



Manufacturing: The Six Keys to a Strategic Edge

Rethink and remake your supply chain and operations processes for responsiveness, flexibility and resiliency.

Manufacturers have relied on software to execute their supply chain, operations and manufacturing processes for years. However, packaged software has limits, and customizing it can be quite costly. To gain an edge, many companies are turning to new technologies like big data analytics and machine-to-machine communications. A methodical approach that leverages an integrated platform is required to ensure success. The goal should be to optimize all facets of a manufacturer's supply chain, operations, and manufacturing processes and activities.

Growth, Profits and Customer Satisfaction: Choose Two

Three objectives of a typical manufacturer are growth, profitability and customer satisfaction. Conventional wisdom holds that you can only have two of the three, as they each require different areas of focus. For instance, to enable growth, the customer must become the focal point, with your supply chain segmented to meet requirements for each customer type. To maximize customer satisfaction as well as growth, inventories must be increased and moved as close to the customer as possible. But meeting these goals means forgoing profit. Inventory rationalization or reduction projects may restore some profitability, but that may require sacrifices that imperil growth or customer satisfaction in an age of ever-increasing consumer expectations.

The question for the manufacturer today is, can you remain flexible and responsive, meet customer demand, support dramatic growth and offer personalization, all while maintaining both revenue and margins? The answer is yes, but it rests upon three fundamental principles:

- * Visibility:** Connecting all disparate systems and obtaining all data that drives an end-to-end process, then analyzing that data to understand when and where exceptions occur.
- * Control:** Leveraging visibility to manage exceptions, understanding how actions affect key performance indicators (KPIs) and how that performance is linked to the financial performance of the organization.

*** Agility or Resiliency:** Not only reacting to issues or customer requests as they occur, but anticipating issues and acting *before* they occur. Being able to react quickly to a customer request without adding a significant amount of undue cost to the process or going through a heroic effort to obtain the desired result.

Obtaining Supply Chain and Operations Visibility

Managing exceptions becomes more efficient and effective when they're identified early in an executed process, before they become larger problems for you or your customers. In general, the earlier you know about an issue, or its possibility, the sooner you can react to it, and the more cost effective the solution can be. It follows that the earlier you react, the more optimized your reaction can be in terms of both time and money, with less chance that your customers will know there was an issue at all. The goal is to maintain this perception with customers and grow your business, without sacrificing profits through costly responses or by adding additional people to solve the problem.

Building Agility: Integrate Applications, Separate Processes and Leverage Data

Software applications exist to aid in manufacturers' processes, and each has its strengths and limitations. Therefore, to attain the aforementioned aspirations, look to leverage solutions based on a technology platform that's usable in almost limitless ways, beyond the target goal most out-of-the-box applications—such as enterprise resource planning (ERP) applications—aim for. Buying and supporting individual applications to solve every new business problem can quickly become cost prohibitive. Most importantly, basing your success on prebuilt applications limits your ability to differentiate from competitors, as you will be following the same standardized, undifferentiated processes.

Instead, your goal should be to build a solution based on an affordable manufacturing platform to ensure maximum flexibility. The solution should adjust to your iterative feedback loop, help drive processes, and collect and analyze data to uncover hidden value at every step. Leveraging best-of-breed applications and integrating them with an enterprise service bus (ESB), or middleware, rather than performing point-to-point integration provides several key benefits.

Leveraging an ESB, or implementing loosely coupled integration, is highly cost effective. It allows your processes to be separated from, or not wholly reliant upon, the underlying system of record. And it enables the processes to be continually modified without upsetting the system of record. A flexible business and technology platform forms the basis for enterprise and supply chain agility, responsiveness and resiliency.

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Include Customers, Partners and Suppliers

The same agile integration methodology should be extended to suppliers, partners and customers as well. However, integrating them into your supply chain will require multiple methods of communication. For instance, you may need to consume electronic data interchange (EDI) feeds, sensor-based data, managed file transfers, email attachments, faxes and data from mobile devices. All of this data needs to be consumed seamlessly, without significantly contributing to the cost and complexity of the solution.

Don't forget to include plenty of customer data. Although customer demographics have driven much of the traditional manufacturing process, the trend is toward the "demographics of one." Instead of classifying your customers into groups, create a knowledgebase of each customer's uniqueness, based on purchasing patterns, feedback and other data sources. The next step is to follow through and deliver on the increased level of customer services. No matter how good your intention, your effort will be in vain if you make promises to customers or internal stakeholders that you can't keep.

Include the Internet of Things

The machine-to-machine (M2M) revolution, also called the Internet of Things (IoT), is giving birth to a higher level of industrial automation and communication than ever before. Integrating sensor data from production lines into an end-to-end supply chain solution further refines the capabilities of what you can deliver, when, and at what cost. This not only includes data from your own production lines, but those of your suppliers as well, where possible. Reducing production variability is one of the key factors in meeting customer expectations and growing as profitably as possible. Production variances cause supply chain practitioners to maintain larger than needed quantities of inventory or increase lead times to compensate for the variability.

Going further, attempt to tie into your customers' methods of interaction for order taking and order status communication. This includes the Web, mobile devices, email, texts and so on. Remember that all of this integration is going to produce a lot of data, very quickly. You need to process this data efficiently to extract the most value from it. This is where big data analytics enters the picture.

Big Data and Analytics to the Rescue

"Big data" is a term used to describe data sets so large that traditional data management tools have difficulty processing them effectively and in a reasonable time frame. With the right big data tools, you can analyze this deep data to identify problem areas including previously unknown issues, refine business processes and make overall improvements as needed. For instance, you can process supply chain and customer data as you gather it, then combine it with historical data based on past sales, manufacturing experience and real-world events to uncover hidden value and patterns for future iterations.



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The challenge is to define and process these analytics using an unbiased approach. Too often, companies fit the data to match their preconceived expectations. With the right approach and ample data, predictive analytics will help you perform advanced planning for future scenarios, and then identify and prepare for anomalies. Examples include changing weather patterns, cyclical supplier shortages, daily risks versus one-off issues and rare events such as floods or earthquakes.

Six Keys For Success

1. Understand the Right Place to Start

It's critical to identify the right starting point to keep the scope narrow enough to ensure clear understanding, fast adoption and a short path to success. For example, internal processes such as order-to-delivery or order-to-cash can be controlled and monitored quickly. After identifying a technology platform, incorporating as many sources of data as possible and implementing the proper big data analytics, the next step is to create a 360-degree view of the forces that affect your ability to satisfy customer demand and requirements. This includes monitoring transaction data as it arrives in the context of the end-to-end process, making sure this data set is as complete as possible.

2. Select KPIs that Align with Corporate Objectives

You will be able to quickly validate that you have selected the right KPIs by leveraging technology capable of understanding what's normal for your supply chain by time of day and day of week. It should trigger action when your transactions or aggregate numbers of transactions are trending outside of normal.

3. Leverage Leading Indicators by Monitoring End-to-End Processes at Key Points

These leading indicators of success or failure, referred to as process-intrinsic metrics (PIMs), are the advanced warning signs that you will not meet a set KPI. These key process points also include supplier and external supply chain partner activities. When suppliers and supply chain partners take action or provide responses outside of what's normal for them, this may indicate that a problem has occurred that may impact you as well. Include shipping data and other logistics information in the exception handling equation, along with any other factors that affect your ability to meet customer demand. Use all of this data to improve your analytics iteratively, and ultimately customize your processes, systems and technology.

4. Visualize the Data Correctly and Take Action

When leveraging PIMs, it is critically important to disseminate real-time performance information throughout the organization with role-based dashboards rather than relying on historical business intelligence (BI) charts or reports. These role-based

dashboards should be embedded in the same user interface where the process exceptions are managed to provide context for accurate, fast decision making and exception handling. Users will not have to sort through multiple applications to obtain the data they need. First- and second-line managers will always have a complete, up-to-date understanding of what is happening in the entire organization.

5. Understand Process Execution for Segmentation

While a real-time dashboard is extremely important, a near-real-time view of as-executed transactions provides a sound basis for understanding the different performance levels and costs of the different segments of a supply chain. By being able to drill down from aggregate cost-level data to the actual as-executed transactions, enterprises can easily determine how much cost and

performance to attribute to executed processes that differ from the designed process. This time and cost data can be examined in the context of whether or not the executed process supported KPI attainment. It also gives an organization immediate clarity around the appropriateness of its designed process. Most importantly, it provides a statistical basis for how each step in a process functions and the time and cost involved for each step.

6. Automate Costly Manual Processes and Exceptions

With a statistical understanding of what “good” is, the automation of critical process points or entire processes can be completed with the understanding that the processes and the automation support critical business KPIs, and that those KPIs drive stakeholder value.

Get Started Today

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