

**The Intelligent Value Network:
Reaping the Advantages of Advanced Supply Chain Management**

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As supply chain efforts mature, one distinction is becoming apparent. Firms that embrace the inherent concepts, as part of a total enterprise optimization effort, have gained the high ground. The leaders have used advanced techniques to focus first on operational excellence and then customer satisfaction, to open a serious gap between less able competitors, with several companies beginning to dominate their industries. Positions achieved by such leaders as Wal-Mart, P&G, Toyota, Intel, Nike and Dell testify to the values being added through a concerted enterprise-wide effort. These leaders have discovered the advantages offered by moving their supply chains into a position of having superior capabilities, gained through greater access to knowledge across what becomes an enterprise-wide intelligent value chain network. When that knowledge is combined with an effort to develop greater customer intimacy with the most important customers, the advantage becomes an ultimate distinction in most industries and markets.

A recent survey by CSC, in conjunction with Supply Chain Management Review magazine, clearly documented that savings and improvements are real for serious supply chain efforts, often reaching three to eight points of new profits. This study, as well as ones conducted by AMR Research and other major consultancies, also shows that the major savings (particularly those related to revenue increase) are eluding most firms, which are still bogged down in the early levels of such an effort and not inclined to work with external business partners. We see an enormous possibility in such a context. The opportunity to use supply chain as a driving force behind further performance enhancement, and to move a firm into a position where the distinguishing feature is being solidly linked in an intelligent value network, has become the means to reap the greatest return from an end-to-end improvement effort. Internal obstacles and cultural conflicts

tend to be the greatest inhibitors to achieving such a position, the most important of which are good data management and process difficulties.

Now distancing an individual business from its competitors in areas of importance in a market has long been the goal of most enterprises. The chance to extend market leadership, however, and to gain a dominant position through the application of collaboration and technology focused on customer satisfaction, the key ingredients of the intelligent value network, have never been greater – for those businesses willing to overcome normal cultural barriers and the traditional unwillingness to work cooperatively with external resources to cope with process problems.

The purpose of this paper is to explain this opportunity by linking together four topics of importance to today's businesses: Supply Chain Management, Customer Relationship Management, Technology Application, and Customer Intelligence. The last topic is our terminology for the acquisition, management, and integration of customer knowledge in order to create a differentiating customer value proposition. By looking holistically at these usually disparate topics, companies can develop integrated strategies and solutions for delivering products and services to key customers better than any competitors. When the effort is extended through business process management (BPM) techniques to include willing and trusted business allies, working across an extended enterprise for the same purposes, the advantages are unmatched.

Improvement Starts in a Complicated Environment

We must begin any discussion on the possibilities of achieving total enterprise optimization with an understanding of just how complex an extended enterprise supply chain has become. While the original supply chain efforts were directed towards achieving optimum operating conditions across a linear set of tightly linked, internal process steps – from beginning raw materials to final delivery of products and services – Exhibit 1 shows that most supply chains are becoming complex business systems. Any analysis that is limited to internal processing is doomed to operate with sub-optimized

conditions. There are simply too many players in a typical business network. The end-to-end processing that has come under scrutiny for improvement now includes a multitude of business partners. Concurrently, the necessary flow of information and knowledge within a business network has become as important as the physical flow of goods and the transfer of money across what is clearly an extended enterprise. Supply chain optimization (SCO) now requires the collaboration of a host of business partners working in concert for the same end results.

It becomes imperative in such an environment that the firm seeking optimized conditions makes a passage from an internal-only perspective, in terms of generating process improvement, to one in which willing and trusted business allies are made a part of the process improvement effort, with the end result focused on customer satisfaction. To accomplish this objective, the leading firms are merging their advanced supply chain management (ASCM) concepts with their customer relationship management (CRM) efforts, yielding a framework and roadmap for progressing through a series of levels until attaining the highest possible return on the effort, in terms of value for the customer and benefits for the providing firm and its allies. Along the way, a concurrent effort must be made to balance supply chain progress with the firm's CRM capabilities, and synchronize the results of the two efforts.

Supply Chain Maturity is matched with Customer Intelligence Progress

As the Exhibit 2 illustrates, CRM progress can be matched with the normal supply chain evolutionary levels, as a business moves from the early points of enterprise integration (where the firm gets its house in order), to a position of analytical CRM (where the firm becomes a viable part of a superior value chain constellation), and on to development of the intelligent CRM position (where the firm and its allies dominate an industry).

Beginning in the mid 90s, most firms progressed through the first levels of the supply chain evolution, moving from enterprise integration, where early savings were

made through concentrated sourcing and logistics efforts, to corporate excellence, where internal obstacles were conquered and planning, order management, manufacturing skills, and inventory management became serious parts of the effort. During this time, many companies also progressed into a form of operational CRM. Sales force automation became a factor, as companies learned they could use data to enhance the ability of sales representatives to help customers find extra values and build more revenues. Call centers came into vogue as contact centers were established to match the needed services with what would truly help the key customers and work into multi-channel customer service hubs. Toward the end of that period, while in the second phase of the effort, campaign management became a factor, as firms learned they could ally themselves with key suppliers and customers to improve the results of special sales efforts.

At the beginning of the new century, those firms that maintained a dedication to the supply chain effort moved into level 3, and began collaborating in earnest with their key partners to find the hidden values in the linkage that eluded those firms bogged down in an internal-only focus. During this period, these firms typically advanced to a form of collaborative CRM, applying technology to increase the knowledge available to business allies having the same purposes. Using the Internet as the major tool of communication, these companies began to share valuable information with selected and trusted business allies, so they could further improve their abilities to create and sustain new revenues. Partner relationship management became the tool of choice, as these allies learned they could share previously sacrosanct and private information to build revenues together, without risking the future of their organizations. Customer data integration became a vital technique to assemble and use important knowledge on customers, consumers, and markets to introduce customized solutions and offerings that were clearly better than any competing business network.

As a few businesses managed to progress into level 4 and became part of a value chain constellation, the more advanced firms moved further with analytical CRM and began to reap the benefits of a true customer intelligence environment. Here the nucleus firm in the center of the supply chain network would join forces with key supply chain

partners and drive the network partners to analyze customer knowledge together. Using business process management (BPM) as the linking tool and BPM systems to transfer the important knowledge between disparate communication systems, these firms found the means to quickly transfer valuable data among supply chain partners. One important output became demand chain management, where the actual needs of the end consumers and customers were matched with the capability to meet those needs. Essentially, demand chain and supply chain converged, and the intelligent value networks which emerged from this level of progress were best able to respond to what the market truly wanted in the most effective manner.

The requirements supporting this evolution are not exactly novel. Improving profitable revenues with targeted customers and retaining their loyalty have been central tenets of business strategy for a long time. With access to helpful knowledge buried in the burgeoning databases most businesses are building, it becomes a modern art, enhanced through technology applications. When the effort is extended to integrating CRM systems with ASCM efforts and access to customer intelligence, a chance to differentiate a firm and its closest business allies appears. Unfortunately, after almost two decades of trying, the concept of applying CRM in an enhanced supply chain to create new business is well understood, but the practical application appears to be very limited. The opportunity to make greater use of this capability looms as one of the most important challenges facing business today.

Customer Relationship Management – A Contemporary View

An analysis of the current state of CRM reveals most markets are under serious scrutiny to show actual value for the necessary investments – in time, resources, and capital. Because of the many stories related to inadequate returns for the investment, CRM suffers from a poor reputation, in spite of the many successes that have been recorded. There is a high degree of complexity associated with these efforts and a naturally high cost of integration across an organization and its end-to-end network. As a result, current views of the potential values are tempered by a need to bring focus to

immediate process improvement and bottom line returns. When executed as part of a deployment of strategies, with enhanced processes and enabling technology applications that are used to acquire, develop, and retain an organization's best customers, CRM becomes a powerful tool for increasing revenue and profit.

In essence, a contemporary CRM operating model will serve to improve the characteristics and performance of a customer intimate organization. The inherent characteristics for customer intimate organizations (courtesy of Fred Wiersema and Michael Treacy) will include:

- Creation of the best business solutions for the key customers
- Introduction of customized products and services to meet these customers' unique needs
- Presentation of a unique range of superior services, so customers can get the most value from the delivered products
- Establishment of the most flexible and responsive system of supply and delivery possible with current technology

The operating model benchmarks will include:

- Management systems geared toward creating superior results for carefully selected strategic customers
- A culture that embraces specific rather than general customer solutions and thrives on deep and lasting relationships
- Deep customer knowledge and breakthrough insights about the customer's underlying processes
- Decision making delegated to employees close to the customer

Reaching these conditions requires a lot of concerted effort and nurturing a cultural imperative that is often hard for firms accustomed to working within an internal-only focus. CRM has its roots in the idea that as a firm's supply chain moves toward maturity, it becomes more effective at both internal and external processing; i.e., it

improves its ability to process within its four walls, and then extends its learning, with the help of useful business allies to constructing a network of delivery that has superior features from the viewpoint of the most important customers and consumers. That means it progresses from making the most of the best practices necessary to achieve parity or better against competing firms, to the point where it is engaged in advanced techniques of value to the customer and not found in any competing group. Since most of these techniques will require enabling technology and the sharing of vital knowledge with key external resources, Exhibit 3 depicts some of the features of such an *Intelligent Value Chain*, which becomes the end product of a successful ASCM/CRM technology enabled effort.

Within the intelligent value chain, business allies are working together from a right-to-left perspective. They begin with what it takes to have a competitively advantaged value network in the eyes of the end customer or consumer, and then work backwards toward what the upstream side of the value chain should be doing across the enterprise processes to achieve the desired superior conditions. Together, the linked parties are working to find the best solutions and practices for all of the key process steps. Beginning with improved forecasting and moving through the necessary linking processes, the network partners expend their best resources to find greater results with product development and introduction, the ultimate distribution efficiency, the best methods for product replenishment, jointly developed marketing strategies and the best possible order fulfillment system. Along the way, they work collaboratively to find the best enterprise processes and become extremely effective at any point of hand off between supply chain constituents. In short, they are working in concert to develop business in a manner that enhances profitability for all of the contributing allies.

Two requirements must be met as this intelligent value chain is constructed and nurtured. First, each participant or major constituent of what becomes the network of delivery must have attained a high level of capability in the supply chain maturity model (level 3 or beyond), an important element of which will be the ability to use BPM and its enabling business language BPML, to enter and access parts of disparate databases so

valuable knowledge can be extracted without compromising the security of the various systems. Second, the enabling technology applications must be selected collaboratively and be functioning successfully across the end-to-end network processing. That means the collaborating business allies are working in concert, with each making valuable contributions toward finding the enhanced state in which ASCM and CRM converge to create the desired differentiation in the eyes of the most coveted customers. They are doing this with the help of enabling BPM technology and superior systems across the end-to-end processing linking them into an intelligent value network.

The Value of Customer Intelligence

There is an important purpose behind the effort to establish greater customer intelligence. Bringing together a single view of the customer with high-value analytics can serve to optimize customer interactions, reduce operational costs, and enhance revenue-generating opportunities. To begin, most organizations have multiple records and accounting for the same customer, with no consistent information transfer across business units, within the same organization. This condition leads to the absence of a single view of the customer and leads to inconsistent customer experiences. Much time and effort is wasted collating reports and gathering information, rather than focusing valuable resources on analyzing high-value information and knowledge. Much of the marketing effort, which is intended to build a demand, is focused on mass-market techniques, rather than the preferred targeted segments offering the most lucrative returns on the effort. Unable to target the right customer at the right time, with no predictive modeling capabilities, exacerbates the problem and leads to the expending of corporate energies on low versus high level customers and a total lack of optimized service levels.

Solutions to these complications can add dramatically to the firm's performance, including such features as:

- Data management personnel savings
- Faster call handling of inbound inquiries

- Prospect and customer solicitation savings
- Reduction in returned communications
- Improved data quality in critical operational systems
- Improved targeting for cross-sell, up-sell, retention, and acquisition campaigns
- Lower customer attrition or churn rates

More importantly, attaining such conditions puts the internal house in order and brings the firm to the point of being able to approach customer intelligence in a more contemporary manner. By today's standards, CRM has become the deployment of strategies, processes and enabling technologies that are used to acquire, develop, and retain an organization's best customers. It includes understanding customer needs, the relative importance of each customer segment and the best, most economical means to meet those needs. Within an environment focused on this view of CRM, strategy, processes, organization and culture begin to revolve around a central focus dedicated to satisfying customers in the most appropriate manner, and sustaining those with most strategic value indefinitely. Businesses adopting such an environment recognize that performing the end-to-end process steps in the most effective manner becomes the hallmark of network distinction, but it cannot be achieved without the knowledge necessary to optimize the important process steps.

Process orientation has never had more meaning in this environment. Organizations that remain fragmented and operate in a stovepipe manner will never achieve the advantages being cited. They will be doomed to local optimizations within some business units and be prevented from achieving network process, and systems optimization. Such systems as enterprise resource planning (ERP), CRM, and collaborative planning forecasting and replenishment (CPFR) will simply never be achieved in an optimal manner due to the process inefficiencies that will occur. Process design and enablement with new technologies and methodologies and tools are what will provide the greatest opportunity to increase corporate performance in the modern era. The drivers behind this return to a process focus, moreover, will be an enhanced customer

controlled environment, where customer satisfaction is the real end objective, and use of the Internet to create and control the sharing of valuable knowledge.

When ASCM and CRM converge in this advanced level of the evolution, some important characteristics will be apparent:

- Demand management and forecasting will be at improved levels, with actual need matched with capability to supply.
- Sales and Operations Planning (S&OP) will move to Advanced Planning and Scheduling (APS), where key suppliers and customers are participating in diagnostics and planning sessions to bring a reality to the planning and supply processing.
- Inventory management will be a network effort, in which the linked allies work to delivery the right goods to the point of need in the right quantities at the right time.
- Visibility into the end-to-end processing will be online, real time, allowing the constituents to view what is taking place, track important events, and adapt the supply chain to ever-changing market conditions faster and more accurately than the competition.
- Event management will be at the highest possible level of effectiveness, as the reactions to any planned sales effort will be instantly relayed back to the important upstream partners, so they can react appropriately to actual event conditions and results.

In short, the voice of the customer will be driving the supply chain, based on the segmentation that has determined the level of response necessary to satisfy the customers being served. This condition requires the firm to move through the four levels of the intelligent customer maturity model, as illustrated in Exhibit 4.

Beginning in the first level, or the *starting gate*, the basic requirements must be met. The firm adopts a 360-degree view of the customer, and deals with the fact that

most processing involves excessive manual analysis and handling of the data. Use of the intranet, or internal communication system has to be improved so there are no cultural inhibitors to building the most accurate, accessible knowledge on the most strategic customers.

High	<p>For-the-Moment Buyers</p> <ul style="list-style-type: none"> • Returns diminish as service costs escalate • Sport buys can be lucrative, but spread over many suppliers • Firms show some willingness to pay for added values • Limited advancement possibilities • High cost to retain loyalty 	<p>Winners – To Die For</p> <ul style="list-style-type: none"> • Returns high relative to cost-to-serve • Focus is on total value; Balanced Scorecard analyses to prove benefits • Firms provide resources to seek joint savings; offer help with joint selling efforts • History of mutual partnering, sharing in risk • Low cost to retain loyalty
Low	<p>Usual Suspects</p> <ul style="list-style-type: none"> • Spot buyers; pricing is crucial to decisions • Will switch for any perceived, momentary lower cost • Will leverage volume frequently; apply auction techniques • Very limited advancement possibilities • Potential for 3rd party fulfillment, sales automation 	<p>Wannabes</p> <ul style="list-style-type: none"> • Lengthy relationships; have shown signs of loyalty while insisting on special servicing for which they are reluctant to pay • Low probability for increasing profits without innovative selling approach • Show some elements of partnership for joint profits • Have fit with firm’s capabilities, value offerings but tend to have high cost-to-serve

Low
High
 ← **Strategic Value** →

In the second foundational level, where the firm begins to erect the *building blocks to success*, a common customer identification system is installed and customer segmentation is used to separate the customer list by strategic value to the firm and profit to the firm. The matrix presented above has been used as a guide for such segmentation. It progresses from the low value, low profit or usual suspects, to the high value, strategic

customers that are “to die for.” Within each block of the grid are comments intended to help the selection process.

Two types of analytics are then used to identify and target the highest potential customers. A profiling tool is used to determine who and where the best customers are and what they really need. In this “descriptive modeling” area, focus is brought to such elements as: lifetime value, demographics, behavioral trends and decile analysis. A targeting tool is used to determine how the firm identifies the right offer to the right customer at the right time. In this “predictive modeling” area, focus goes to propensity to churn, chances for cross selling and up selling, and the propensity to buy.

Returning to the maturity model framework (Exhibit 4), as a firm moves into the “advanced” level three of the progression, it begins to build a *market advantage*, through ASCM/CRM. Now the organization is working selectively with business allies and develops a complete customer view, with treatments and services matched with the value segments from the segmentation grid. Together, these allies apply BPM technologies to link those components of the various databases that contain valuable customer information in a manner that protects internal security. Now the involved parties have agreed to what knowledge will be made available and for what purposes, and they have established the means of access.

In the “distinctive” level, a *sustainable competitive advantage* is the objective. Here, the nucleus firm in the extended enterprise and its allies are offering differentiated products and services matched to the needs of the various segments in the grid. Through the sharing and analysis of mutually provided information, insight-driven interactions are a part of the scheme. The joint analysis of the data being transferred over the BPM-enabled extranet connecting the value chain constituents is providing knowledge unavailable to competing networks. As this model is considered, it is imperative that a firm desiring such an advanced position evaluates itself and determines where the organization and its network partners fall on the maturity scale. Then a determination

can be made of where the firm needs to be and the business partners can begin building a plan to achieve that position.

Responding to the Customer Experience

The intelligent value chain that evolves will have many facets, but it will remain focused on customer satisfaction. The architecture that makes such a value chain possible is described in Exhibit 5. It progresses from the back office systems, necessary to meet the needs of the customers, to the customer touch points so critical to the provision of value-added services. In between, a customer intelligence hub is at work, using BPM and providing the profile, rules management, events and treatments, and the quality data needed to enhance the ASCM/CRM Systems.

New definitions are then brought to the benefits and values being delivered to the most strategic customers. Differentiated (often customized) answers to members of a particular segment's business problems are part of the delivery. Points of view are specific to each market segment. Solutions are comprised of a mix of tools, competencies, and offerings matched to actual needs. Specific solutions are packaged and delivered with a defined and *quantifiable* business value. The customer intelligence system at work synthesizes data consolidation and analytics so a single view of the customer emerges, as well as individual customer analytics, which are used in profiling, evaluation, and modeling for success. A single, up-to-date, integrated view of the customer relationship is maintained, along with robust customer insights to tailor the correct treatment to the right customer at the right time.

The features of the customer consolidation segment include:

- Integration and rationalization of disparate customer data, to provide a persistent cross-channel data store to serve as a focal point for analytic processing and as a clearing house for multiple disparate touch points

- Establishment of relationships in the data to support analysis at the customer, prospect, household, and segment levels
- Operations format for use of customer knowledge through all customer interaction points
- Development of event-based or delta-based sensing mechanisms to identify changes in front-end CRM systems, such as customer behavior or profile
- Transfer of information on event or delta to the hub-based repository for integration and consolidation
- Utilization of Enterprise Application Integration (EAI) or low latency tools to move data from front-end systems to operational data storage

The customer analytics will contain:

- Ability to analyze cleansed and consolidated customer data to develop descriptive and/or predictive models
- Understanding of the economic or lifetime value of each individual customer
- Customer segmentation based on value, demographics, and behavioral information
- Quantification of each customer's responsiveness to marketing and other stimuli
- Identification of the appropriate treatment or offer for each customer and delivery of this insight to front-end application
- Mining of vast amounts of data to identify hidden customer insights
- Capture and codification of analytical best practices in a business rules engine, to create intelligent recommendations in a near real-time environment

Conclusion: Using Customer Intelligence is the Key to Success

Information abounds in most business organizations. The problem is that most of it is not used in an intelligent manner because it is stored in non-integrated databases, and rarely shared across internal business units. What must be done with this valuable

information forms the basis of customer intelligence. That begins with a common definition of customers, a description of the tools to be applied, and the information integration architecture necessary to make the system a viable business enhancement process.

Customer Intelligence Maturity Model

	Basic	Foundational	Core	Distinctive
Customer Data Quality	<ul style="list-style-type: none"> Manual data cleanup Multiple customer IDs Data not trusted by users 	<ul style="list-style-type: none"> Periodic batch process to cleanup data Common customer ID shared across systems 	<ul style="list-style-type: none"> Online search, lookup, validation rules applied at point of data entry Cross-reference for IDs 	<ul style="list-style-type: none"> Real-time data quality maintenance using external vendor where appropriate
Customer Data Integration	<ul style="list-style-type: none"> No 360 degree view of customer Touch points acting independently Customer aggregates and rollups performed manually 	<ul style="list-style-type: none"> Some point-to-point integration between front and back office Some synchronization or data sharing across touch points 	<ul style="list-style-type: none"> Complete customer view available across all touch points with updates performed via periodic batch process 	<ul style="list-style-type: none"> Real-time, bi-directional integration between front and back office Updates to single customer view available to all applications in real-time
Analytic Sophistication				
Insight Operationalization	<ul style="list-style-type: none"> Market segmentation only No predictive analysis Insights created by offline process No integration to front-office applications Offline direct marketing 	<ul style="list-style-type: none"> Known customer value Segments defined by actual behavior Treatments driven by segment Insights created offline are manually fed into some front-office apps No production process to update insights 	<ul style="list-style-type: none"> Segment-specific predictive models Tactical treatments driven by predictive outputs Insights available in most front-office apps Model outputs (scores) updated through periodic batch process 	<ul style="list-style-type: none"> Products/services matched to interested customers Differentiated service for valuable customers Insights updated with real-time scoring Real-time, rules-driven, fully-optimized customer interactions