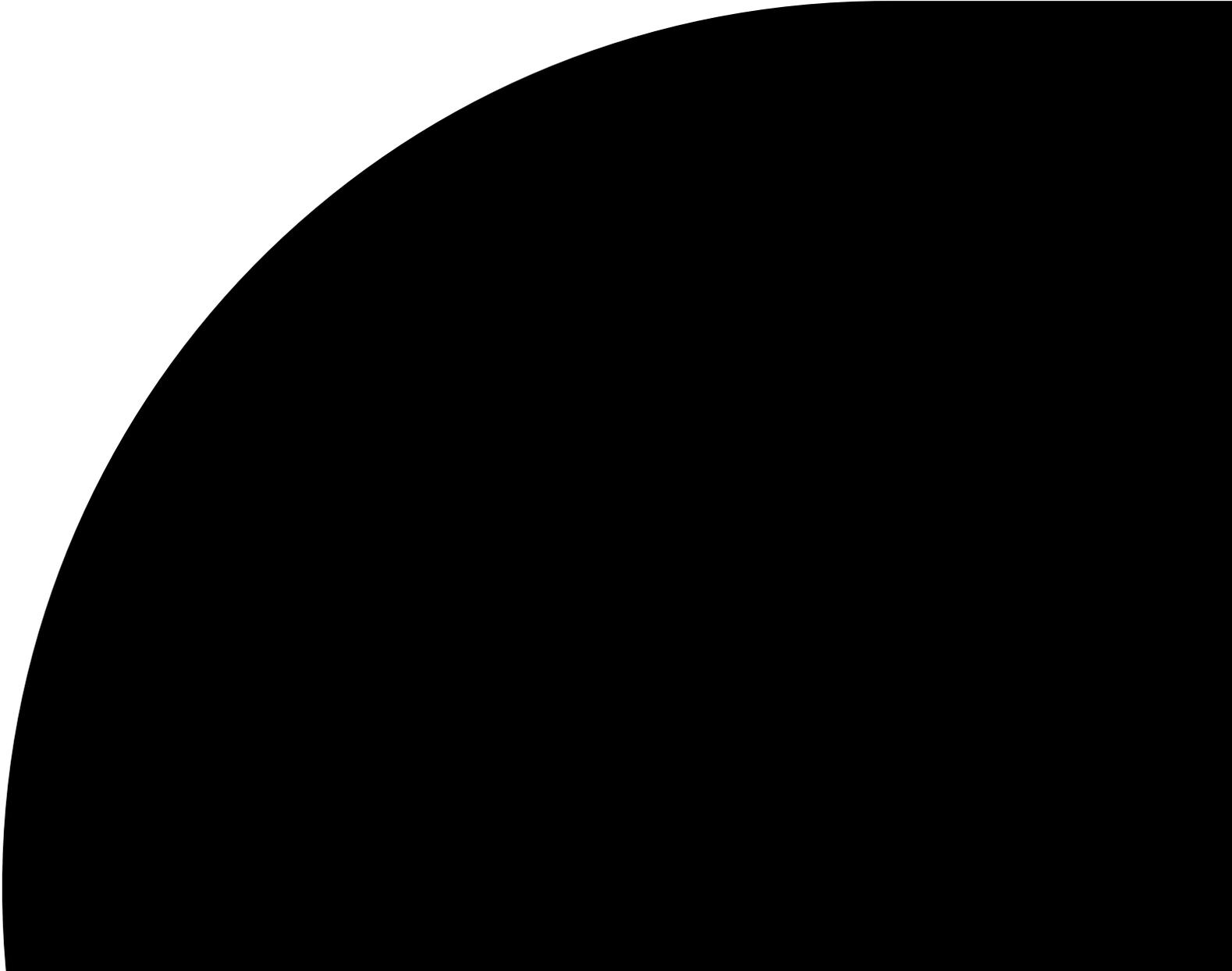


CPG manufacturing in the digital age

Consumer Packaged Goods
March 2018



How CPG manufacturers are evolving to meet new expectations

Need laundry detergent? Order online for next-day or even same-day delivery. If a favorite brand isn't readily available, pick a different brand that is. This direct-to-consumer model, and seemingly endless product choice, makes it pretty easy for shoppers to get what they want, when they want it.

But it is putting new pressures on consumer packaged goods (CPG) manufacturers, and is just one of the many challenges they now face. CPGs have to operate in a fast-moving, highly competitive market that increasingly relies on multiple delivery channels, is innovating up and down the supply chain to shorten production and delivery cycles, and is adopting smart technologies to facilitate real-time inventory and advanced analytics to enhance customer relationships. To keep up, CPGs need to become more aggressive in their omnichannel strategies and much more granular in their supply chain management. And they have to better understand and relate to consumer demand. Engaging consumers on their terms is not a nice-to-have but an imperative for survival.

The good news is that manufacturers have more tools at their disposal to tackle the challenges, improve operations and ultimately thrive. This paper considers the variety of changes affecting CPG manufacturing and the strategies and technologies CPGs can employ to respond.

What's changing

For some time, industry visionaries have painted a cheery picture of “Manufacturing of the Future” — tales of an infinite variety of consumer products custom-made on demand from machines that worked like replicators on the Starship Enterprise. Press a button, get a mug. Press a button, get a bicycle.

In some respects, that's happening. While limited in scope and capability, 3D printing is making good on the promise of instant manufacturing. E-commerce and bespoke technology that uses automation are making custom-made products easier to obtain, especially in areas where customization has been a tradition, such as clothing.

The expectation of building everything for a market of one may have diminished a little, but consumers still expect to get what they want, when they want it. Those expectations stem from the explosive innovation that's happened at the consumer end of the supply chain. E-commerce continues to grow at double digit rates annually as consumers have become utterly addicted to online purchases and doorstep delivery.

Traditional brick-and-mortar retail channels, though challenged by the rise of e-commerce, aren't standing still. As highlighted in a recent IDC report, modern retail stores are integrating omnichannel strategies and technologies to create

more intimate and engaging shopping experiences for customers on their path to purchase.¹ Geomatics and smart-shelf technology, for example, are delivering new levels of customer insights for retailers and manufacturers, which will invariably lead to more variety in product and packaging options.²

Innovation at every point in the supply chain, especially upstream, is accelerating change. A product development process that once took 5 years might be completed in 5 months or 5 weeks today. Product life cycles have shortened from decades to years, to months. Acceleration can exacerbate trouble spots elsewhere in the supply chain and create bottlenecks further down the supply chain, including right up to the front door of the manufacturing plant. Furthermore, increasing numbers of orders from a growing number of channels put even more stress on manufacturing.

All of these changes are redefining what “success” means for producing goods. Manufacturers must still drive the optimal utilization of line equipment, maintain uptime and reduce production costs. But they also must now accommodate more variety in order size, more variations in product size and packaging, and more frequent updates to product designs. They need to rethink distribution and fulfillment strategies, taking into account the different pricing and delivery timelines in direct-to-consumer models and same-day shipping. They need to package products in more ways; i.e., attractively-packaged goods for retail, easy-to-handle packaging for e-commerce fulfillment channels. Often, they need to produce and manage different stock-keeping units for different channels.

It’s clear that something needs to happen. As manufacturers look to keep their schedules, contain costs and maintain quality, the old way of doing business won’t be enough to remain competitive. Manufacturers need to get smarter and more agile.

Achieving agility

Lean manufacturing principles have been the gold standard that companies have followed for decades to reduce waste, improve efficiencies, control costs and improve product quality. No one expects these principles to be abandoned, because they still form the foundation of an efficient manufacturing process. What’s needed is another set of principles and processes to help manufacturers manage the growing variability and volatility that’s occurring in orders submitted for fulfillment.

That’s why the idea of agile manufacturing is beginning to gain traction. Agile manufacturing refers to companies that have created the processes, tools and training to respond quickly to consumer needs and market changes while maintaining cost and quality controls. Agile manufacturing is well suited for companies in highly competitive environments that make products which benefit from small variations in performance and product delivery, such as consumer goods. The ability to offer products in a wider variety is an important tool for companies that now rely on distinguishing their products through brand marketing.

1 https://assets1.dxc.technology/retail/downloads/Digital_Transformation_Boosts_Retail_Customer_Experience.pdf

2 http://www.dxc.technology/analytics/insights/143913-optimizing_the_in_store_retail_experience_using_geomatics

Agile manufacturing is made possible by the development of manufacturing support technology that allows the marketers, designers and production personnel to work together more effectively, developing products with a common database of parts. Together, the team can identify potential production and quality issues before they surface during the manufacturing process. Finding and fixing problems early are significant time- and cost-saving benefits.

Manufacturers are developing an agile response in other ways as well. Distributed and contract manufacturing offer companies a way to quickly bolster production or build a new item without building new manufacturing capability. This can be especially appealing as product development cycles shrink and variation grows. It's also useful for outsourcing elements such as packaging, especially as the diversity of packaging needs grows. Manufacturers on the path to becoming more digital in operations will be better able to coordinate an ecosystem of manufacturing and packaging partners to meet variations in demand.

Creating opportunities

The evolution of smart manufacturing is helping companies develop a more nimble, flexible approach to making and distributing products in greater variety while managing the levers of cost, quality and schedule. As manufacturing technology and IT converge, the resulting new streams of data are providing manufacturers with an important new source of insights that can be used to manage production effectively.

The whole concept of the smart factory is to ingest data from all points in the supply chain plus the factory floor and adapt the factory to the demands accordingly. Instrumentation, automation technologies, artificial intelligence, internet of things (IoT) technologies, machine learning and machine-to-machine communication are all components needed to instrument the process and amass data to make real-time decisions that affect production in a positive way. Insights gained from the process can help managers evaluate issues such as these:

Cost-structure optimization. A processing and distribution company needs to understand the cost of production based on country-specific procurement costs and factory-specific manufacturing costs. From this data, it is able to prioritize pain points and extrapolate its findings to other product lines and other manufacturing locations.

Inventory management. Smart manufacturing combines historical data, service-level concepts, and inventory process changes to deliver improved customer service and reduce inventory levels.

Freight transport optimization. The development of unique shipper profiles identifies key handling characteristics that influence accuracy in predicting capacity, based on how freight is tendered. The goal is to build an automated model that produces shipper profiles that can be used to predict capacity for pickup, delivery and line-haul operations. This creates an opportunity to implement or operationalize analytic capabilities across a large, complex hub-and-spoke operating network, improving operations and reducing costs.

Distribution optimization. This large-scale optimization solution helps reduce total cost to serve customer demand. The model suggests which plants should be open or closed in a time-phased manner over the next 10 years and evaluates capacity requirements. Optimally, this enables a company to restructure its supply chain network and determine optimal plant-product customer-location mapping. The Amazon Prime effect has created expectations from consumers that they can have virtually anything they want in 2 days or less. To meet these demands, manufacturing organizations must become nimbler, possibly partnering with contract manufacturers.

Equipment downtime cost evaluation. This process marries historical data, service records and real-time sensor data to predict failures, thereby helping manufacturers avoid unexpected operational downtime due to unplanned outages, and to improve efficiency and safety. Predictive maintenance has the added benefit of extending equipment life and improving order fill rates. This process alone can yield a 5 to 20 percent increase in operations efficiency.

Modernize securely

Manufacturers will need to address the issue of aging infrastructure, accelerating plans to replace some equipment and retrofitting other assets with a higher degree of sensor technology. From an IT standpoint, much of the equipment on the factory floor is neither instrumented nor integrated. Everything that a manufacturing manager does to make continuous improvements will rely on real-time data. To get this essential component for smart, agile manufacturing, it will be necessary to make these investments.

Companies will need to build new connections upstream to capture more demand signals and downstream warehouse, logistics and customer systems to connect to the data they'll need to power new algorithms. Changes like these introduce new security concerns into the supply chain as plants and machines become smarter and more connected. An on-premises, unconnected manufacturing asset doesn't pose much of a security risk. By contrast, assets that are connected to a network, whether on-premises or at a contract facility, hold business-critical data (such as the "recipe" for making a product) that can be subject to theft. Devices that are part of the IoT will dramatically increase the attack surface in manufacturing facilities. As machine connectivity and contract manufacturing grow, companies will need to take more steps to protect their products and their brands.

Strike the right balance

The fundamental measures of manufacturing success haven't changed. Companies still need to produce quality products, on time and within budget. But as lot sizes shrink and variations increase, companies will need to get smarter about the way they plan and produce their wares. No one wants to make too much and create waste. No one wants to leave orders unfilled.

Acquiring new forms of data from the supply chain and from the manufacturing floor will enable companies to strike a better balance between demand and manufacturing capability. And it will allow them to support a broader range of product variations while minimizing effects on the product supply chain.

Standing still isn't an option in the digital economy, and companies that aggressively pursue agile manufacturing and a smart, connected manufacturing strategy will have gained an important, lasting advantage.

**Learn more at
[www.dxc.technology/
consumer_packaged_
goods](http://www.dxc.technology/consumer_packaged_goods)**

About DXC Technology

DXC Technology (DXC: NYSE) is the world's leading independent, end-to-end IT services company, helping clients harness the power of innovation to thrive on change. Created by the merger of CSC and the Enterprise Services business of Hewlett Packard Enterprise, DXC Technology serves nearly 6,000 private and public sector clients across 70 countries. The company's technology independence, global talent and extensive partner network combine to deliver powerful next-generation IT services and solutions. DXC Technology is recognized among the best corporate citizens globally. For more information, visit www.dxc.technology.