaging, and other sources of cost, and continually searching for ways to drive each of those costs down.
- An integrated supply chain—this ideal is achieved by using partnerships and communication to integrate the entire supply chain, thereby focusing on the ultimate customer.

Supply chains that reach the Synthesis level are going to have major successes. A few already have; they include Dell and Wal-Mart. Their accomplishments were achieved with patience. Synthesis is not achieved overnight. It takes time to remove the boundaries between links of a supply chain. However, if all links are visible and all trading partners collaborate, then Synthesis is within reach.

Velocity
Today’s business environment demands speed. The Internet has created immediate orders, and customers expect their products to arrive almost as quickly. Velocity is Synthesis at the speed of light.

Synthesis with speed creates multi-level networks that meet these demands. They are complex entities that can meet the demands of today’s economy through a combination of partnerships, flexibility, and robust design methods. The emphasis has changed from designing systems and networks that work, to designing systems and networks that not only work, but also work fast. It is the process that will achieve ongoing Supply Chain Excellence.

Conclusion
Supply chains that pursue the journey to Excellence are going to have major successes today and in the future. To make Supply Chain Excellence happen, it is important to be armed with knowledge. Information and knowledge will enable your organization and its supply chain to reach unparalleled levels of performance, create synthesis, and apply the right technology that can make the process happen from start to finish.
Works Consulted