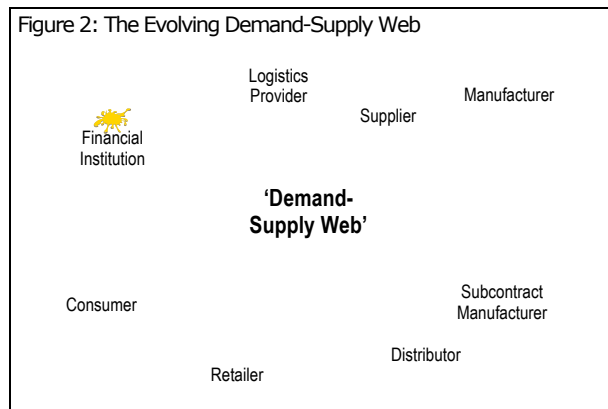


Supply chain management consists of the coordination of demand and supply of products and services between a suppliers' supplier and a customers' customer. It involves the flow of product, information, and money between the 'trading partners' of a company's 'supply chain'. We see the concept of a linear 'supply chain' (see figure 1) evolving more into a non-linear concept of a 'Demand-Supply Web' (see figure 2), where companies and people are more connected, and more 'plugged-in' to each other's products, services, operations, and organizations. This connectivity is rapidly breaking down the walls between trading partners, allowing them to be more in line with each other's operations, and to overcome inefficiencies in various parts of the chain, through better planning and collaboration.



As customers become impatient with poor service levels, and influence ever-increasing proliferation of product variety, supply chains must gear up to cater to these demands. The presence of a growing number of competitors in the global marketplace only increases this pressure. A global world-class supply chain is no longer a 'nice-to-have'; it's a question of survival, especially for companies in the high growth small to mid-market segment who typically compete with each other as well as with larger competitors.

Importance of Integrated Supply Chain Management Processes

It is a well-known fact that supply chain concepts can directly result in companies creating value for their shareholders. Effective supply chain management proliferates profits, increases market share, strengthens competitive positions and boosts the value of the companies. Third party research has quantified the impact. Pittiglio Rabin Todd & Mcgrath (PRTM), a benchmarking firm, finds typical results achievable through an integrated supply chain of 25% to 50% reduction in total supply chain costs, 25% to 60% reduction in inventory holding costs, and 30% to 50% improvement in order fulfillment cycle time. The gaps between best in class and average performers on total supply chain cost are as high as 6% of revenue.² Moreover, a study by Omni Consulting Group concluded that the cost of logistics could be reduced by up to 12.3% for organizations that participate in collaborative supply chain networks.³

Large companies such as Proctor & Gamble, Unilever, and Wal-Mart have seen significant reductions in their cost of goods and increases in their top-line due to better management of their supply chains. Sport Obermeyer, a sporting goods manufacturing company, put great effort into integrating its customers and retailers with its overseas production operations, resulting in "a 60-percent increase in profits and a top ranking in customer satisfaction surveys for several consecutive years."⁴

² O'Marah, Kevin, "Where is the Supply Chain value in B2B?" *AMR Research*, October 2000 (www.amrresearch.com)

³ O'Marah, Kevin, "Where is the Supply Chain value in B2B?" *AMR Research*, October 2000 (www.amrresearch.com)

⁴ Lee, Hau L., "Creating Value Through Supply Chain Integration", *Supply Chain Management Review*, Cahners Supply Chain OEM Group, September / October 2000 (www.SupplyChainLink.com)

The success of these companies is a result of an integrated supply chain that makes smart use of information to orchestrate the activities of the chain⁵. Clearly, there is great value for a company to incorporate leading practices of supply chain management and reap the benefits of streamlining the operations.

What About Technology?

The growing plethora of supply chain technology vendors is offering better and more sophisticated software to their clients. The complex optimization algorithms built into these tools are meant to work out the kinks in the production operations, the freight payment, the inventory levels, and the sales forecasts. Technology no doubt forms an important part of the supply chain equation since it enables the exchange of voluminous information between trading partners within an enterprise, allows for the solving of large and complex business problems, and gives the user a different view of the supply chain operations.

In the past 5 years, the popularity of supply chain software has increased dramatically, with AMR Research projecting a compounded annual growth rate (CAGR) of 41%⁶. This rapid growth has witnessed the rise of several new players in the supply chain space who are evolving new niches, either vertical or horizontal. This market structure serves clients well, since it caters to their specific needs and challenges.

The trend toward web-enabled supply chain software makes the exchange of information between trading partners even more effective, and hence more appealing, than software on traditionally used platforms with limited integration capability. Using the latest technology in open systems, these software players are able to integrate information from several trading partners and leverage this in a collaborative manner to enhance the quality of planning. Several companies have rushed to introduce web-enabled 'bolt-on' enhancements or additions to their existing non-internet software packages. Innovation on this front has been slow, however, due to vendors having committed dollars and resources to support their existing customer base software on non-web platforms.

While technology is making strides in supply chain management, very few companies have considered offering other services that could directly enable the operations of the company and thereby reduce the time-to-benefit overall. For example, one of the benefits of technology that vendors are proposing includes the ability to reoptimize supply chains plans on a weekly or even daily basis. However, while this may be feasible from a technology point of view, consumer products companies are reporting that their supply chain operations cannot react that fast. One of these companies commented, "You can run Materials Requirements Planning (MRP) and Distribution Requirement Planning (DRP) every day, but you can't execute on the plan across a network of 70 distribution centers that quickly"⁷

Technology is hence a necessary but not sufficient solution for improvement in the supply chain of a company. Several other features need to be in place to leverage the existing strength of the company, such as knowledge, consulting, meetings, and other resources.

What About Knowledge?

⁵ Lee, Hau L., "Creating Value Through Supply Chain Integration", *Supply Chain Management Review*, Cahners Supply Chain OEM Group, September / October 2000 (www.SupplyChainLink.com)

⁶ AMR Research 1999, *Supply Chain Management Software Report 1998-2003*

⁷ Newton, Chris "Introspective SCM: Focus Group on CPG Manufacturing", *AMR Research*, July 2000 (www.amrresearch.com)

In order for companies to determine the best ways to improve their operations and set realistic priorities, they should consider acquiring specific knowledge. Among other results, this knowledge would help companies to develop key benchmarks and performance metrics, understand leading practices and organizational development methods, and implement integration architecture.

Benchmarks are important as they have wide-ranging strategic significance when organizations use them to compare their performance against that of peers.⁸ While performance metrics are the mechanisms that companies use to measure these benchmarks. Furthermore, identifying the industry's leading practices allows companies to best utilize their business processes to achieve their benchmarks. Moreover, hiring the right people is key to improving business processes. Certain knowledge is needed to hire these people including appropriate job descriptions, roles and responsibility matrices, and critical success factors. Finally, companies also need to identify the best integration architecture for their technology platforms, so as to be able to cast a wide net to effectively exchange data with their trading partners. Without the proper acquisition of the critical knowledge described above, the company is less effective in pinpointing and performing the appropriate and required activities to improve their supply chain operations.

Our findings indicate that companies are not using knowledge to their advantage. In a recent study of consumer packaged goods manufacturers, every company in the group said that most of their business units operate as autonomous decisions, often making their own Information technology (IT) decisions and measuring against their own benchmarks.⁹ Moreover, according to AMR Research, companies fail to integrate market demand, capacity and order status information to support enterprise wide Key Performance Indications (KPIs). Furthermore, KPIs combining manufacturing, supply chain, and customer service processes are not readily available in packaged ERP, supply chain management, or fragmented plant IT systems.¹⁰ In addition, fragmented IT architectures, complex point to point integration and isolated manufacturing information make it hard to access the performance management information that enables Capability to Promise (CTP), Available to Promise (ATP), and Profitable to Promise (PTP) KPI Processes. The web bridges tradition functional, departmental, and geographic boundaries to facilitate enterprise wide coordination, synchronization and process performance. Shared views of the same data using browser based technology and web based business processes reduce the need to physically integrate systems to move data and view KPI information. Currently, tools and applications supporting KPI monitoring are too rigid to support easily and quickly changing KPIs and measurements.¹¹

Knowledge is one of the key enablers that allow a company to tie the organizational business processes to the technology infrastructure, thereby enabling the process with the application technology. Further, a company can develop it's internal learning mechanisms and capture knowledge that would otherwise go undocumented if a viable and friendly format exists in which knowledge such as internal leading practices, benchmarks, and technology or integration architecture can be captured.

What About Consulting?

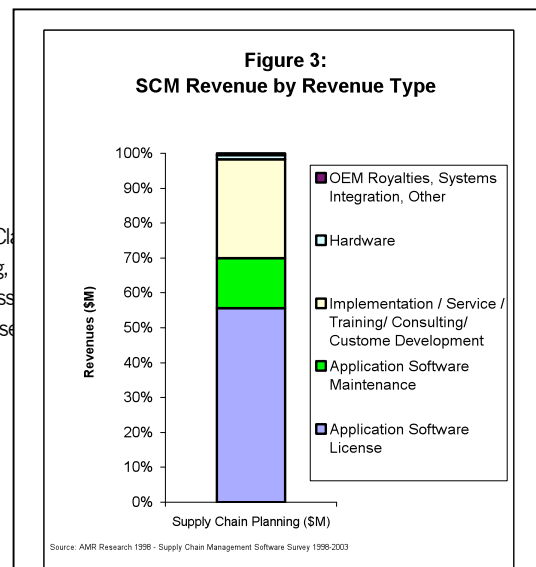
In general, consulting can be broken up into two types: Business Consulting, and Solution

⁸ Greary, Steve and Jan Paul Zonnenberg. "What it Means to Be Best In Cl

⁹ Chris Newton, "Introspective SCM: Focus Group on CPG Manufacturing,

¹⁰ Martin, Roddy. "The Issue: Old KPIs are Blind to New Business Process

¹¹ Martin, Roddy. "The Issue: Old KPIs are Blind to New Business Process



Consulting. Business Consulting deals with the restructuring of business processes within an organization, and Solution Consulting deals with subject matter expertise actual solution being implemented at a company.

Most software vendors currently offer consulting services as a part of their solutions, as this is a large revenue component over and above license revenues. AMR Research projects the breakdown of revenue amongst the various solution components as shown in Figure 3, comprising about 30% of revenues¹².

However, consulting is not being applied effectively and cost-efficiently. The consulting services being provided encompass software solution consulting and don't necessarily extend into the business process area. Moreover, there is a great need for a continuous consulting relationship after the duration of the software implementation project, however the typical consulting relationship rarely extends beyond. This extension is required as more questions arise regarding the solution itself, as well as the "tweaking" and optimization of the software and business processes. Further, shifts in a company's competitive position or an internal re-organization may require a solution re-vamping or supply chain re-modeling

In these days of mergers, acquisitions, and divestitures, it is important that consulting be available over a large global geographic area. In addition, there is a need for this 'perpetual' consulting to be available on a 24x7 basis as different parts of the world have different schedules. The Internet provides an effective, affordable channel for global, 24x7 consulting, however, few firms are taking advantage of this channel. While web-based consulting may not be as in-depth as on-site consulting, there are many issues that can be resolved via a combination of the Internet, phone, and email.

Hence, whereas it is important for experienced consultants to play a role in the company's supply chain operations, in the same way that it is important for a medical practitioner to be involved for a person who is not well. But in the same way that home-visits by a doctor are not done anymore, the need for a consultant to be on-site too has become less and less. There is great benefit to companies where most consulting can be done from an off-site location.

What About Communication?

Improved supply chain integration and collaboration seem to be the missing link in so many under performing supply chains. By sharing demand information, inventory status, capacity plans, production schedules, promotion schedules, promotion plans, demand forecasts, and shipment schedules, supply chain members can better coordinate forecasting and replenishment.¹³ Therefore, supporting integration and collaboration with standardized communication tools is absolutely necessary. For example, last year a well-known consumer appliance manufacturer moved manufacturing operations to China and outsourced them there. What they ended up saving in production costs was lost to a large degree on mismanagement of resources and inventory buildups due to lack of communication. The language barrier, the non-standardization of systems, and the lack of a common planning platform created havoc for the operations of this company.

People are speaking about Collaborative Commerce or C-Commerce more frequently, without really understanding that there is more to it than simply technology. How do you negotiate using technology, or how do you add the element of human contact via technology. Granted, auctions and reverse auctions make the collaborative process more realistic than just a non-interactive

¹² AMR Research 1999, *Supply Chain Management Software Report 1998-2003*

¹³ Hau Lee, pg. 3 www.manufacturing.net

technology process, but it still leaves a void from a human standpoint. Whatever happened to just picking up the phone and talking to the person you've been doing business with for so long without technology!

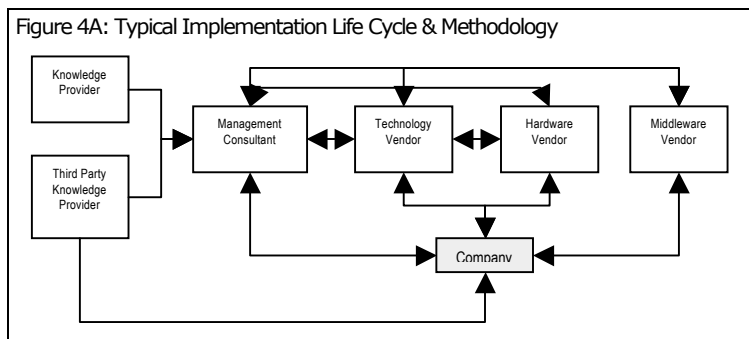
Furthermore, there is a strong and growing need for 'collaboration' to include all means of communication between trading partners. As companies become more global, and as operations become more scattered around the world, the need to tie in people and operations becomes even greater and more crucial for the smooth running of the business. Further, the more global a firm is, the greater the need to keep a tight coordination between the local and the global supply chains, as they are highly interdependent.

Unfortunately, the communication tools offered are not supply chain management savvy. Currently, the vendors offering these tools are in the telecommunications business, such as WebEx®, NetMeeting®. They don't necessarily integrate their tools with the applications for the supply chain community specifically.

There is room for more structured communication to exist between trading partners, which is not necessarily data-driven or data-intensive; more about discussing issues around the supply chain and resolving those via non-data means, but leveraging data as an enabler. Further, for high growth mid market companies, who may not have had formal training in supply chain management, facilitated meetings can be of great use, where a experienced subject matter expert can point out potential trouble spots in the supply chain activities or events that are occurring, in real time, while hosting or facilitating a meeting between a company and its trading partners. In addition, for companies with limited budgets, it is appealing to have web-based meetings where travel is not necessary and the meeting is still as effective as an in-person meeting.

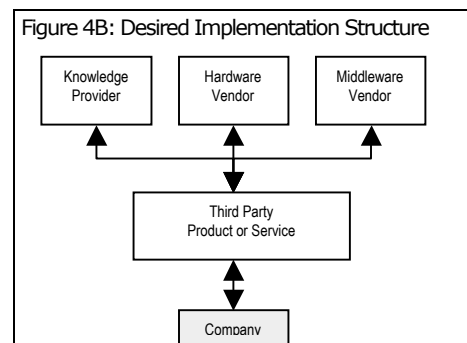
What About Implementation?

When a company implements a supply chain solution, it is most often done in various ways: the most common ways are to either hire a systems integrator (such as a management consulting firm) to implement the solution, hire the technology company itself, or some combination thereof. The most common approach is to follow a methodology which forces the company to buy the hardware and software separately, hire the technology vendor to cover the technology part of the implementation, and hire a management consulting firm to do the reengineering involved. Sometimes the consulting firm manages the technology vendor. The schematic of this situation is shown in Figure 4A.



As seen here, the company has to interact with several teams of different service providers to successfully implement a software technology solution. There are management consultants, knowledge providers, technology vendors, hardware vendors, and middleware vendors to be,

managed and paid separately.



A more desirable model of implementation is where the non-core functions and services are outsourced to a third party who manages the other providers as well as aggregates the management information. Such a model is shown in Figure 4B, where the third party acting perhaps as an application service provider, solution implementation consultant, and knowledge aggregator, serves as a hub for the IT group and User Community in a company. This model provides a faster time to benefit, since the implementation time, decision-making time, selection of IT platform and expenses for hardware would be minimized.

What About Other Resources?

When supply chain planners execute their functions, they frequently discover a need to do research on some aspect of their function. This may include finding news on their industry vertical, particular horizontal function, a new technology that has entered the marketplace, or how best to use their systems. Supply chain specific links are available at a number of different addresses on the Internet, but there lacks one consolidated hub for links to information on a particular topic, functional discussion forums, public supply chain research, career advice or even job listings.

The large membership roster and diverse attendance profile at Council of Logistics Management (CLM) seminars and conferences are a good indication of the general interest level in the subject matter of supply chain management. If the users of these supply chain systems and the people involved in some manner in supply chain management are this interested in the subject matter, there is clearly a need for a hub for interaction and information for this community.

Whereas this in and of itself may not be a dire need in the marketplace, it is an incremental service that enables a planner to become more aware of his/her function, industry, and relevant environment.

The Opportunity - Existing Solutions in the Marketplace Lack a Holistic Approach

As we can see, technology, knowledge, consulting, communication and implementation services are necessary enablers. Currently, these critical success services are offered by a disjointed set of companies, all of who have functional expertise in their own area. Given the evolving needs of clients, both supply chain business process and technology subject matter experts advise that vendors focus on the 'global optimum, rather than the 'local optimum'. We call this a holistic approach to supply chain planning. Niche players are trying to encompass the entire spectrum of products and services, which we find in most cases falls short of client expectations. "Marketing hype from the vendors inevitably claims an end-to-end solution. Don't believe it. Even the most competent players can deliver no more than components. Many deliver tools or a platform that can truly revolutionize B2B interaction, but nothing is really shrink-wrapped."¹⁴ We find great value in niche markets or niche applications, since there is always room to collaborate with other vendors to develop an integrated end-to-end solution, combining best-in-breed functionality that is compatible from a data exchange standpoint, using whatever standards are appropriate to apply.

Companies Want an Efficient Solution

As already discussed in this paper, companies process information in a linear and closed fashion, as shown in Figure 1. They don't share critical information with suppliers, customers, and other trading partners. This lack of communication erodes customer service levels (reduced market share), wastes production capacity (high fixed costs), increases inventory levels (high carrying

¹⁴ O'Marah, Kevin, "Where is the Supply Chain value in B2B?" *AMR Research*, October 2000 (www.amrresearch.com)

costs and obsolescence costs), and slows response times and reduces flexibility (high competitive disadvantage).

Furthermore, existing planning solutions are available at a high cost and take significant time to implement. Planning solutions usually cost about \$0.5m to \$3m, and the implementation costs about twice that. These solutions are typically implemented in 3 to 12 months. Moreover, the consultants who implement these solutions typically leave when the project is completed and post-implementation support is often minimal.

In addition, these planning solutions offer benefits that are difficult to quantify. These benefit analyses typically cost an additional amount over and above the implementation, and are represent snapshot in time, as opposed to dynamically changing over time. Industry benchmarks and leading practices are difficult to come by, and the current sources in the marketplace are more focused on content creation rather than customizing research that already exists.

Hence, the need for an efficient solution arises because:

- Supply Chain Management Software:
 - Has inadequate collaboration functionality
 - Is expensive in terms of hardware and software
 - Takes too long to implement
 - Has an Return On Investment (ROI) that is difficult to determine
- Supply Chain Knowledge:
 - Exists but is difficult to find
 - Does not exist in a client-customized format
- Supply Chain & Systems Consulting:
 - Occurs mainly on a project-basis
 - Is expensive
 - Is not 24x7
 - Is not truly global
- The Combination:
 - Is an integrated combination of the planning software, on-line knowledge, and on-line consulting that does not exist today

Software companies providing this type of portal software as a service (SaaS) offering have a distinct advantage over others offering point solutions.

Deep R. Parekh is a Partner with Equus Group, LLC, a Supply Chain Advisory Services and Management Consulting firm based in New York, NY and Sao Paulo, Brazil. He welcomes your feedback and comments at deep.parekh@equusllc.com, and can be contacted at +1-212-905-3336.