



Expert Insights

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# Intelligent automation for consumer products and retail supply chains

How a holistic approach enables end-to-end planning and execution

IBM Institute for Business Value



## Experts on this topic



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Intelligent automation in the supply chain is guided by artificial intelligence (AI) tools that can build efficiencies while enabling digital operations.

## — Talking points

### **Consumer products and retail supply chains have yet to achieve end-to-end capability**

Higher synchronization is needed across supply chain functions; from sourcing of raw material, to production of finished goods, to warehousing and delivery of consumer products.

### **A supply chain that operates more “as a whole” than a group of functions is possible with intelligent automation**

An autonomous supply chain plans and executes for the whole of operations, increasing service level, reducing operational cost, and optimizing inventory levels.

### **While some refer to “the death of supply chain management,” it’s actually a rebirth<sup>1</sup>**

The supply chain can be reborn as a highly optimized, self-regulating utility that automates the sum of all workflows, with a goal of less human intervention and fewer errors.

## The autonomous whole is greater than the sum

It’s the pervasive challenge faced by consumer products manufacturers and retailers alike – how to plan and execute as an end-to-end supply chain. From consensus of sales and demand, to coordination of truckloads and warehouse capacity, organizations are addressing integration gaps through individual initiatives. But those siloed efforts aren’t enough. Consumer expectations and market conditions continue to fluctuate, driving more variability into operations that must become even more agile to compete. The supply chain must operate as an autonomous whole rather than a group of loosely connected functions. Why? Because the potential benefits of autonomous operations are far deeper and more significant than incremental improvements.

## Strain on the chain

As market expectations rise in the consumer products and retail industries, the pressure is on supply chain operations. Recent tactics have retailers and manufacturers turning to digital innovation to move the needle on performance. Now, those strategies are taking an evolutionary turn as artificial intelligence (AI) and automation come together to create a tipping point for supply chain organizations.

More than ever, retailers demand full cases of goods and tighter delivery windows. Over the past year alone, retailer focus on cost and service levels increased by 16 percent.<sup>2</sup> And despite being forerunners in zero-based budgeting, the consumer products sector is pressed to increase earnings per share through heavier margin and cost-cutting.

To relieve the pressure on profitability, leading brands have launched digital initiatives to improve service levels, costs, and inventory. American consumer goods corporation Procter & Gamble employs machine learning algorithms that automatically adjust and optimize demand plans.<sup>3</sup> Transnational food and beverage company Nestlé leverages blockchain to increase food safety.<sup>4</sup>

## AI and intelligent automation 101<sup>6</sup>

From a recent IBM Institute for Business Value report, AI is defined as, “the capability in machines to reason. AI can remember information, learn, and identify new insights through data discovery. Intelligent automation is guided by AI tools that need minimal manual routine interventions. This operational shift augments and assists human capabilities, reduces human errors, and builds efficiencies while enabling digital operations and innovations.”

Four components make up intelligent automation. The first three are fueled by AI, the fourth by automation.<sup>5</sup> They are:

1. *Engagement* over external touch points where users interact with systems
2. *Learning* from analytics across different data sources and recognizing semantic references to use as criteria for decisions
3. *Reasoning* from learning to make autonomous decisions and self-remediate over time
4. *Executing* the next best action that systems can execute digitally and that people or robots can execute physically

## The whole truth

Supply chains in the consumer products and retail sectors are loosely connected at best. In fact, 69 percent of organizations aren't yet fully integrated.<sup>7</sup> This often leads to disparate supply chain functions, which beget siloed innovations with suboptimal improvement. For example, a digital innovation that optimizes outbound truckloads from a plant might contend with another that tempers inbound throughput at a warehouse. These two initiatives might cannibalize each other if not managed properly.

To operate “as a whole,” organizations must shift their strategy from siloed innovation to intelligent automation. Automation enhances a workflow of tasks by moving from static, process-based outcomes to machine-driven decisions and actions. AI infuses intelligence into automation, enabling machines to learn and generate recommendations, make autonomous decisions, and self-remediate over time.<sup>8</sup> The end goal is an autonomous entity that intuitively drives value for the entire chain.

Two in five brands and retailers are already employing intelligent automation, and that number is on track to double within the next three years.<sup>8</sup>

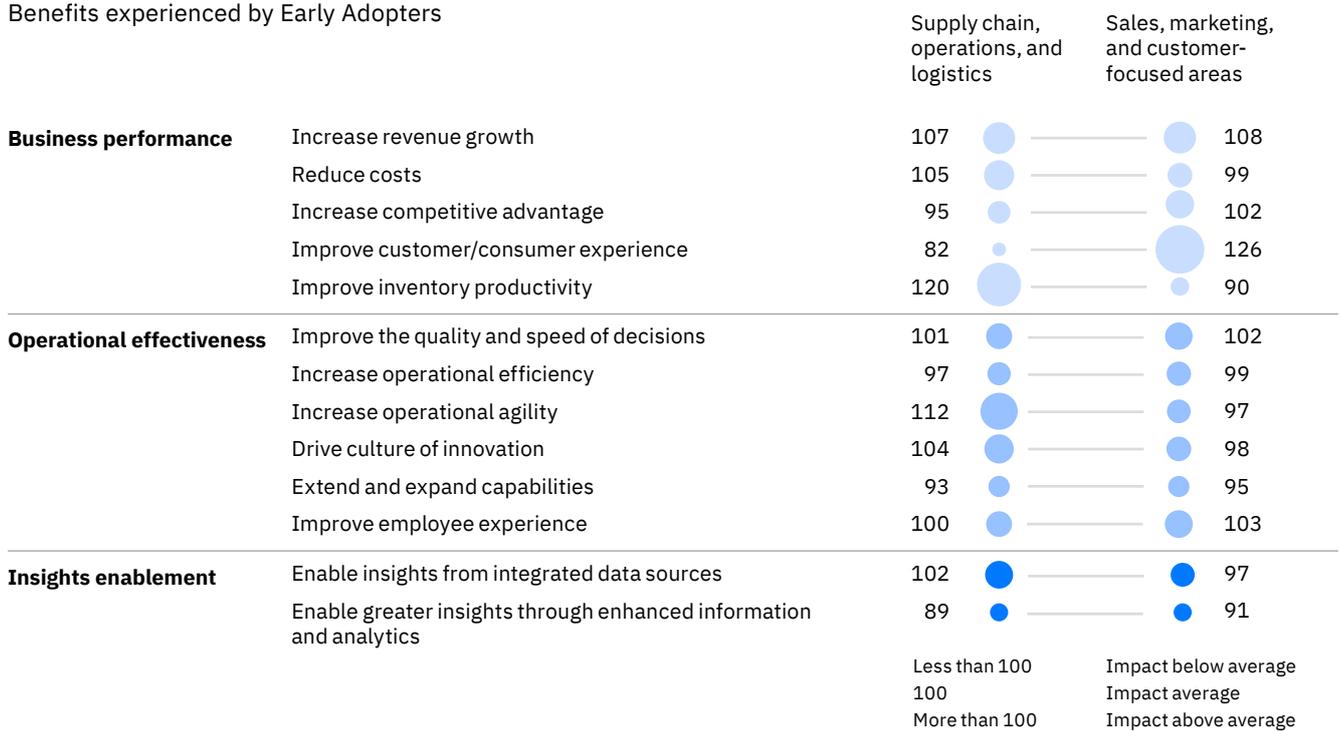
At the core of an autonomous supply chain is a new operating model where:

- Roles merge and become more strategic by shifting tactical responsibility to AI
- Siloed processes integrate to improve operational performance under the direction of algorithms that learn
- Disparate technologies connect and operate as one in an orchestrated manner

### Three guidelines for the next three years

Consumer products and retail companies are planning ahead: Intelligent automation in the supply chain is expected to reach 79 percent in the consumer products industry and 85 percent in retail over the next three years.<sup>9</sup> Those organizations using intelligent automation are experiencing an array of benefits (see Figure 1).

Figure 1  
Benefits experienced by Early Adopters



Source: The coming AI revolution in retail and consumer products

## Instead of operating in the siloed supply chain of the past, reimagine its autonomous future.

So how did Early Adopters get there? We offer three guiding principles that can help inform an autonomous supply chain approach:

- *Reevaluate the core.* From planning to distribution, organizations continue to move core competencies to outsourced services for higher flexibility at a lower cost. Does the value proposition still hold with an autonomous model? One consumer products company found that by automating and optimizing transportation management, it would achieve a 2 percent increase in on-time delivery, and 54 percent lower costs than conventional business process outsourcing.<sup>10</sup> If the return is clear, consider bucking the outsourcing trend. If not, engage providers in a conversation about the potential for intelligent automation.
- *Model the end-to-end.* Digital innovations often target and benefit an individual process, like plant receiving or line scheduling. But for an autonomous model to work, it must comprehend how upstream processes impact the downstream, and vice versa. Through a series of advanced algorithms, one manufacturer modeled how an increase in material quality at a co-packer affected work-in-process inventory at a plant, thereby impacting finished goods for distribution. The net effect was a 2 percent improvement in yield at a 95 percent confidence interval.<sup>11</sup> There's a bullwhip effect that occurs where upstream value diminishes as you traverse different processes throughout the chain. Quantifying this is key to building an autonomous strategy.

- *Connect the tech.* The value of an autonomous model isn't predicated on the number of robots that run a set of transactions. It's based on how robotics work together with other technologies to fulfill an operation. One supply chain organization determined that 24 percent of its planning tasks could be automated using robotic process automation (RPA). Ultimately, 44 percent of tasks were automated using an intelligent orchestration of RPAs and machine learning models.<sup>12</sup> The value of intelligent automation lies in the intelligent connection among new and existing assets to automate transactions.

### Ready, or not?

With 31 percent of consumer products executives prioritizing supply chain integration in their strategic plans,<sup>13</sup> the need to operate as a whole can't be understated.

But with transition comes challenges, including a shortage of senior leaders. A new and flourishing workforce is shaping tomorrow's supply chain. Bringing unique skills and motivation, the next generation of supply chain leaders—millennials—are confident working with technologies like analytics and robotics. These exponential technologies serve as the underpinnings of a new orchestrated platform, much of which exists in today's modern IT landscape.

Organizations that are already using intelligent automation are experiencing impacts that fundamentally change the way they do business. For example, 79 percent report a high impact on operational efficiency, 83 percent have achieved higher-quality decisions faster, and 81 percent are realizing increased operational agility.<sup>14</sup>

Many consumer products manufacturers and retailers have formulated their autonomous supply chain strategies and roadmaps. The question is how fast they can get there, and what's at stake if they don't.

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## Key questions to consider

- » By 2021, consumer products and retail companies are planning to use intelligent automation across the value chain. Are you among those companies? And if not, what challenges, questions, or concerns are deterring you?
- » Both success factors and challenges exist when adopting intelligent automation capabilities. Do you have the right skills and resources in place? Is yours a culture open to change?
- » Can you communicate a clear vision about and benefits of the autonomous supply chain across your enterprise, from employees to decision makers?

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