MANUFACTURING

Break down barriers for successful customer collaboration

Accommodating customer collaboration can introduce more complexity into an already complicated manufacturing process. Customers bring ideas, usually without a complete understanding of what it takes to turn vision into product. This misunderstanding can create delays, frustrated customers and employees, and lost revenue.

Previously siloed departments must collaborate to foster more efficient customer collaboration. One way to break down silos is by weaving a "**digital thread**," a technology-based manufacturing approach that stitches together all the previously separate groups who work on the same product.

Manufacturers also need to have the right supply chain model and supply chain technology in place to better meet customer needs. With the right model and technology for their business, manufacturers can more quickly produce custom products to meet customers' demanding deadlines.

This paper looks at the approaches, models, and technology available to help manufacturers better collaborate with customers to build and deliver custom products.

Simplify customer-driven product development

It's imperative for manufacturers to bring customers into the design process, even though customers may not have the technical language or tools to easily share their ideas and concepts with professional product designers.

Manufacturers can help bridge this communication gap with an environment that gives customers practical and best practice-based design parameters. This kind of environment serves two purposes: First, it gives customers the freedom to customize and submit their product ideas. Secondly, it gives product designers an efficient starting point to build out the technical specifications required for production.

Configure-price-quote (CPQ) technology is helpful at this stage. It can help foster the custom order process with advanced visual product catalogs and Google-like search capabilities, and guide customers through the process of isolating the precise product, options, and configurations to fit their unique needs.

Through pre-built account rules and compatibility constraints, CPQ tools can limit customers to creating only orders for end products that are viable from the manufacturer's standpoint, while still empowering the customer with choice and flexibility.

These same capabilities can help speed order confirmation times, providing customers access to photo-realistic images of final products—including dynamic 2D drawings and 3D models—to give them the information they need to feel confident that their custom orders will meet their precise specifications.

Reduce engineering's workload in a world of configuration

While difficult for customers, the demands of a made-to-order manufacturing environment can also be hard on design and engineering teams accustomed to a make-to-stock business model. Creating and launching new, make-to-order products involves a multitude of internal and external teams. The powerful product data management capabilities available within product lifecycle management (PLM) software ensure that everyone is accessing the right information, which helps to avoid errors and eliminate product delivery delays.

The most effective PLM software systems include distributed storage vaults that make information quickly accessible anywhere, supporting global product development and supply chain collaboration strategies. The software also has visual collaboration capabilities to broaden and increase the pace of discussions, resulting in better products that can be brought to market faster.

By using the right software and concepts within the digital thread, manufacturers can break down silos among internal and external teams. The multimedia research collaboration and documentary series, **Following the Digital Thread**, produced by *MIT Sloan Management Review* and Deloitte Insights, follows the creation of an aviation part to illustrate how breaking down internal silos helps manufacturers meet customer demands.

From product design through to delivery, the manufacturer uses the digital thread approach to facilitate collaboration among departments and customers. This framework efficiently pushes information forward from design to production to build the product while also accommodating a feedback loop to pull information back to design from production and customers. This feedback loop helps to quickly inform new iterations and improvements for future product versions.

Manufacturers benefit from having a robust digital backbone to help automate the dynamic nature of this approach. A comprehensive software platform that includes a cloud-based enterprise resource planning (ERP) system, seamlessly integrated with CPQ, PLM, and a computer-aided design (CAD) system, helps break down departmental silos and efficiently get products to market.

Choose a supply chain model to meet customer demands

The two main supply chain models used among manufacturers today are lean supply chain and agile supply chain. Manufacturers may use one or a hybrid of both to meet their unique business requirements and customer needs.

Manufacturers use these models primarily to meet make-to-stock manufacturing requirements, garnering a clearer view into their supply chain and onsite parts inventory to more efficiently meet customer needs. The technology supporting these models give manufacturers up-to-the-minute information on inventory levels and fulfillment status, proving continual supply chain analysis to ensure profitable demand fulfillment.

The *MIT Sloan Management Review* article "**Supply Chains Built for Speed and Customization**" discusses the advent of a third supply chain model to better meet make-to-order manufacturing requirements: the high-speed, bespoke supply chain model.

This model emerged from manufacturers who needed both quickness and product customization to support personalized product development. However, the article points out the value of this supply chain model also extends to other uses, such as the manufacturing and fulfillment of rarely ordered products.

With a high-speed, bespoke supply model, supply chain managers gain a potentially more cost-effective option for fulfilling ultra-low-volume items. One example is fulfilling requests for outdated product model replacement parts. By moving replacement parts to on-demand production, a manufacturer decreases inventory and can retire molds and related equipment it no longer needs. Without this overhead, an order can be fulfilled from the company's nearest manufacturing or development location using 3D printing.

A cloud-based, supply chain network is essential for each of these supply chain models. Cloud-based supply chain software makes it possible to access real-time inventory and fulfillment status information. It also provides manufacturers immediate supply chain network visibility and sophisticated analytics that draw simultaneously from all available network data.

Everyone succeeds when customers come first

A customer-first model provides a positive impact to a manufacturer's bottom line. The **KPMG 2018 Top of Mind Survey** found those companies beginning their journey toward customer-centricity forecasted 2.7% revenue growth in 2018, with 5.5% revenue growth projected for 2020.

According to the McKinsey Quarterly report, **The Business Value of Design**, "Top-quartile companies embrace the full user experience; they break down internal barriers among physical, digital, and service design. The importance of user-centricity demands a broad-based view of where design can make a difference."

By using the latest in manufacturing and supply chain models, and the technology to support it, manufacturers will be well-positioned to collaborate efficiently with customers to deliver the products and services they need to help their customers succeed—while achieving their own success as well.

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