



# Making sense of postponement strategies

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## **Late-stage production and assembly help manufacturers meet customer expectations for product customization**

Mass customization and highly configured products are increasingly becoming the new normal in manufacturing. While meeting customer demands for highly configured products is essential to remain competitive, the operational demands can stretch resources and severely impact profitability. Manufacturers must adapt processes in order to retain efficiency and quality control, while also producing products that meet customer specifications for style, color, accessories, special features, and add-on components. Even the warehouse and logistical challenges of maintaining multiple stock keeping units (SKUs) and product variations can pose a major challenge.

For many manufacturers, a postponement manufacturing strategy may be the best way to address some of the most pressing business challenges associated with customization. These challenges include maintaining quality on a wide assortment of product variations; inventorying multiple variations of parts, sub-assemblies, components; and managing as-configured packaged goods.

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## What is postponement manufacturing?

Postponement is a workflow strategy. In many ways, it is a direct contradiction to the lean principles and focus on completion speed that has dominated manufacturing for the last two decades. Manufacturers are learning that one simple linear flow doesn't allow for the high degree of variables contained in product offerings today.

With postponement manufacturing, core product components are produced using traditional mass production concepts for full efficiency and cost savings. The product is often broken down into modules, with all of the common elements produced on a large scale. Details, accessories, and custom finishes are saved for future completion based on an actual order.

This process makes postponement manufacturing both proactive and reactive. Manufacturers proactively make products up to the point of differentiation, and then reactively complete a customized version to satisfy a unique or small-lot requirement.

The comprehensive nature of postponement manufacturing means it impacts multiple operations, including product design; resource procurement; need forecasting; parts and component readiness; inventory of partially-assembled product inventory; multiple-stage quality checks; and final assembly based on customer orders.

For manufacturing executives, postponement manufacturing represents a fundamental shift in how they run their operations. It's important that they understand what it takes to make the change and what they can expect to gain from the effort.



## What's driving the need?

The basic principles and potential business benefits of postponement manufacturing have been known for decades. Stan Davis called the fundamental concept “mass customization” in his breakthrough business book, *Future Perfect*, published in 1987. Davis understood that the information technology available then made it possible for companies to move beyond using economies of scale to mass produce goods at low costs.

Davis asserted it was possible to **use technology to produce goods that are individually and cost-effectively managed**. Postponement manufacturing became the operational side of his mass customization assertion.

Fast forward to today. Manufacturers have made great strides in their ability to design and bring complex products to market at affordable prices. Despite these advances, market forces challenge manufacturers to do more, while driving the need for innovation and product customization. These market forces include:

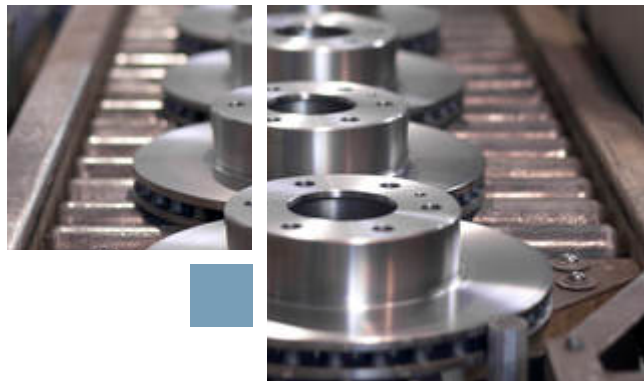
**Customer expectations.** The evolution of customer expectations is one of the most striking results of manufacturing progress, raising the bar for manufacturers to produce unique items quickly. Once it became possible for consumers to buy highly customized products, they were no longer willing to settle for mass-produced, generic items. Today, customers demand more individualized products at the same speed and value as mass-produced items.

According to a recent report by IDC, the trend is expected to continue unabated. “In the future, fulfilling customers’ needs through a ‘make-to-individual’ approach – fulfilling clients with a single, specifically tailored customized product, made on demand—will be the norm,” IDC writes in its report, **“The Future of Manufacturing.”**

Customers also demand speed, on two levels. They are impatient and don’t want to endure long product delivery times. And when the product demand shifts, they don’t want to wait long for manufacturers to shift their production to meet the new demand.

“This consumer purchasing style is not only having an impact on brand oriented industries—it is impacting the whole manufacturing value chain, to a point that B2B (business-to-business) trading is now often defined as B2B2C (business-to-business-to-consumer), indicating how increasingly important it is to take care of the customer of the customer,” **reports IDC.**

**Inventory control.** High inventory costs are an important driving factor behind postponement strategy adoption. Maintaining an inventory of multiple product variations is often cost prohibitive. When companies offer hundreds of styles, colors, and features, the inventory implications become staggering. Short-lived product lifespans also make it risky to maintain inventory of a particular product version. No brand manager wants to be stuck with yesterday’s bestseller when the customer is looking to purchase the next hot thing.



**Quality control.** Although customers expect highly specialized products, they still expect reliable quality and brand continuity. It is up to the manufacturer to ensure a level of consistency among the many variations produced and shipped under their name, even when various subcontractors and third-party logistics partners may be involved in completing the product, packing, and shipping.

## What is technology's role?

Manufacturers need to establish an IT strategy that supports the operational shift to postponement manufacturing—for both business operations and employees. Advanced enterprise solutions can help discrete manufacturers successfully implement such a strategy.

The increased need for product postponement manufacturing has coincided with recent advances in the enterprise software solutions necessary to make the strategy viable. A recent [report by McKinsey and Company](#) asserts that the time is ripe. “We believe the time for widespread, profitable mass customization may finally have come, the result of emerging or improved technologies that can help address economic barriers to responding to consumers’ exact needs in a more precise way.”

Enterprise solutions can help by offering:

**Enhanced product configuration.** Product specialization typically starts with the ability to manage multiple product configurations. Modern technology solutions make this possible through an online portal where customers pick and choose product variables. A design engineer can use tools to update product specifications, and sales teams can cut their time quoting complex configurations.

**Improved visibility.** Modern analytics and business intelligence (BI) solutions offer enhanced capabilities to consume data at a more granular level. As a result, manufacturers can now get better visibility into their operations for efficient postponement manufacturing. They know exactly how many parts are in inventory to meet precise production requirements and can better predict future requirements.



**Improved communications.** Postponement manufacturing requires better communications among customers, suppliers, and partners. Manufacturers often turn to partners to complete the product or perform specialized finishing tasks, such as adding a name or picking and packing orders. This collaboration requires real-time visibility among multiple locations and systems.

The advanced enterprise solutions of today—mobile and social tools—strengthen communications within the company and among partners. Collaborative tools that capture business-related conversations also play an important role in coordinating multiple resources.

**More detailed product management.** Advanced enterprise solutions have new capabilities to manage sourcing, production, and inventory at the component and serial number level. These new capabilities make it easier for manufacturers to efficiently manage the individualized production and assembly requirements of postponement manufacturing. Combined with tools for improved visibility, the manufacturer can allocate components from one product to another as needed.

**Improved demand forecasting.** More detailed supply chain management capabilities, which work with advanced analytics and BI, can help manufacturers better forecast demand, predict specific requirements, and manage supply chain production.

**Improved management of complex bills of materials (BOMs).** Postponement manufacturing makes BOM requirements more important than ever in the manufacturing process; they have to do more than establish what manufacturers need to build a product. Postponement strategies use BOMs as a tool to manage the complex progression of materials and components as they evolve throughout the entire product manufacturing process. Modern software solutions can help efficiently manage the increased reliance on BOMs and the vast increase in product components that have to be tracked.

## What are the advantages?

Postponement manufacturing is the right strategy for automotive, apparel, consumer electronics, and other discrete manufacturers that must deliver products that are configurable, personalized, or localized to meet the unique demands of a region or country. When it's successfully implemented, companies can derive a wide range of business benefits, including:

**Reduced labor costs.** Postponement manufacturing allows manufacturers to only invest in the final stages of product production when it's necessary to meet a specific demand. Manufacturers can avoid labor investment that's premature, or worse, wasted.

Some manufacturers outsource the final stages of product completion to companies with specialized equipment or capabilities. For finishing stages involving more manual labor, production might be outsourced to an emerging nation with lower labor costs.

**Reduced material costs.** With postponement manufacturing, manufacturers have greater visibility into parts and material inventories to better align materials and demand. Advanced analytics provide greater reliability in predicting the needed raw materials, preventing unnecessary delays because of stock outs.



**Increased sales.** Being able to deliver specific products that answer specific customer requirements helps manufacturers meet the higher customer expectations, which can translate into higher sales.

**Strengthened brand.** Branding has become more critical to discrete manufacturers, regardless of whether they deliver products to consumers or other businesses. Manufacturers can strengthen their brand by building their reputation around successfully and consistently meeting unique product customization requirements.

Recent [research by Bain & Company](#) illustrates how executives view the threat to their brand value and the role that mass customization can play to preserve their brand. In a survey of more than 1,200 global executives across a range of industries, Bain found that 67 percent of executives believed their customers are becoming less loyal to their brand. The research also found that customization helps companies differentiate their products from those of competitors at a time when the Internet is rapidly creating high price transparency and making it easier for customers to compare products with standard features.

**Improved product development.** Postponement manufacturing can contribute to improved product development and vice versa.

[According to McKinsey and Company](#), companies that implement postponement manufacturing can more effectively curate customer preferences to better inform their product development efforts. McKinsey also notes that companies can better control the cost of product customization by using a postponement strategy and undertaking a modular approach to product development.

Postponement manufacturing impacts all aspects of the manufacturing process—from product design to production, through to the customer order and purchasing experience. As customer demands more highly configured products, manufacturers must turn to postponement strategies and late-stage assembly to profitably meet these demands. By embracing postponement strategies, manufacturers can better meet customer expectations and maintain employee satisfaction. The technology is available today to help manufacturers put postponement strategies to work.

A [McKinsey and Company research report](#), “How technology can drive the next wave of mass customization,” provides a good summary of the overall benefit of postponement manufacturing that forms the underpinnings of mass customization of products. “Mass customization has the potential to help companies increase revenue and gain competitive advantage, improve cash flow, and reduce waste through on-demand production. Mass customization can also generate valuable data that may be used in the development of standard products and in online marketing and public relations campaigns.”

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