

# Field-to-factory – how manufacturers harvest demand

## WHITE PAPER

Cincom in-depth analysis and review



By Louis Columbus



SIMPLIFICATION THROUGH INNOVATION™



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### Table of contents

- Executive summary ..... 2
- The cure for manufacturing myopia:  
getting a field-to-factory vision ..... 3
- Why field-to-factory is critical now ..... 4
- What best practices in field-to-factory look like ..... 7
  - Case study 1: Trane makes field-to-factory work ..... 7
  - Case study 2: Greenheck Manufacturing's road  
to best practices ..... 8
- Recommendations ..... 9



## Executive summary

The bottom line: The pace of change is quickening. To be competitive, manufacturers must become transparent from the field where orders and quotes are created, through to the factories where products are manufactured through fulfillment. Transparency and speed now rule over mountains of metrics and analytics. To be myopically focused is to predominantly focus on internal measures of performance first, and miss this revolution that your customers want and opportunities to serve them and grow your business.

Harvesting demand starts with a commitment on the part of manufacturers to turn the speed of change into a competitive asset. The pace of change itself is changing, and during the next five years for any manufacturer to stay competitive, they will have to keep pace, even outrun changes in their customer base, in their processes, and most of all in the transparency between when an order is first placed, to its steps in fulfillment and finally in its delivery to the customer.

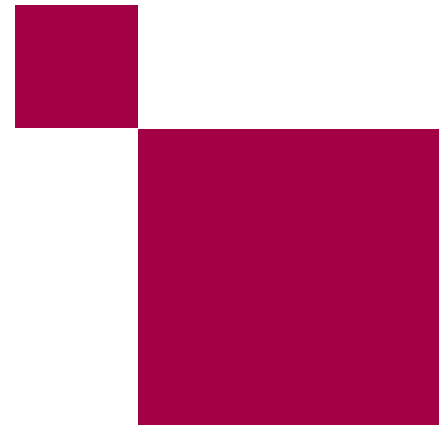
Speed is a competitive asset, and the visibility from when a quote is first produced to when a final product is shipped is what matters most. Harvesting demand starts with this clear view through your company's value chain. To ignore it by being myopic or by leaving out a critical step is to leave money on the table. AMR Research, a research firm that specializes in analyzing the effects of increasing the visibility of demand signals through global manufacturing enterprises, has found a strong correlation between the extent of integration and resulting transparency between the field and its many interactions with customers on the one hand, and the ability to excel at production, manufacturing, fulfillment, and service on the other.

The answer to being too inward-centric and missing the revolution your customers want is to aggressively develop and pursue a field-to-factory vision for your company. This is beyond buzzwords and just theoretical knowledge. It's about turning speed and accuracy into a competitive advantage and turning change into an asset.

Clearly adopting a field-to-factory vision and then aggressively going after the strategies to fulfill its objectives is actually beyond best practices as it has been defined in many research circles. It's beyond searching for the best of what others have done. It's defining your own best practices as they relate to becoming a global competitor; where speed, not spending, and timing, not tentativeness, mark your strategies for growth.

Becoming a world-class competitor includes making the decision to move away from being myopically inward focused and striving to see the outside world such as what's happening in the field with your channels, customers, partners, and own sales force. Next, strategies for making the field-to-factory vision come alive are discussed. A few of them are briefly described here:

- **Intensify your focus on each customer interaction.** Realize that in each and every interaction you have with a customer, their trust must be earned. You must intensify your focus on the fact that every critical moment of every day has to underscore the fact that your company in particular values and aligns internal systems to deliver exceptional service.
- **Bring solutions – not just technology – to your clients.** Create systems that allow your prospects to progress at their own pace. This strategy is true for product evaluations, trials, and purchases. Also, during the trial period, build clear visibility throughout the entire value chain of your company.
- **Give your clients visibility into order history as well as each specific order's progress.** Creating systems that benefit all clients by delivering the status of a customized order as it travels through manufacturing and fulfillment and also has the ability to quickly summarize order history by product, region, or business unit is what happens when a field-to-factory vision gets turned into reality.
- **Integrate all customer-facing systems in the field to ensure accuracy, reliability, and transparency.** The need for providing transparency across quoting, pricing, manufacturing, and fulfillment systems – with a focus on how to best surpass customers' expectations at every interaction – is critical. This is at the heart of field-to-factory strategies and where several manufacturers are finding a sustainable competitive advantage.



## The cure for manufacturing myopia: getting a field-to-factory vision

Thomas Friedman, in his best-selling book, “The World Is Flat: a Brief History of the 21st Century,” speaks of the need for every service and manufacturing company to view themselves as global competitors. According to Friedman, the first step is to cure inward or myopic views of sales and service performance by embracing the fact that every company is a global competitor, and each has to harness speed, accuracy, and agility as competitive weapons to survive in an increasingly competitive world.

The best companies are pursuing pre-emptive and aggressive growth using field-to-factory strategies and initiatives as their competitive weapons.

Let's take a look at the implications of Thomas Friedman's book on field-to-factory strategies, and how his insights can be applied to the manufacturing of mass-customized products:

- **Focus on serving the customer instead of pricing.** Friedman stresses this point and shows several examples of how companies that focused on price-based strategies failed and those that focused on field-based strategies for harvesting demand succeeded.
- **Focus on “the voice of the customers” over products.** From his research, Friedman shows how companies that became myopically focused only on products and how to produce them at a cheaper price were doomed to fail. However, those that embraced the voice of the customers and redefined their entire manufacturing approach succeeded.
- **Rather than focusing on rival companies, intensely compete against yourself.** This promotes a broader product outlook and sets the pace in any manufacturing company to create solutions – not just products.
- **Field-to-factory execution is the path to competitive advantage.** Via several examples, Friedman shows that for a manufacturing company to grow, it needs to add value for its customers, channels, partners, suppliers, buyers, and service partners.
- **The secret to lasting competitive advantage is to continually improve field-to-factory performance.** Friedman's research shows that when a company loses its connection with the field-to-factory process within its companies, the company loses the ability to stay competitive.
- **Cost advantages are a mirage; customer advantages are real.** Friedman underscores this point again and again in his analysis of industries.
- **Focus on turning information into competitive strength.** Making the most of a field-to-factory strategy includes transforming the relationships you have with customers, suppliers, logistics providers, and sales and operations planning partners. Building a field-to-factory strategy has to start with looking at how to make communication between each of these constituents as efficient and in real time as the business model dictates. Figure 1 shows the results of surveys completed by AMR Research regarding their work on the leaders in Demand Drive Supply Networks (DDSN). This is a core concept of the broader field-to-factory strategies of many of the world's best-managed fulfillment companies.

### Four key best practices – field-to-factory execution

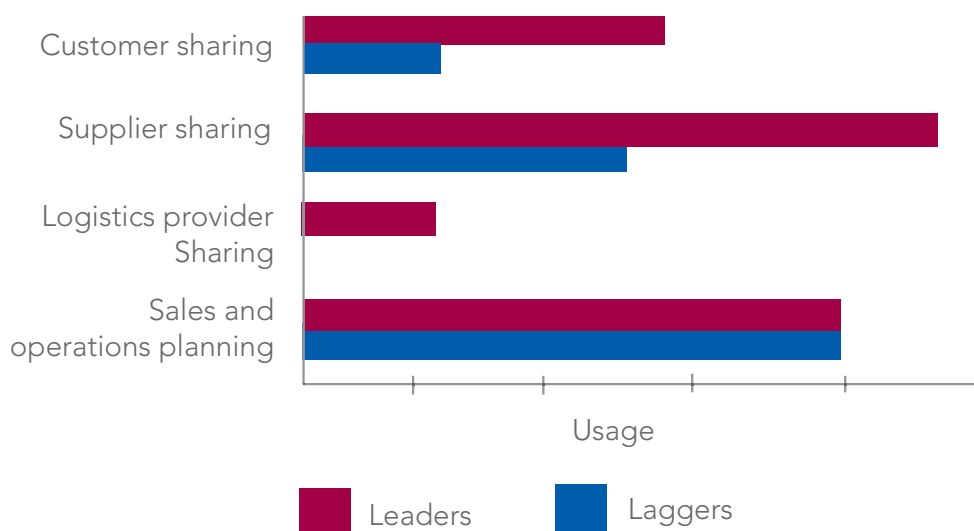


Figure 1: Sharing information in real time leads to field-to-factory best practices  
Sources: AMR Research; Cincom CMBS Research

## Why field-to-factory is critical now

Manufacturers step onto a global playing field each day. The ability to compete and win business, then fulfill orders accurately, reliably, and profitably, distinguishes the manufacturers that grow versus those that shrink or go out of business altogether. In manufacturing, speed and accuracy already beat out geographic preferences thousands of times a day. It's time for many manufacturers to step up and use field-to-factory strategies to become the global competitors that they are capable of being. The bottom line is that field-to-factory strategies – the ability to have a clear view of what's happening in your channels and align manufacturing to support its fulfillment – will make or break thousands of manufacturers by 2010, according to AMR Research.

To be pre-emptive and aggressive about your growth as a company is to embrace and excel at a field-to-factory vision. When you consider these facts, you'll see that this concept is all about creating competitive strength.

Table 1 includes several statistics that underscore the need for companies to adopt and champion field-to-factory strategies. Each of the bullets below describes the specifics of how companies are relying on field-to-factory strategies to compete globally.

- Between 70 and 80% of orders from manufacturers need further work and often re-entering, compared to 20% average across all industries. The complexities of capturing orders in manufacturing make adopting a field-to-factory series strategies a must-have. Add in the complexities of managing global orders and the need for delivering a clear and consistent message to customers becomes clear.
- Only one in three orders can be filled the first time. For one heavy-truck manufacturer, only one order out of seven is filled correctly the first time. Think of the competitive advantage this manufacturer could attain from just a slight improvement? Field-to-factory strategies can deliver greater synchronization and results.
- Consolidate and synchronize your channels. According to AMR Research, 51% of companies have more than one order-capture system, and in manufacturing companies, the average number of fulfillment systems is 5.3. Synchronizing these order-capture systems and creating a competitively strong and synchronized field-to-factory link is critical.
- Only one in three companies that rely on indirect channels has systems that are integrated with each other. Integrating pricing, order capture, and fulfillment systems differentiates those companies that are capable of responding quickly to unforecasted product orders.

20%	The order error rate across U.S. industries.
30%	Percentage of orders consumer products companies don't fulfill.
4%	Percentage of call center cross-sell opportunities that result in a sale.
42%	Percentage of companies that have one or more mergers or acquisitions in a typical year, and 70% plan to make all product and service offerings visible to all sales channels.
51%	Percentage of companies that have more than one order-capture application.
40%	Percentage of companies that have multiple order-fulfillment applications. (U.S. average is 5.3.)
37%	Adequately integrated throughout their sales channels.

Table 1 Why field-to-factory strategies are needed now  
Sources: AMR Research; Cincom CMBS Research

Think of field-to-factory strategies as the glue that unifies your company's demand, supply, and product processes and organizations.

Field-to-factory strategies progress through the steps of demand sensing, demand shaping, and defining profitable demand response or fulfillment. Figure 2 shows these steps in the context of the intersection of demand, supply, and product areas of your company. Each of the following areas of the field-to-factory vision is defined on the next page.

### Demand sensing:

- Attract prospects, clients, and existing customers by enriching them through knowledge. You get what you give, not what you demand. That's the new paradigm of selling. The field-to-factory strategies look to enrich prospects with excellent information first and earn trust during sales cycles.
- Enable everyone in your channels and direct sales force to always deliver value, and respond to prospects with "what's in it for them." Earn the title of trusted advisor. You do this by delivering exceptionally accurate, clear, and solid information. This is only possible with thorough integration of systems from the front office or field to the back office including ERP, pricing, fulfillment, and service.

- Quotes, pricing, proposals, and responses to requests for information must be trustworthy. The performance of all systems needs to show evidence of being highly integrated. They must also deliver responses in real time from the field, and as a result, further strengthen the trust between your prospects and your field or channels.
- Selectively use analytics to deliver insights to prospect opportunities. Manufacturers are taking an all-or-nothing approach to analytics today with some going to the extremes of measuring everything. Many are also focusing on capturing data manually and posting Excel charts throughout their companies. With field-to-factory, the focus first needs to be on measuring what matters to your prospects, customers, and installed base.

**Demand shaping:**

- Cultivate sales leads and prospects by delivering on company-wide promises more often. The essential aspect of field-to-factory strategies is that they deliver accurate and insightful information at the time in the sales cycles when it's needed the most – right at the time when prospects are deciding whether or not to purchase products. The focus on serving the prospect with clear and trustworthy information about how your company will perform later in the relationship is a very powerful competitive weapon.
- Give prospects a glimpse into the extent of your company's value chain. Being synchronized earns trust and sales and solidifies long-term relationships. For field-to-factory strategies to work, there must be a clear and strong link between the “field” or channel systems and production systems throughout your company.

- Enable your channel partners, resellers, distributors, and sales force to provide identical information to prospects. The Achilles' heel of so many manufacturing companies that rely on indirect channels is the often conflicting and incomplete information that is given to prospects. By taking a field-to-factory approach to the systems that serve the channels and sales forces of your company, you can alleviate the bottlenecks caused by inaccurate, conflicting – and many times incomplete – information.
- Write orders only for those products and services that can be delivered. With systems reporting back what's available in both finished goods and what's possible to produce given production capacity, companies are only taking orders that they can fulfill profitably. There's no longer the uncertainty of knowing whether an order is buildable or not, and if it is, when it will be produced.
- Build reliable sales pipelines by starting with accurate information from production. Equipping the sales force with access to the critical pieces of information from your supply chain results in solid pipelines. Trane and Greenheck have especially demonstrated this. The complexities of products these companies sell underscore the critical nature of setting accurate expectations with customers early in sales cycles.

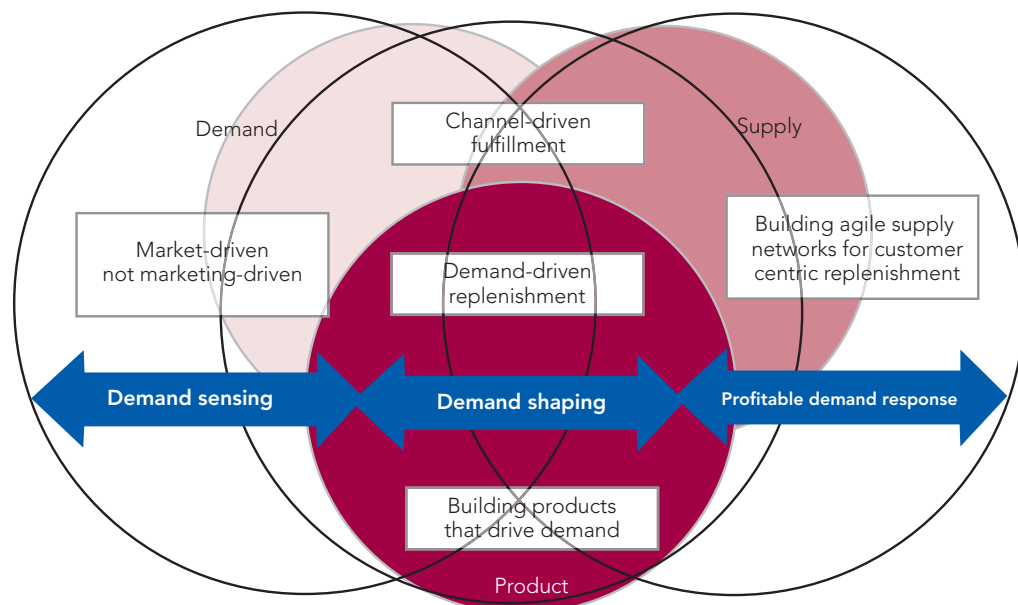


Figure 2: How field-to-factory works  
Sources: AMR Research; Cincom CMBS Research

**Profitable demand response:**

From sales orders to production in a single keystroke. At companies where field-to-factory is revolutionizing selling strategies, when an order is input, it travels directly to production scheduling. Order lines, date, and answer sets are sent through a field-to-factory platform, and at the same time, order header data is sent to the ERP system. The field-to-factory platform translates order lines and date question and answer data into order lines and characteristics for the bill of material.

• Make lean manufacturing a reality – even for highly customized products. The companies that are accomplishing best practices in field-to-factory strategies are finding the following benefits, especially in production workflows for configurable, high-end products:

- Accomplishing the essence of lean manufacturing by automatically routing orders to production. Making manufacturing processes as lean as possible starts by trimming all unnecessary steps in the order-capture, order-management, and production-scheduling systems. This is the essence of the field-to-factory vision: the ability to place orders and have them scheduled and ultimately fulfilled electronically.
- Capturing engineering knowledge so that it can be electronically applied to quotes, orders, and RFPs. In companies that have taken this step, product introductions were on time 50% more often, and the more complex production engineering tasks were completed on time. Using visual tools also cuts down on training time.
- Using visual tools and models that bring process modeling to business managers. To make lean manufacturing truly lean, tools that are easily used by business managers need to be provided. In the case of Greenheck Manufacturing and their use of a field-to-factory strategy, the ability of business managers to create product rules and constraints has given them a competitive advantage in launching new products and maintaining existing ones.

- Gaining greater independence from legacy systems' limitations. Another major benefit of implementing a field-to-factory strategy is that your company won't have to constantly change bills of material (BOM) in response to the order's changing requirements. By using a field-to-factory solution strategy, manufacturers are able to generate a BOM only once and use it throughout the production process. The field-to-factory solution includes support for both production-level and engineering-level BOMs, synchronizing workflows in the process.
- Consolidating order-fulfillment systems significantly improves order accuracy and fulfillment. AMR Research states that, on average, the typical manufacturer has 5.3 fulfillment systems. Consolidating these down to a single system that has an architecture that can support multiple channels and synchronize orders is a strategy that is paying off across all industries. At the heart of this consolidation of order-fulfillment systems, is the goal of creating and perfecting a lean front-office globally.
- Each manufacturer has a slightly different path to lean manufacturing, yet the benchmarks along the path are shared. In our experiences, we've seen manufacturers vary in their approaches to accomplishing lean-manufacturing goals. However, the shared value across all of them is a focus on measuring their performance on the perfect order, supply-chain measures of performance, and multiple measures of value and supply-chain performance. Figure 4 provides a framework of factors influencing field-to-factory success. The approach of assessing, diagnosing, and correcting field-to-factory performance by demand sensing, demand shaping, and demand response needs to be part of any performance measurement.



## What best practices in field-to-factory look like

### Case study 1: Trane makes field-to-factory work

#### Summary of results:

Trane, the air-conditioning division of American Standard Companies Inc., is a leading provider of applied air-conditioning systems used in large buildings. Each of these systems is uniquely designed based on the characteristics and location of the building. The Trane system needs to meet the customers' environmental and air-quality requirements while operating quietly and efficiently. This set of complex variables led Trane to pioneer the use of intelligent, rule-based product-selection and product-definition systems. The result is a product model that is built through the field-to-factory process. This model is comprised of "attributes and values" that define every aspect of the configuration, including performance specifications. Today, this data model is the information backbone of customers' product requirements.

#### Field-to-factory strategies used:

Trane's strategy was to develop a common information model that would evolve through the sales and manufacturing cycles and be relevant years after the product left the factory. By constructing this model around a product's attributes and values, they created a common denominator that can be viewed across a product's life. This same product model provides the basis for pricing, bills of material, manufacturing processes, service, and forecasting a future product-option mix.

#### Results achieved:

- A common product definition model drives all business processes. This provides a common language from the sales engineer and the demand planner to the production technician.
- Suppliers using the attributes and values of the product definition produce customer-specific components. This ability eliminates the need to create unique part-level engineering drawings and purchase part numbers.
- Manpower planning is based on product configurations. In a mass-customized world made up of ever-changing mixes of size options, labor forces can be overwhelmed by part numbers and engineering changes. By building the labor profile around the key attributes and values of the product definition, the product configuration can be used to optimize and balance factory manpower.
- Recognizing and responding to market trends. By monitoring incoming order configurations, you can spot market shifts as they occur. This insight allows marketing teams to adjust near-term demand shaping strategies much the way Wal-Mart uses point-of-sales information.

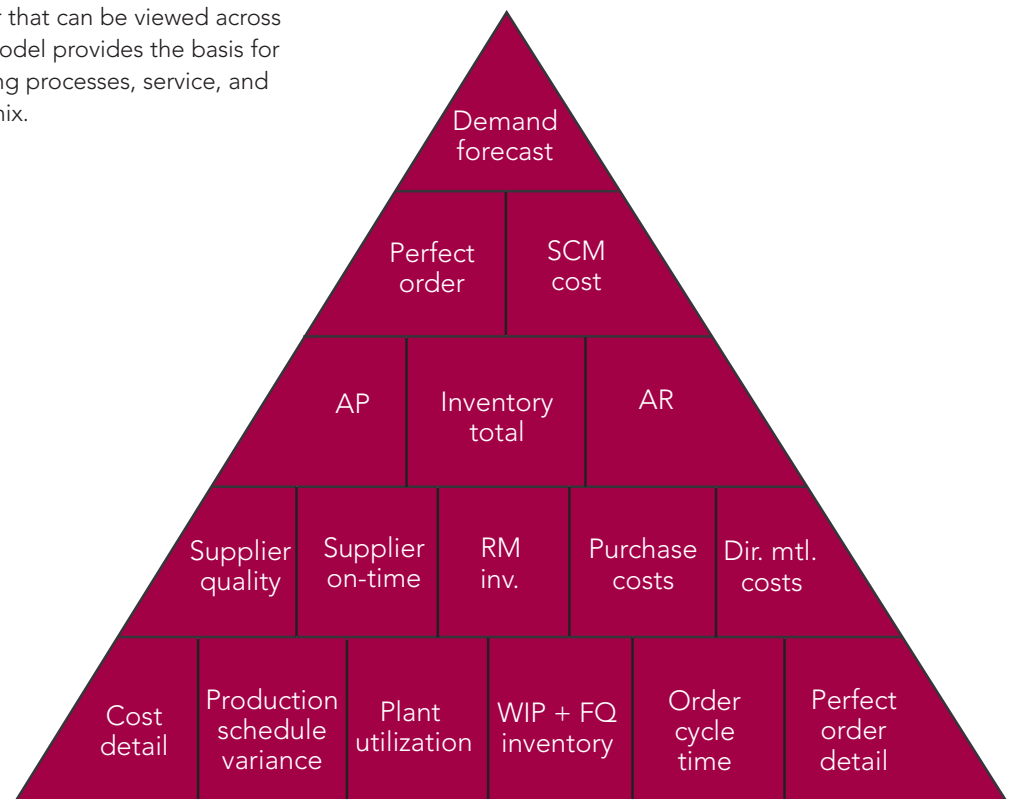


Figure 3: Factors influencing field-to-factory performance Sources: AMR Research; Cincom CMBS Research

## Case study 2: Greenheck Manufacturing's road to best practice

### Summary of results:

Greenheck Manufacturing was founded in 1947 and is the market-share leader in air-movement and control products. The company has over 2,000 employees, operates in 1.2 million square feet of manufacturing space, and is the U.S. market-share leader in its markets. Greenheck's product divisions include fans and ventilators, centrifugal and vane axial fans, dampers, louvers, kitchen ventilation systems, make-up air, energy recover, and Innovent product groups. Greenheck was challenged with how to achieve lean manufacturing while making its quoting and ordering process more synchronized with production.

### Specific challenges include the following:

- Supporting the launch of more new products than ever before with solid product-configuration data.
- Modifying product data over the shorter life of many products due to the competitive nature of its business.
- Providing full sales-cycle support, including improving the user experience of their existing configurator and creating additional cross-selling and up-selling opportunities.
- Streamlining proposal generation to support integration with CAD applications so CAD files can be output for configured models as part of the production process.
- Providing support for mobile sales and configuration in both connected and untethered environments as their sales force spends time in the field working with customers.

**Field-to-factory strategies used:** Greenheck Manufacturing focused on synchronizing demand from the field directly with production, attaining the first steps of their field-to-factory strategy by integrating sales, engineering, and manufacturing systems through aggressive use of field-to-factory strategies. Figure 5 shows Greenheck's approach to accomplishing their lean-manufacturing objectives using field-to-factory strategies. Greenheck was able to take data once "locked" in legacy systems and use it more effectively in making its sales and production process more productive.

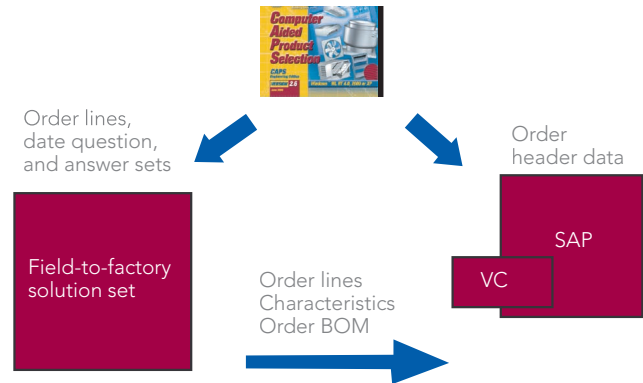


Figure 4: Factors Influencing field-to-factory performance  
Source: Greenheck Manufacturing Company

### Results achieved:

Greenheck Manufacturing was able to accomplish the following results by pursuing their field-to-factory strategy:

- The integration that was achieved between legacy systems created more data independence, and as a result, higher sales. Greenheck Manufacturing was able to unleash the legacy data in their systems on the latest challenges and problems in their field sales organizations. This resulted in greater accuracy of quotes and orders and less re-work on the production floor.
- The ability to execute from a quote to the completed product in a single step created high levels of customer trust. Being able to fulfill orders accurately the first time and with little if any delay from the original promise dates greatly increases customer trust in any company.
- Significantly increased order-fulfillment efficiency. Greenheck was able to eliminate an entire series of order-fulfillment manual processes, and therefore experienced a significant increase in order-fulfillment speed and accuracy. With less manual processes, there were also fewer order errors, which significantly reduced the number of rejected, reworked, and returned orders. A by-product of this was soaring customer satisfaction.
- Increased ability to meet its customers, wherever they happen to be, when they are ready to buy. Greenheck Manufacturing entered into creating its field-to-factory strategies with the goal of providing quoting, configuration, and pricing systems in both connected and disconnected or "untethered" modes. This was a critical requirement to support their sales strategies, and meant that quoting systems would need to be able to replicate data easily between their laptops and order capture, management, and product-information databases that are available only online.

- Creating a common set of rules meant business managers could modify product rules and options without having to rely on IT. This provided Greenheck with the speed necessary to keep up with the many new product introductions they had planned throughout the year. It also gave business managers the opportunity to create entirely new configurations based on logic already defined in their field-to-factory system.
- Trimming down the number of orders requiring special handling. With the coordination of engineering content and rules as shown in Figure 4, Greenheck Manufacturing was able to significantly trim down the number of exception or special orders handled. This in turn helped to maintain higher margins on custom orders, trimmed down the time required for exception handling on the production floor and by operations, and ultimately opened up new product lines for growth.
- Attacking inefficiencies in customer-fulfillment systems contributed to its market-share growth. The bottom line of Greenheck's manufacturing efforts to attain field-to-factory strategies ultimately led to its ability to maintain its market-share leadership in the United States while adding more new products than ever before.
- Spend heavily on channel education and product knowledge versus short-term incentives. Those companies winning against competitors are using field-to-factory strategies to bring superior knowledge into their channels. Knowledge puts lasting pressure on competitors while incentives become addictive for channel partners, and they often become conditioned to only sell what has an incentive attached to it.
- Aggressively manage leads and their escalation through your channels. Don't settle for just sending leads out and then waiting to see if sales happen. Work to re-engineer processes around leads to track them efficiently, then find what best practices work for your channel and organization.
- Aggressively pursue best practices in quoting and order capture. This translates into making the most of integration between your quoting and order-capture systems with pricing, supply-chain, ERP, and services systems. Making your company as competitive as possible starts with a strong focus on unifying the channel-facing systems with internal systems. Winning business against your competitors starts with the ability to capture quotes without errors, and the skill to define a realistic expectation back to a client regarding when their build-to-order product will be shipped.

- The longest-lasting benefits from field-to-factory go to those companies that exhibit the following characteristics:
  - The ability to start with the goal of providing a clear workflow from the order to the production floor, alleviating all unnecessary manual steps in the process.
  - The ability to consolidate redundant order-capture systems that may serve only a single channel or are a leftover from an acquisition or merger.
  - The ability to integrate legacy systems while enabling order capture, quoting, and pricing systems to deliver the same data.
  - The ability to process orders with greater speed from order to fulfillment; achieve greater accuracy due to engineering, sales, and manufacturing being in concert with each other; and produce greater flexibility in automating responses to custom orders.

## Recommendations

Cultivating channel partners, distributors, and resellers is where the most profitable returns are being generated from field-to-factory initiatives and strategies.

Go after these strategies for quicker returns on channel investments so that your company will be able to harvest demand more efficiently and with greater accuracy than competitors.

- Look to the intersection of manufacturing, sales, and production to make field-to-factory strategies work. Just as Greenheck Manufacturing looked to unify their sales and manufacturing responses to customers electronically and accurately using engineering's expertise, many manufacturers can find the same benefits. Look at the intersection of these departments, the databases and systems used, and examine ways to streamline or even replace manual processes.

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