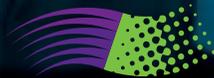




Connecting Customer Demand to the Plant Floor

How discrete manufacturers can leverage market information for improved performance and new product development



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Introduction

Discrete manufacturers produce and sell goods they can count — a reality that encourages many to forecast demand by looking in the rearview mirror at past performance. It's understandable: using *previously filled orders* for discrete resource and production planning is far easier than using *anticipated consumption quantities*, which vary in real time — and require far more flexibility to manage.

Relying on the past may have worked in the old, batch-and-queue days of discrete operations. However, manufacturers navigating a competitive global marketplace can't manage today by looking at yesterday's results. Firms that focus on past performances miss huge opportunities to leverage insights, expertise, and market knowledge from their sales forces and customers — intelligence that can make customer demand more visible, forecasts more accurate, product development more nimble, and supply chains more efficient. And in the current economic climate, in which customer orders (and even customers) disappear overnight, it's more important than ever to link true demand and actual production.

How does using yesterday's information make manufacturers *less* competitive?

- **Operations:** Planning production based on what has been shipped to customers instead of *anticipated* consumption inevitably leads to overproduction (excess finished-goods inventory) or underproduction (low fill rates). Both damage profitability by driving up unit costs or turning away potential revenue. This model also lengthens fulfillment cycles, which slows velocity and cash flow (important given today's tight credit markets), and camouflages valuable trends that could be used for long-term planning.
- **Supply-chain management:** Globalization and technology have increased the demand for, and value of, flexible production that rapidly responds to changing customer needs and unique market requirements. Achieving this flexibility requires extensive supplier involvement and accurate, real-time demand information to connect customer information to the plant floor. Otherwise, discrete manufacturers would have to stockpile all types of inventory (raw materials, work-in-process and finished goods) to respond quickly, incurring costs for excess and obsolete inventory.
- **Product development:** Demand-driven research and development increases product-development success. Lean companies such as Toyota Motor Manufacturing, for example, have much shorter product-development cycles than their competitors. Their products not only get to market sooner, they also anticipate changing preferences: for example, the Prius, which Toyota introduced in 1997 as the first mass-produced hybrid car, and which still dominates that market. Long-term relationships with customers are particularly important to product-development success.

Stabilizing Customer Responsiveness

A discrete manufacturer that successfully builds close partnerships with customers — relationships based on mutual information-sharing and trust — has a more accurate view of near-term demand and can subsequently build more collaborative partnerships with suppliers through a demand-driven network. This model gives end-to-end and real-time visibility to key information that fuels strategic planning throughout the value chain, including demand forecasts, facility investments, product development, and raw-material prices.

Unfortunately, this model is rarer than might be expected: Just one in five North American discrete manufacturers report “extensive integration” with customers. Not surprisingly, this small group of customer-connected discrete manufacturers also are well connected with their supply chains, with 91 percent reporting integration with suppliers, as well (45 percent report *extensive* integration with suppliers and 46 percent report *some* integration with suppliers). These connections to customers and suppliers help this elite group to be more efficient than their peers: 51 percent reduced or held steady per-unit manufacturing costs (excluding material) over the past three years. Conversely, for discrete manufacturers with *no* collaboration with customers, 59 percent endured an *increase* in per-unit manufacturing costs (excluding material) during the same period.¹

Customer integration also creates opportunities for more successful long-term planning. A manufacturer that *anticipates* customer demand can develop products based on customer signals, which can lead to more orders: Approximately 77 percent of North American discrete manufacturers with *extensive* customer integration *increased* their unit-volume output during the past 12 months versus just 66 percent of those with *no* customer integrationⁱⁱ

Smart discrete manufacturers build three important pieces of infrastructure to create and optimize customer partnerships:

- 1. A consistent improvement methodology:** Manufacturers need to put their own operations in order before integrating with customers. This means having defined an improvement methodology supported with actions and funding, not just words. It isn't necessary to be at world-class performance levels before engaging customers, but a company should be able to demonstrate success in implementing best practices and continuous-improvement activities that grow profits and support long-term sustainability (and it certainly helps when attempting to convince suppliers to undertake best practices). One of the most profitable outcomes of collaboration often occurs when suppliers and customers jointly develop new best practices, a strategy that can deliver exponential savings and market growth for both enterprises.
- 2. An information strategy to capture and share actionable customer knowledge:** Business-management tools that provide swift access to needed information enable customer collaboration in several ways: increasing communication; documenting commitments and actions; connecting previously disparate activities and groups; and collecting, storing, and managing knowledge and results.

Customer-relationship management (CRM) applications, for instance, enable a company to create a detailed database of all information connected to clients, allowing users to view that information quickly and easily in a variety of formats. This access empowers everyone in a company to become a "customer service" specialist, offering clients solutions rather than just products (or in many worst-case scenarios, nothing at all). CRM also can support quick sales quotations to improve customer satisfaction and speed time to production. Similarly, supply-chain management (SCM) applications provide detailed information about suppliers and supply-chain transactions, not only used for reference, but also to make function-specific strategic decisions on such issues as materials procurement, daily logistics planning, product lifecycle management, and so on. Early enterprise resource planning (ERP) tools originally worked against demand-driven planning by fostering "push" production, but they have evolved to support demand-driven planning and its "pull" production. Today, best-in-class ERP systems often integrate with many common office applications and SCM, offering demand-planning capabilities, and incorporating historical data, economic indicators, promotions, and so on to improve decision-making. In the U.S., 53 percent of discrete manufacturers with *extensive* customer collaboration use ERP solutions.ⁱⁱⁱ

- 3. Integration of business-management systems with suppliers:** Gaining insight into customer demand doesn't generate full benefits until it leads to more efficient *and* profitable fulfillment. Elevating suppliers to a "partner" level is a critical component in this strategy. But remember that true supply-chain partners require access to the manufacturer communications, agreements, and commitments — along with the tools to communicate efficiently with these companies as needed. When done well, such a system enables monitoring of fulfillment practices — suppliers through internal operations — and provides a baseline for improving internal operations and those of suppliers.

A modern business management system can help staff monitor and report on the productivity and business value of supplier and partner relationships, and provide the red flags to implement appropriate course corrections. This then can help enable efficient quality control over supplier fulfillment commitments to the manufacturer, and sharing of these findings to evaluate performance, negotiate terms, or initiate new business alliances. Reliable demand-planning capabilities also can help to control costs and align vendors firmly behind the manufacturer's business goals.

Discrete manufacturers with extensive supplier integration and a formal supplier-management program report higher levels of performance, ongoing improvement in customer service, and higher inventory turn rates:

- 77 percent have made significant progress toward, or have fully achieved, world-class manufacturing status.
- As a group they improved customer-order lead time by 37.5 percent (median) during the past three years, and report 100 percent customer retention (median).
- These firms turn over their total inventories at a rate of 12 times (median) per year (2 turns more than other discrete manufacturers).^{iv}

Demand-driven supplier networks are crucial for discrete manufacturers that want to improve performance while containing costs. Fortunately, best practices, continuous improvement, and information technology tools can be used simultaneously in relationships up and down the supply chain — as long as all partners have common goals.

Continuous Improvement of the Customer Relationship

Building successful partner-level customer relationships requires a long-term commitment to continuous improvement. Why? Because process improvement involves changing behavior at every step, which means that leaders throughout the value chain must manage this difficult process with ongoing communication, training, encouragement, responsiveness, persistence, and consistency. This investment is worth it for customers and suppliers alike; however, because when a discrete manufacturer transforms its supply chain into a pull-based enterprise focused on the customer, all the firms that comprise the supply chain can adjust to changing market requirements faster and more efficiently. Not surprisingly, discrete manufacturers that collaborate with *both* customers and suppliers are more apt to be world-class performers (*see Integration and World-Class*).

Integration and Progress toward World-Class Manufacturing (Percentage of Plants)^v			
	<i>Extensive integration with customers and suppliers</i>	<i>Some integration with customers and suppliers</i>	<i>No integration with customers or suppliers</i>
No progress	11.1 percent	13.5 percent	22.2 percent
Some progress	32.6 percent	56.3 percent	61.1 percent
Significant progress or fully achieved	55.8 percent	30.3 percent	16.7 percent

Discrete manufacturers with *extensive* integration with both customers and suppliers are more likely to pursue higher performance based on defined improvement methods (Lean Manufacturing, Toyota Production System, Six Sigma, and so on) — 91 percent have adopted one or more improvement methodologies versus 76 percent of those discrete manufacturers with *no* integration. And they're getting results (even "some" integration with customers and suppliers correlates with improved performance).^{vi}

Integration and Performance (Medians)^{vii}			
	<i>Extensive</i> integration with customers and suppliers	<i>Some</i> integration with customers and suppliers	<i>No</i> integration with customers or suppliers
Customer retention rates (percent retained from previous year)	99.0 percent	98.0 percent	90.0 percent
Gross margins	42.5 percent	36.0 percent	26.0 percent
Total inventory turns	12.0	10.2	7.0
Production volume as percent of planned capacity	80.0 percent	75.0 percent	70.0 percent
Return on invested capital	50.0 percent	15.0 percent	15.0 percent

How Does Real-Time Visibility into Customer Demand Trigger Improved Performance?

The velocity of a fulfillment system — from pulling raw materials and components to finished-goods delivery to customers — increases when demand signals move faster through the supply chain, pulling material from process to process and facility to facility. Increasing velocity also reduces inventories and lead times so that customers receive goods faster and cash flow throughout the system increases. Higher velocity also increases systemwide flexibility by allowing for quick changes in vital functions such as product design, materials procurement, production planning, asset investment (such as tooling), packaging, and logistics and transportation. This momentum helps to drive out wasted labor, material, and assets by revealing (and eliminating) bottlenecks. Simultaneously, higher velocity increases customer satisfaction because customers receive the goods they want much more quickly. This, in turn, increases the customers' flexibility, which eventually leads to customers viewing their suppliers not as vendors of products but as providers of solutions.

In addition to improving operational performance, tighter links and information-sharing with customers provide a long-term strategic advantage by giving decision-makers — both internal and external (that is suppliers) — clearer and more detailed insight into the future. For example, a manufacturer with intimate knowledge of a major customer's five-year strategic plan can incorporate this knowledge into its own forecasting, gaining competitive advantage by more effectively planning capacity, sourcing, logistics and transportation, and other costs when a demand-driven supplier network is in place.

This is particularly advantageous in uncertain economic times when crucial raw materials (for example, energy) and services (such as transportation) typically exhibit volatile, unpredictable pricing. Any group of supply-chain companies trying to minimize energy consumption and transportation costs will be more effective when collaborating than when working independently. Indeed, more than half of discrete manufacturers integrated with *both* customers and suppliers reduced or held in check per-unit manufacturing costs (excluding materials) over the past three years. Conversely, fewer than 40 percent of discrete manufacturers with *no* integration were able to reduce or keep costs constant.

Integration and Manufacturing Costs (Percent of respondents reporting three-year change)^{viii}			
	Extensive integration with customers and suppliers	Some integration with customers and suppliers	No integration with customers or suppliers
Decreased	42.1 percent	39.0 percent	29.5 percent
Stayed the same	7.9 percent	13.7 percent	10.3 percent
Increased	50.0 percent	47.2 percent	60.3 percent

Understanding a customer’s plans for the future also expands opportunities for new product and service proposals, as well as ways to become a more valuable partner. For example, if a customer anticipates the need for a new warehouse, there may be an opportunity for a vendor-managed inventory program that reduces inventory-carrying costs for the customer and allows the supplier to smooth the effects of variable demand, increasing flexibility for both partners.

Conclusion

The trend is clear: Discrete manufacturers that gain insight into customers’ challenges and strategic planning and use this knowledge to build demand-driven supplier networks will be more competitive even in difficult economic environments. Their costs will be lower, their efficiencies improved, and the resulting increases in customer satisfaction will yield market growth — and rising profit margins. But implementing a demand-driven strategy takes more than good intent; it also requires a commitment from executives to invest time and effort into establishing business management systems (ERP, SCM, CRM) and refined processes that foster true partnerships. This includes shared information, risks, and decision-making among all firms, whether supplier or customer, in a given value chain. Are you and your company ready for the responsibilities — and the profits — that a demand-driven business model can bring?

ⁱNorth America data on 572 discrete manufacturing plants from The *IndustryWeek*/Manufacturing Performance Institute 2007 Census of Manufacturers; 2007 Canada Manufacturing Study, conducted by *Advanced Manufacturing* and the Manufacturing Performance Institute; and Estudio De Manufactura Mexico 2007, conducted by the Manufacturing Performance Institute with support of CS Events.

ⁱⁱIbid.

ⁱⁱⁱIbid; note that ERP is less likely in Mexico (29 percent) and Canada (43 percent).

^{iv}Ibid.

^vIbid.

^{vi}Ibid.

^{vii}Ibid.

^{viii}Ibid.

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