The Multi-Enterprise Challenge: Management and Control Outside the Four Walls of the Enterprise

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Evolution of the Value Chain

Throughout the 1980s electronic equipment companies strived to improve their efficiency by focusing within the four walls of the enterprise. Enterprise Resource Planning (ERP) systems were deployed to connect and monitor the functional silos of internal operations such as manufacturing, accounting, sales and marketing. Supply chain activity was effectively managed within this environment because vertical integration placed most of it within the enterprise. The typical large Original Equipment Manufacturer (OEM) had its own sheet metal shop, paint shop, printed circuit board shop, cable and wire plants, assembly plants and sometimes even semiconductor manufacturing capabilities. Managing the supply chain was viewed as a matter of asset ownership. This is no longer the case.

In the 1990s industries began to focus on “core competencies” and adopted a specialization model. Companies abandoned vertical integration, sold off operations in which they weren’t experts, and outsourced those functions to other companies. This changed their management requirements by extending the supply chain well beyond the four walls and distributing its management across specialized value chain partnerships.

It also refocused the fundamental perspectives of each respective organization. OEMs became brand owners that needed deep visibility into their supply base. They had to control the entire value chain from above instead of from within. Contract manufacturers had to manage bills of material with different part numbering schemes from multiple OEMs and support customer requests for work-in-process visibility and Vendor-Managed Inventory (VMI). EMSs had to manage both the buy side and the sell side of these workflows. Specialization enabled efficiency, but it created new challenges -- specifically, establishing control over operations outside your direct domain.

The multi-enterprise environment is fundamentally different. It includes business processes and workflows unlike those that enterprise platforms were designed to manage. ERP systems are now dependent on external variables that transpire outside of the four walls; success requires coordination of extra-enterprise activity. The enterprise itself, once the centralized source of all information, has become the orchestration point of external value chain activity. Companies are now faced with managing two separate domains; enterprise and multi-enterprise environments. This change has significantly effected the value equation of the internal management systems (ERP) and the external (SCM). Because of this, companies need to focus their ERP on running the enterprise domain, and develop Multi-Enterprise Control Systems (MECS) to manage the multi-enterprise domain.

Summary

In the High Technology industry, every company exhibits multiple personalities. Each participant has its own identity reflecting an internal environment it controls – the enterprise. But each company must also adopt the external personalities of the many supply chains it inhabits – the multi-enterprise. These internal and external “personalities” are in complete contrast and require fundamentally different management strategies. They drive different IT architectures and solutions. To succeed in today’s specialized value chain model, companies need to coordinate across the internal and external elements of their extended value chain. Companies must leverage the value of world class ERP systems to run their enterprise and the value of world class Multi-Enterprise Control Systems to run their multi-enterprise.
Changing the Management Orientation

Specialization has re-engineered entire value chains by segmenting and distributing operations across multiple enterprises. This has shifted the supply chain from a vertical (enterprise centric) to a horizontal (multiple enterprise) orientation. Picture a graph with an X and Y axis. Prior to specialization, the supply chain had been viewed from a single point (the enterprise) with a series of events occurring along the y or vertical axis.

Enterprise Management on the Y-Axis

Each enterprise managed the activity within its vertical orientation and communicated information from vertical enterprise to vertical enterprise. When a demand signal was received by the markets, it was communicated to the brand owner who communicated it to its EMS partner(s) who in turn communicated it to the component suppliers. Because each event was in an isolated silo on the Y axis, there was a lag time between each communication – anywhere from a few days to a few weeks. The information exchanged across these silos was asynchronous. That created a potential for inaccuracies including overages and shortages. Companies addressed this by accounting for variability through buffer inventory. This practice led to excess inventory and reactive sourcing which directly impacted profitability and efficiency.

“Our product is unique in that it’s like fresh fish. The longer you keep it, the more it loses value. In our industry, the product depreciates anywhere form a half to a full point a week. You can literally see the stuff rot. Cutting inventory is not just a nice thing to do, it’s a financial imperative.”

Kevin Rollins, Dell CEO

The specialization model requires a fundamentally different approach to supply chain management. In an in-sourced environment, Y axis management made sense because the issues involved coordination across different work stations within an enterprise. In the multi-enterprise environment, where contribution is spread out across multiple tiers of value chain partners, management needs to be shifted to the X or horizontal axis. Failure to adjust the management horizon causes inaccurate and untimely data exchange which, in turn, generates excess inventory, shortages, liability exposure, poor customer service, and production issues.
Multi-Enterprise Management on the X-Axis

In shifting the management horizon to the X axis, the weakness in the system is effectively addressed. Demand signals are transparent and shared to all the parties in a given value chain in real time as the changes occur. This enables accurate information to be monitored and managed in an actionable manner; eliminating the bullwhip effect before it is amplified downstream. Management on the X axis feeds accurate information across planning processes at all levels and to all participants in the supply chain. It enables accurate measurement and control over inventories, both static and in motion, which eliminates excesses and shortages, balances supply and demand, and limits liabilities.

“Leading companies will enable the frequent sharing of demand information backward through the supply network to contract manufacturers and strategic suppliers (transportation included) as the network attempts to be efficient at flexibly meeting demand without incurring excessive costs (inventory buildup) or service delays (lead-time variability).”

AMR Research

Many Supply Chains, Many Programs

The specialization model creates manufacturing and distribution networks composed of multiple, individual supply chains specific to products, suppliers and customers. In the electronics industry, individual supply chains are based upon “programs” where several companies work together to design, manufacture, distribute, market, sell and service a product. The set of partners may change according to a given market, region or channel, resulting in a proliferation of trading partner environments, each with their own configuration. Each value chain participant must therefore adopt a supply chain management strategy that incorporates the ability to control many programs effectively and efficiently, each with its own set of unique operational caveats.
A program defines the partners, items, and locations involved in a given supply chain. This includes their roles and agreements, the processes and workflow they adopt, the metrics by which they measure success and more. A solution designed to view the supply chain at this level of complexity makes it possible to model and manage multi-enterprise operations to gain productivity, visibility and control.

For example, a large electronics manufacturer might have one program dedicated to a television set, another program for a computer, and programs for its other major products. Within each program lies a series of relationships that govern the flow of materials across the value chain. Various component suppliers ship to various EMS suppliers who ship either directly to the market or to the electronics manufacturer or brand owner who then ships to the market. In this high volume, high transaction environment, the challenge is the dissemination of program specific information to the right place in the supply chain at the right time for the purposes of planning, execution, and exceptions management.

According to Eugene McCabe, executive vice president for worldwide operations at Sun Microsystems, “If you look at our industry, fundamentally we’re all buying the same components. There are only a couple of memory suppliers in the world, a couple of disk drive suppliers and so on, so there isn’t a lot of cost opportunity left in the materials. The opportunity for savings is in the efficiency of the supply chain process from the time you start with the raw material until you get the product to your customer.”

Essentially, this is a data roll up from component supplier through EMS to OEM and ultimately to the market. Program-specific management capabilities are required to segregate and organize item level inventory information so that exact requirements of the specific customer, product and end market are visible and actionable across the supply chain. This aligns supply chain management to the view that is most significant – the end product.
A New Paradigm Brings New Challenges

The management of programs in the supply chain has posed significant challenges to traditional enterprise models and business solutions because they were built to solve fundamentally different business issues. What has become clear is that enterprise-centric solutions are not sufficiently flexible or configurable to manage this complex web of relationships.

“The lines between supply chain technology infrastructure and applications are blurring out of necessity, in large part because of business practice changes and the advent of a network-based supply chain. With the creation of trading communities, companies are forced to extend processes, information and management control over a disparate set of systems and processes of suppliers, customers and service providers. The requirement for increased flexibility acerbates the process by demanding management of a supply and distribution network spanning multiple channels and multiple brands, across multiple suppliers to multiple customers. It’s a difficult situation. For most companies, the typical approach of standardizing on a common ERP system just won’t work.”

John Fontanella and Kosin Huang of The Yankee Group

Enterprise vendors often minimize the importance and urgency of these supply chain issues. But by oversimplifying this problem and attempting to solve it through portals and hubs, they ultimately handicap their ability to generate value in their core competency -- enterprise planning. Even a world class ERP system will produce distorted results if it is fed untimely and incorrect data. Supply chain control is now central to the overall performance and efficiency of an organization – both in the distributed value chain and the enterprise. The primary variable of enterprise control now firmly rests within the supply chain.

According to Bill Swanton of AMR Research, ERP systems cannot meet the challenges posed by the modern, extended global supply chains. He states that, “Companies are finding that their massive investments in ERP are now restricting their flexibility to morph their supply network operations. Standardized business processes are fine for accounts payable, but unique supply networks by product or market will require variations from traditional product development, order to cash, and procure to pay that extend beyond a single enterprise. Right now, and perhaps for a long time to come, tools to manage these processes are the province of third party (solution providers).”

The Demand Driven Supply Chain is Multi-Enterprise

Managing a supply chain so it produces competitive advantage or differentiation is not an easy task. As AMR Research has observed, “Small differences in products, markets, and strategies can yield radically different supply chains, which need to change as the market matures.” In order to handle rapidly changing requirements, companies need to connect all their suppliers, contract manufacturers, trading partners and customers into what AMR calls a “Demand Driven Supply Network (DDSN).”
A DDSN has three very specific characteristics. It must be agile, flexible and collaborative in order to produce maximum value. Agility and flexibility allow a supply chain to rapidly respond to unexpected changes in demand in a highly predictable and flexible manner. Collaboration means that multiple enterprises within the supply chain are networked together and work collectively to their mutual benefit; making the supply chain more efficient, responsive and productive. This requires constant, global, real-time visibility of demand and supply for all the participants in the network.

In order to leverage a supply chain for competitive advantage, a company must be able to respond quickly and transparently to unforeseen events. This includes a fast and flexible reaction to changes in supply or demand, events requiring exception management, or any other unpredictable supply chain event.

“Being demand driven means building a much more flexible and agile supply and distribution system to respond quickly to variable demand signals. As companies move production or sourcing to remote places around the globe to lower costs, they introduce complexity into the supply channel. In order not to build up inventories or risk not meeting customer delivery, companies must insist on an information infrastructure to make transparent all of the activities by all the parties involved in the supply network.”

AMR Research, DDSN Visibility for Global Supply Lines: Technology Options Abound
Thursday, February 03, 2005 Greg Aimi

Improving Buggy Whips In An Age Of Automobiles

ERP vendors have tried to extend their systems to handle modern supply chain management by patching together point solutions. These have taken the form of portals that provide self-service access to external users to offload data entry and reduce service requirements. But this process is error prone. In addition, it does not effectively factor the importance of time synchronization across the supply chain. It cannot ensure that 100% of the events are recorded and are visible across the chain.
In the multi-enterprise world, all parties must share common, real-time metrics. They must be able to choose how to access and integrate at the user, transaction and event level. They need a highly configurable system that can manage by exception according to the specific requirements of their operations. They can’t be limited by the logic dictated by inflexible ERP systems designed to solve totally different issues.

One of the major reasons for the gap between ERP systems and best-of-breed solutions is that ERP solutions are not industry specific. No where is this more apparent than within the dynamic, outsourced electronics manufacturing supply chain. Industry analysts have specifically noted that supply chain solutions from SAP and Oracle are inadequate for the task at hand; particularly when compared to best-of-breed solutions.

“The SAP has built a common system to address the SCP requirements for all industries in its installed base. However, a common system for all does not work since supply chain processes are, by definition, industry-specific.”

Lora Cecere, Bruce Richardson, Colin Masson, AMR Research

In January 2005, Supply Chain Digest released the results of a survey it conducted on the issue of ERP vs. Best-of-Breed (BoB). It was based on interviews with 160 leading companies in a variety of industries. Almost all the companies had revenues of more than $100 million a year. Key findings included:

» Overwhelming user preference for BoB over ERP solutions. The BoB solutions tend to offer far deeper functionality, easier integration with outside systems and superior overall value compared to ERP SCM systems.

» The more the respondents knew about the differences between ERP and the BoB offerings, the more they favored BoB.

» A majority of respondents considered the BoB providers to be more than two years ahead of ERP in Supply Chain Planning (SCP) and Supply Chain Execution (SCE).

This last finding is particularly important. Commentators have suggested that it means you must carefully evaluate ERP vendor promises that “the functionality you need will soon be available.”

“Business users are finding the functionality in mySAP SCM is still not adequate for many complex industry requirements.”

Lora Cecere of AMR Research

Your Supply Chain Strategy is Your Growth Strategy

The issues facing supply chain managers today are more than a question of whether the tools you put in place can solve your immediate challenges. The issues are much more significant and longer term. Your supply chain strategy should lay the foundation for your organization’s ability to compete today as well as to manage the changes and challenges you will be facing in the future – the multi-enterprise future.
In the past, operational efficiency within the enterprise drove cost improvement and allowed managers to engineer their internal operations to leverage centralized control. In today’s distributed environment, this same strategy is a liability. In order to compete and grow, resources must be deployed within the specialization model in a way that supports agility and innovation. Pursuing incremental improvements in the old model while rivals reinvent the industry is like fiddling while Rome burns – or more specifically, like designing a better buggy whip as Model Ts role off the assembly line.

Winning in a global, distributed economy means managing partners and events far beyond the four walls of the enterprise. As Ralph Waldo Emerson wrote, “there are always two parties, the party of the past and the party of the future; the establishment and the movement.” By the time those entrenched in the enterprise model realize that the future requires multi-enterprise tools and strategies and not modifications to systems designed for other challenges, they will have lost significant ground to more forward-looking competitors. At the end of the day companies need an ERP system to run the enterprise and a best of breed Multi-Enterprise Control system to run multi-enterprise.

About RiverOne

RiverOne is the fastest growing provider of multi-enterprise control systems to the electronics industry. The company’s customers include OEMs, EMS companies, and component suppliers who account for more than 25% of global outsourced manufacturing. The company’s INTERACTIVE software solution enables business processes at the supply chain level delivering integrated execution, multi-tier planning, and shared metrics through a single, multi-company business application. Only RiverOne fosters supply chain intimacy by enabling organizations to define and drive their supply chain operations partner-by-partner, and program-by-program. RiverOne’s professional services team and business consulting partners help customers redesign business processes to take full advantage of the power and flexibility of INTERACTIVE solutions. RiverOne serves a global market, including Acer, Flextronics and Solectron. Founded in 1999, RiverOne has received industry recognition for its consistent growth and product innovation, and is headquartered in Irvine, California.