DEMAND-DRIVEN SUPPLY NETWORKS: ADVANCING SUPPLY CHAIN MANAGEMENT
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DEMAND-DRIVEN SUPPLY NETWORKS: ADVANCING SUPPLY CHAIN MANAGEMENT

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Most consumer products companies realize that developing a demand-driven supply network (DDSN) could provide the pathway to true customer focus. These supply networks depart from the traditional systematic manufacturing “push” of products to market—which meets the demand of the distribution center, but not of the end customer. Because actual buying decisions are made with the shopping cart, not the warehouse picker, DDSN turns the business around: customers actually “pull” products to the point of sale.

While the proposition may seem somewhat commonplace, achieving it requires a major strategic shift. Being “demand-driven” requires an instantaneous sensing of customer demand and an immediate supply chain response to get the product to the customer when the customer wants it. The critical element is collaboration among partners in the supply chain, enabling manufacturers to produce exactly what the customer is poised to buy.

DDSN is the next step in the advancement of supply chain philosophy, which has included responsive replenishment; collaborative planning, forecasting, and replenishment; and others. These advances streamlined the supply chain to deliver greater profits through efficiencies and collaboration among trading partners. DDSN, however, is a mind shift that combines traditional practices with new elements in an evolutionary way.

DDSN translates into real money on the bottom line. Based on existing customer studies, analyst comments, and industry polling, SAP has determined that consumer products companies can achieve significant value by adopting the DDSN model, as illustrated below.

**Revenue**
- Increase fill rates and reduce out-of-stocks 3%–10%
- Improve personnel productivity 7%–12%
- Reduce obsolescence and waste 35%–50%

**Operating cost**
- Increase production efficiencies 1%–5%
- Decrease freight costs 5%–15%
- Reduce inventory levels 7%–15%
- Improve asset utilization 10%–15%
- Decrease cash-to-cash cycle 10%–30%
- Decrease freight costs 5%–15%
- Improve personnel productivity 7%–12%
- Reduce obsolescence and waste 35%–50%

**Working capital**
- Reduce inventory levels 7%–15%
- Improve asset utilization 10%–15%
- Decrease cash-to-cash cycle 10%–30%

In addition, DDSN will help businesses realize the following advantages:
- Fewer deductions based on more perfect order fill
- Better use of promotional funds based on more accurate and timely marketing information and faster response to changes in demand
- Faster, more effective product introductions (and phase-outs) based on a more flexible, responsive supply network

For the past several years, SAP has been working with our customers to enable this vision. They will enable DDSN by combining existing technology such as advanced planning and optimization with the following capabilities as they evolve:
- Dynamic sales and operations planning (S&OP)
- Global data synchronization
- Radio frequency identification (RFID)–enabled processes
- Point of sale–based analytics
- Integrated trade promotions management
- Responsive replenishment
- Multitiered collaboration and shared scorecards
- Adaptive manufacturing
- Event management
- Innovation and design collaboration

In the following SAP Insight, we will explore the current approach to managing the supply chain, the challenges to that approach, the benefits of DDSN, and what SAP is doing to support this evolution.
FOCUS ON REAL DEMAND

In consumer markets, customer expectations have completely changed. With more products, more channels, more outlets, and more product information, customer choice reigns. Unconstrained by geography, a consumer might choose to buy from a brick-and-mortar retailer nearby, but can also shop online for better availability, selection, and price.

To succeed with this more demanding and well-informed customer, consumer products manufacturers must be precise with their product line and in-stock levels. If a manufacturer permits an item to be out of stock, consumer products companies cannot assume that the customer will come back another day. Someone else will fill the gap. Companies must change the whole approach to forecasting and product distribution, which is mired in assumptions that are no longer valid.

The answer is DDSN, which ties supply to actual demand. DDSN provides real-time sensing and response, as well as visibility, collaboration, and analysis, throughout the network. In its most advanced form, DDSN can better inform the product innovation process for targeting consumers’ true needs and desires, creating a powerful competitive advantage. And beyond its immediate uses, DDSN will also reveal intelligence that enables the ability to sense – and act upon – small shifts in demand that can sometimes provide a preview of an important trend. Consumers want different things at different times. The goal of DDSN is to be the first to sense those desires and fulfill those expectations – with increased sales of full-priced merchandise as the desired result.
THE CHALLENGE: CHANGING THE STATUS QUO

But the advantages of DDSN are more obvious than the route to implementation. Even companies that profess to be customer-focused are not truly optimized to respond to consumer demand. In fact, the path to becoming a demand-driven company is strewn with many obstacles.

Traditionally, forecasting, planning, and execution have formed the foundation of the modern supply chain. The products pushed out to the distribution center and into the marketplace are those that managers – and their forecasters – believe consumers will most likely purchase. Ultimately, this approach is flawed because of the following realities:

■ Production is driven by forecasts at the distribution-center level or by operational metrics instead of actual demand.

■ Even when planners recognize demand, the system cannot respond fast enough to meet it. In most consumer products companies, the production line cannot meet a sudden surge in demand. In the classic scenario, a company regularly processes orders on Wednesdays, leaving a demand spike sensed on Thursday unfulfilled for a week.

■ Consumer products companies struggle to communicate effectively and efficiently with trading partners, which forces them to respond to stockouts by carrying more inventory.

■ Trade promotion planning and execution are not fully integrated into demand or production plans.
THE PROBLEM WITH PLANNING

Many companies have a less-than-perfect planning process, but loath to admit it. The management in charge of forecasting will often describe the ideal as though it were reality: the planning process identifies the forecasted demand for products, arranges for the appropriate materials and manufacturing capability, and ensures that the shipping and warehousing resources will be in place. As a result, the company delivers the product to the shelf when the forecast predicts demand at the retail level.

But companies rarely reach this ideal. No matter what the statistical models show, business decisions are predicated on hunches or history. Forecasts are based largely on empirical data, with planning dependent on projections from historical demand. What’s more, various stakeholders will not find the data they need to make a case and influence a decision—often because finding the truth is just too difficult. For example, data may have been recorded on spreadsheets, using different metrics or units. Making updates is tedious and slow, even as pressing demands change or problems arise. Everyone struggles to make sense of the data, and end up simply verifying what they already know. Divisions of the same company operate autonomously, sometimes using different terms for the same items and actions. And when the divisions do communicate, they often focus on common information, because it’s much easier—and because common information is more positively rewarded than attempting to argue from a more unconventional and often unpopular viewpoint.1

Even if the operations team can get the right materials into the factory and make a product according to the plan, they focus on getting the product to the distribution center. Meanwhile, the consumer may have lost interest in that product. Demand may have shifted. Couple this with product innovation and other changes, and most organizations struggle just to keep up. The process barely works—let alone being dynamic or responsive.

The best distribution system still has inefficiencies, time lags, and “lumpiness.” Instead of a steady flow to the shelf to match the customer demand in the store, the merchandise arrives by a weekly shipment, or is reordered on a weekly basis, or the warehouse waits for a full load before making a delivery.

Direct-store delivery (DSD), which determines daily the needs at the retail outlet, can partially solve the problem. A sales rep for a snack food company, for example, can follow a daily schedule like clockwork to visit every retail customer and fill every empty shelf. But even that level of customer service is still reactive. The shelf remains empty until the sales rep arrives—and remains empty if the warehouse is out of stock. Furthermore, running a DSD network is not feasible for most consumer products manufactures.

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DDSN will integrate the supply chain within the four walls of the enterprise and beyond, to suppliers and customers. DDSN will remove natural distortions caused by transactions and inconsistencies in the flow of goods while increasing speed and responsiveness. DDSN will provide enterprise-wide visibility with the manufacturing execution system, and can share that data in the same format with internal and external stakeholders and trading partners. It will provide a systematic way to determine if one cog in the wheel of the overall operation is underperforming.

DDSN’s most fundamental capability is the elimination of inefficiencies and constraints across the supply chain. DDSN delivers a smooth product flow that matches actual demand. And these capabilities are actually available now; the big challenge is in implementing new IT systems and retooling manufacturing processes. Indeed, adopting new processes is an essential element of the DDSN initiative. Updating IT solutions without retooling processes is a missed opportunity.

With DDSN, trading partners will fully integrate supply chains. State-of-the-art technologies such as RFID can sense demand and outages in real time. Responsiveness can be increased by enhancing traditional practices like vendor-managed inventory (VMI) and establishing event management concepts. Then, agile manufacturing capabilities can adapt quickly to meet that demand. By meeting true demand better than ever before, DDSN makes a direct impact on profit margins.

Synchronizing the data exchanged and the process to exchange it enhances efficiencies and detail. By standardizing master data – and how the different entities order, pick and pack, ship, and invoice – the data can be optimized for the entire network. Through the use of sensing technology, planners can accurately assess demand and thus forecast more precisely. New tools make this data more timely and actionable.

Once trading partners are synchronized and using a consistent and accurate forecasting methodology, a dynamic S&OP can put that forecast into action. Instituting DDSN delivers a series of enhanced planning, execution, sensing, responsiveness, and adaptation capabilities.

Managers can respond proactively to the deviations caused by internal and external events. Instead of spending their time gathering information, responding to problems, or preoccupied by ancillary tasks, managers can turn their attention to the most pressing needs – or new opportunities. The ability to react more quickly to alerts can prevent crises and reduce the attendant costs.
ANOTHER SHIFT: MANUFACTURING TO SATISFY DEMAND

Manufacturers strive for simplicity and efficiency. But with DDSN, manufacturing will be agile. Instead of long production runs, the line may operate with shorter runs and be shifted quickly to another product to meet actual demand.

Operational planning cycles will need to be reduced to accommodate more flexible response times, and production lines may become much smaller and more adaptable. Instead of using forecasts to create a three- or four-week planning cycle, the more adaptive manufacturing approach calls for the agility to operate with a planning cycle of one week or less. The new fulfillment network will be based on available or anticipated supply network and logistics resource capabilities.

Here is the heart of the argument. While manufacturers have always believed that long production runs lead to higher profitability, this is no longer the case. Although it may seem counterintuitive, production runs that are theoretically less efficient may actually post a better ROI with DDSN because of the ability to shift manufacturing quickly to the most profitable products.

Managers can look at orders received in the morning and change the production schedule in the afternoon. While this capability will not be required for all products, the agility to respond to what customers are buying will be required. While this is indeed adaptive manufacturing, the payoffs are enormous. Such improvements in supply chain management help companies manufacture what the customer wants, instead of trying to sell what manufacturing has produced.

Running longer and more efficient production runs creates large inventories of product that is essentially “dumped” to the supply chain. This oversupply results in carrying costs, obsolescence, and markdowns. The new reality is to carry smaller inventories and meet current demand with products that sell at full price. Even small improvements in adaptive manufacturing can deliver significant improvements. Smaller inventories and higher fill rates improve margins. The difference is being demand-driven instead of marketing-driven. As soon as customers have a new desire, manufacturers adapt production to accommodate.

Returning to the example of the snack food rep, the optimum solution determines what should be loaded onto the delivery truck before the driver leaves the warehouse and creates the best itinerary so the sales rep services the right stores with the right product before a stock outage occurs. Taking it one step further, the sensing triggers the manufacturing process to meet the demand.
ALERTS AND SIMULATION TOOLS TO DEAL WITH CONTINGENCIES

To aid operations with a shorter cycle, new modeling and simulation tools can run a multitude of what-if scenarios to determine the optimal manufacturing configuration, quantities, transportation plans, and sales promotions. When planners determine the best course of action, they can apply supplies, labor, manufacturing capacity, shipping, and other requirements to the tasks. Newer, more flexible manufacturing equipment may be required to produce smaller quantities and permit more rapid reconfiguration.

As with any system, breakdowns will happen. The traditional supply chain is full of black holes. Material may fail to show up or to meet specifications—or it’s delivered but fails to reach the right party. Customs may delay a truck at the border; the customs broker may be aware of the holdup but other key people are not. A drought may affect a commodity, but the operations team doesn’t get the word. DDSN tools such as event management can mitigate these disconnects, allowing partners to see what’s coming, where it’s going, and how best to handle it.

To eliminate surprises and increase response times, simulation tools permit analysis of different responses to each contingency. Parameters can be changed and all the permutations taken to the various conclusions. Using the example of the snack food rep, planners can simulate different load-outs and routes to determine which delivers the best overall in-stock position. With simulations, planners can pursue the best options and notify partners ahead of time when a problem arises or a promise cannot be fulfilled.

DDSN eliminates the need to pad projections, squirrel away raw materials, or store extra inventory for a rainy day. That excess stock occupies storage space, ties up capital, and slows down the ability to respond to demand. Inventory transparency helps find idle stock, which can now be repurposed more profitably.

With these new tools comes full visibility up and down the supply chain. Padding can be identified and reduced, if not eliminated. Visibility enables collaboration. This connectivity and cooperation is pervasive, spreading across the business network to meet the internal and external demand and proactively respond to supply.

Managers can move quickly when something goes wrong. Marketing knows much more about what is coming from the factory and when it will be available. Manufacturing can monitor what product is selling and be ready to respond immediately to shifting consumer demands.

DDSN helps managers respond to the pressing demands of the moment. It delivers analytics that provide standard dashboards to monitor activities continuously. It also provides business intelligence that allows leaders to look to the future and steer the business in the right direction. Lessons learned can be incorporated into the company’s business processes to drive continuous improvement.

DDSN spans the entire consumer products supply chain and seamlessly connects all facets of the network. The future demand-driven organization integrates all supply and demand elements to provide a seamless flow of real-time information to support valid decision making.
DDSN AND A NEW FORMULA FOR SUCCESS

DDSN capabilities help manufacturers better serve changing consumer and customer needs by consistently having the right products on the shelf at the moment the purchaser wants them. DDSN enables the delivery of more and higher-margin products while reducing inventory and costs. This facilitates revenue-generating product and service innovations that result in customer service excellence and higher profits.

DDSN is not one thing or one capability. It is not a destination, but rather a journey. It comprises a group of capabilities that enable a company to achieve the results possible at each stage of the evolution toward a full demand-driven model.

While most organizations have some DDSN elements in place, no company today has the full network up and functioning. To begin the journey, it is important to recognize the end state and work methodically toward that goal as your organization, your trading partners, and the underlying technology evolves. Consider the following steps.

Stage 1: Harmonization – The first step in becoming demand-driven is to standardize processes, data, and technology within your current environment. This would typically start with establishing performance management and the alignment of master data.

Stage 2: Advanced planning – The second step still focuses on the internal organization and requires the integration of key supply and demand elements. This typically focuses on a robust, dynamic S&OP that integrates all parties such as logistics, production, new-product introduction, and trade management. Furthermore, this step includes the refinement of forecasting techniques and the implementation of advanced planning and scheduling processes — that is, using optimization algorithms.

Stage 3: Increased responsiveness – The third step extends the focus beyond the enterprise to the network as a whole. On the customer side, this means driving forecasting and visibility past the distribution center to the source of demand. On the supply side, this means extending past traditional purchase orders to supplier availability and capability.

Stage 4: Adaptability – The fourth step takes the integrated network and refines its capabilities to adapt effectively and quickly to changes. This may require new levels of data, new time considerations, and increased flexibility across the network. By becoming more adaptive, the network can increase its ability to fulfill demand while removing waste from the entire supply chain.

By progressing through each of these stages and integrating processes such as sales, marketing, R & D, financials, sourcing, analytics, and customer data to create a seamless value chain, manufacturers can reduce costs, optimize assets, and increase revenue. A company can make the transition from a linear chain to a virtual network, especially when trading partners integrate at the same time. This requires enabling networked infrastructures and a willingness to share information freely among partners.
Ultimately, DDSN benefits every player in the supply chain, not just the manufacturer. Suppliers, brokers, retailers, and consumers will benefit as well.

Suppliers, for example, are often bullwhipped by demand, forcing them to carry significant volumes of nonproductive inventory. Or, they are slaves to unforeseen product developments. With DDSN, suppliers can respond faster and smarter to demand and supply dynamics. They can reduce inventory, balance capacity, and lower total delivered costs. Increased agility enables suppliers to better respond to customer demands, creating more powerful customer relationships and maximizing their revenue and profit. Linking consistent and enhanced forecasting processes with supply capabilities results in more flexible overall supply operations. Furthermore, the supplier can become a partner in the innovation process rather than an obstacle.

Meanwhile, brokers can be better in sensing and shaping demand. They can become more than order takers or middlemen, and become key supply network enablers. This will increase their value to both manufacturers and retailers.

Retailers are able to benefit from increased in-stock levels of full-margin products and meanwhile, carry lower inventory. They can maximize revenue and cash by providing constant availability of products that their customers want to buy. Using DDSN allows retailers to offer a unique merchandise and service portfolio tailored to their specific shoppers’ needs. It better responds to consumer demand, and that in turn provides business-building product and category innovation — setting the retailer apart from competitors and differentiating the brand. The result: enhanced shopper loyalty and increased spending. And finally, the consumer benefits through increased product availability, satisfaction, time savings, and convenience.

What we are creating is a better supply chain, driven by demand, and powered by tools that enable a manufacturer to plan, execute, sense, and respond to a dynamic market. The key is the ability to sense shifts in demand rapidly and act on those shifts to deliver what consumers want at the moment they want it.

The game is changing. There is no middle ground. Companies that fail to adopt DDSN while their competitors are doing so will find empty shelves in the store and warehouses full of the wrong product. Now is the time to step up to a leadership position.

As a leader in integrated business solutions, open technology, and enterprise service-oriented architecture, SAP can help companies lay the foundation for DDSN. Following the step-by-step approach outlined here, SAP® solutions and services provide the following support:

- **Harmonization** – The SAP NetWeaver® platform provides the foundation for harmonizing processes and data. In particular, SAP NetWeaver can help the company effectively manage master data across the entire supply and demand network to generate “one version of the truth.”

- **Integration and internal collaboration** – SAP software provides the right collaboration and analytic tools to support user productivity, along with predefined analysis configurations and rapid integration to other applications.

- **External collaboration** – A key capability for DDSN is extension of the internal corporate network to suppliers and customers. The network then seamlessly communicates shifts in demand to suppliers who in turn respond with the materials necessary for manufacturing to meet the demand. The SAP Advanced Planning & Optimization component ties demand planning and supply network optimization to production planning and detailed scheduling, as well as transportation planning. The SAP Inventory Collaboration Hub component helps the company develop responsive replenishment and supplier-managed inventory.

- **Adaptability** – Adaptability is the key to the long-term viability of DDSN. When DDSN functions most effectively, it immediately adapts to changes in demand — all along the supply chain. SAP solutions that foster demand forecasting also help develop an advanced forecasting capability. That leads to load building and eventually to replenishment with order generation, subdaily planning, and dynamic sourcing.