

# IDC PeerScape: Automation Practices to Drive Differentiated Supply Chain Planning Performance

Simon Ellis

## IDC PEERSCAPE FIGURE

FIGURE 1

### IDC PeerScape: Supply Chain – Practices to Use Automation to Drive Differentiated Supply Chain Planning Performance

**Voice of Your Peer** 

“Automation, particularly artificial intelligence, is a key strategic element of our future supply chain.”  
— director of supply chain planning at a global CPG company

 <b>Your Challenges</b>	 <b>Peer Insights</b>
<p><b>Digital supply chain workforce</b> Finding employees with the right experience and skill set is an ongoing challenge for the supply chain.</p>	<p><b>Practice 1</b> Leveraging intelligent automation at Mars to implement a digital workforce</p>
<p><b>Multiple demand signals</b> The best ways utilize the varied demand data available to the business to improve the forecast.</p>	<p><b>Practice 2</b> Using AI to improve the near-term demand forecast by managing multiple signals</p>
<p><b>Disconnect between sourcing and supply chain</b> A lack of alignment between sourcing vendors and the supply chain caused delays and excess cost.</p>	<p><b>Practice 3</b> Bridging the disconnect between sourcing and supply chain at Belcorp</p>

Source: IDC, 2021

**EXECUTIVE SUMMARY**

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The supply chain plays a critical role in the evolution of manufacturing, with digital competencies at the center of change. Not technology for technology sake of course, but the ability to drive to new levels of efficiency and effectiveness while enabling transformational business model heretofore is impossible with traditional approaches. As companies use digital competencies in the supply chain to drive better products and services, those that do not will find themselves increasingly uncompetitive. Clearly these changes will occur at a different pace in different industries, but those companies that compete in segments ripe for digital disruption best get started.

The supply chain is now a critical function for companies to realize their business aspirations. It is a competitive weapon in the modern, digital economy. Advanced supply chain capabilities can support more efficient and effective current business approaches as well as new business models that translate directly to business performance that is tangible and measurable. The importance of the supply chain to business success in the modern, digital economy means transitioning from a functional area that has traditionally been viewed as a "cost center" to one that must be leveraged as an "opportunity center." In addition to functional excellence, this means having the ability to collect, consume, and disseminate data-driven insights in real time both within the supply chain and to adjacent functions like sales and marketing.

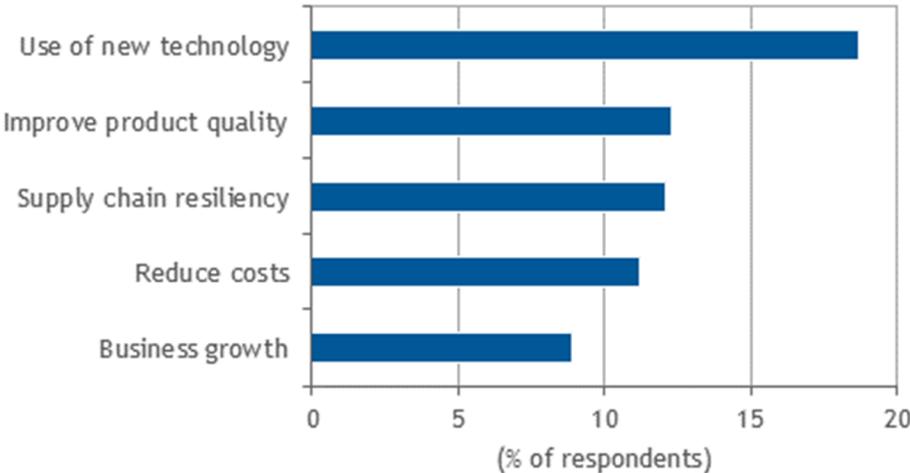
The use of modern technology is a critical enabler of the modern supply chain, either by helping solve business problems or by allowing companies to take advantage of opportunities. The supply chain orchestration necessary in a disruptive world simply cannot happen without adapting and adopting new technology. Figure 2, from the IDC's 2020 *Supply Chain Survey*, shows that the use of new technology is the top driver of change in the supply chain.

**FIGURE 2**

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**Drivers of Change in the Supply Chain**

Q. What are the key drivers of change for your supply chain?



n = 532

Source: IDC's *Supply Chain Survey*, 2020

As we navigate a world turned upside down by the COVID-19 pandemic, it is important to consider the role of technology both in the short term ("survival" mode) and in the longer term ("recovery" mode). For example, actions that companies can take now would include broader adoption of SaaS and cloud-enabled supply chain software. While digital transformation initiatives can take a long time, especially for large enterprises moving from legacy to modern applications, vendors often have faster cloud-based alternatives to digitize the business. COVID-19 is a huge reminder that technology and automation can be used to predict and help an organization enhance the performance of the supply chain. As organizations look to survive this difficult economic and social period, automation can provide organizations with a competitive edge by continuing to focus on operational efficiency and improved collaboration.

In the longer term, actions that companies can take would include intelligent automation. In the supply chain planning space, for example, the ability to better understand the drivers of demand volatility, and match supply to demand in real time, means the adoption of artificial intelligence (AI) and machine learning to effectively harness the power of data. It also means using automation and AI to drive the data quality and data integrity level needed. In supply chain execution, examples include assessing maintenance issues with drones, moving inventory around warehouses with automated guided vehicles (AGVs), or the adoption of service robotics or even using driverless vehicles for certain transportation routes.

This IDC PeerScape examines automation practices to drive differentiated supply chain planning performance.

"Automation, whether the use of advanced analytics, artificial intelligence, or sensors, is a critical element of the best-in-class supply chain and central to the digital transformation journey," says Simon Ellis, program vice president, Supply Chain, IDC. "Companies that better integrate people, process, and technology will outperform those that do not."

## PEER INSIGHTS

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### Practice 1: Leveraging Intelligent Automation at Mars to Implement a Digital Workforce

#### *Challenge*

As is the case in supply chain for many companies, balancing short-term business needs with long-term strategic investments is an ongoing challenge for Mars. The reality is that the supply chain has been experiencing pressure to digitize for over a decade now, and this imperative is only forecast to increase as life and work become more digital. Although people will always be a critical element of the modern supply chain, intelligent automation presents a real opportunity to augment people and take on many of the rote tasks that currently consume the resources of Mars associates, allowing associates to focus on more value-added and strategic work.

Mars has been on an ADX journey for a while now, with the goal to transform the business using user centricity, analytics, automation, and agile ways of working. Mars has innovation teams to manage these strategic pillars. The groups work with Mars business segments to drive digital business transformation by enabling productivity improvements for Mars. The first team, User Centricity, helps the company better engage consumers through digital technology. Second is a data and analytics team that manages data lakes, modern data infrastructure, and data science to drive advanced business insights. Third is the Intelligent Automation Hub that helps with efficiency, improves

experiences, and drives effectiveness by deploying digital workers to perform repetitive tasks. These teams make up the Digital Engine at Mars, working cohesively to find problems; solve them in a modern, digital fashion; and deploy those solutions at scale. This digital workforce helps the company operate more efficiently, while embedding agility and resilience into operations and improving user outcomes, both for customers and for associates.

The COVID-19 pandemic has immersed us in a situation unlike anything we've seen. It demands we work together, find the calm when we can, communicate and, most importantly, take care. Mars' approach for working through this has been, and will continue to be, putting the safety and well-being of the associates first, doing its part to prevent the spread of the virus and caring for our communities.

Even as the company continues to embark on the Digital Mars journey, a strong focus remains on associate empowerment through digital initiatives and skills building. Mars also expects to invest in the areas of data science, process/task management, and technology maintenance.

### **Example**

As noted, the Mars vision is to continue to leverage technology, data analytics, and new digital experiences to help achieve better business outcomes. Mars asked itself a series of questions that encapsulate the specific challenges of and opportunities for achieving a true digital workforce:

- Can employees be relieved of mundane work enabling them to work on higher value-added activities resulting in business growth?
- Can returns on people and technology investments be achieved within months instead of years?
- Can human contact with sensitive data be reduced, limiting the possibility of fraud and achieving greater regulatory compliance?
- Can operations be scaled up or down as needed, and can adjustments be made based on seasonality without either increasing or decreasing the human workforce?
- Can human error in transaction processing be mitigated to achieve 100% accuracy?
- Can transactions be automated using non-invasive technologies without interfering with the current systems and business processes?
- Can cost efficiencies be achieved through shifting work to digital workers?

Mars looked across functions and business units for process automation candidates. Although not exhaustive, these included things like invoice processing, intercompany chargebacks, order creation/fulfillment, purchase contract updates, and master data management. All are critical tasks, but equally can be mundane and repetitive with clear policies and procedures making them ideal for automation.

The Intelligent Automation Hub at Mars studies end-to-end processes to identify the highest/best opportunities for automation. They start with a pilot and then scale across business units/markets and geographies as appropriate using a few vectors to assess priorities – growth potential, savings, and market complexity. A three-pronged strategy has been created to enable the digital workforce:

- A standardized governance process was established, from identifying and documenting the process to be automated to promoting digital workers to production and supporting ongoing operations.

- Implementing an easy-to-understand catalog-based task pricing model to provide a simpler chargeback structure, ensuring the business understands the "cost" of a digital worker and to put together business cases for automation more easily.
- A digital worker cockpit was created, which provides insights into business benefits and achievements, as well as production performance of the digital workers against their strategic goals. The digital worker cockpit is utilized to provide better operational visibility and faster response of support operations through real-time monitoring of all digital workers.

The digital worker program has been evangelized across the business segments to get bigger pipeline opportunities focusing on those areas that have a direct business impact. Reusable processes and components have been created to reduce the cost of developing the digital workers. Automation has also been a critical component of enabling business pivots necessitated by the pandemic. As COVID-19 introduced a myriad of disruptions to the way work is done, rapid digital worker deployments have helped to alleviate these change pressures by allowing Mars to address problems quickly and effectively like volume spikes and office closures while preventing negative impacts to customer experience.

Along its automation journey, Mars engaged Tata Consultancy Services (TCS) to support the Intelligent Automation road map. TCS has helped Mars establish and mature the hub with governance and oversight roles filled by Mars. While Mars focused on building its internal expertise and technology toolkit, Mars leveraged TCS to help improve DevOps approaches to deploy automation across the segments.

TCS has demonstrated expertise around industry-leading technology standards that have helped Mars establish a scalable Digital Command Center for automation operations. TCS has also supported automation at scale by integrating solutions developed by multiple Mars digital suppliers into this command center.

Automation benefits at Mars have included cycle-time reduction to enable faster operations, improved customer experiences, and cost-efficient alternatives to repetitive manual work. Digital workers enable turnkey scaling up or scaling down of transaction processing to better handle peak season volumes and special events. To highlight one such example: The pandemic, especially early on led to dramatic changes in demand, which led to 200% order increases in some product categories. There was a huge increase in the orders placed in the Petcare segment, which led to downstream resource constraints to process and fulfill the orders in Mars ERP systems. Digital workers were deployed seamlessly within a very short period of time to help manage this abrupt volume spike; something that would have been challenging to impossible without a digitally augmented business.

The Mars Intelligent Automation program has metrics that principally measure value along vectors of efficiency, effectiveness, and experience, closely tracking the work hours saved by digital workers, quality improvements to business processes (e.g., cost of mistakes, reduced fines), and cycle time improvements (stakeholder and customer experience). Overall, automation adoption has grown 100% from 2019 to 2020.

## **Guidance**

The Mars Intelligent Automation Hub has been a successful program that has been a key operational difference maker during the pandemic. As with any transformational program, challenges exist – and there is clearly a role for change management in evangelizing automation as a pathway to effective and efficient ways of working. Some automation journey challenges have included:

- Multiple suppliers doing both support and development of digital workers using multiple frameworks and different processes.
- Lack of standardization and consistency in experience for the associates
- The potential for a diverse toolkit and scaled operations to increase support requirements and operational expenses around infrastructure
- A clear need for strong governance around digital workers that are now performing mission-critical business operations.

None of these are program stoppers, but they do highlight the importance of piloting first, then expanding across the business at a pace that allows such challenges to be addressed. It is also important to understand which processes drive the most value, thus providing a lens into where to direct automation resources to drive the greatest overall impact.

## Practice 2: Using AI to Improve the Near-Term Demand Forecast by Managing Multiple Signals

### *Challenge*

Demand planning has been a challenge for manufacturers in recent years. Brand loyalty has declined in the consumer-packaged goods industry, retail private label continues to grow as a percentage of consumer purchases, and large asset replacements have been increasingly postponed. That was all true even before COVID-19; post-COVID-19, we have seen further, huge demand volatility driven by unpredictable economic openings and closings, as well a consumer-hoarding behavior. We also live in an increasingly data-rich world, a good thing in the long run but tricky in the shorter term as companies try to work out how to best utilize (or in many cases, utilize at all) various and varied data sources.

Varied and various data sources are both a problem and an opportunity across many companies, particularly those across the consumer-centric industries like consumer-packaged goods, consumer electronics, and retail. The significant shift to ecommerce that we have seen as a result of COVID-19 only serves to exacerbate this issue.

### *Example*

When considering demand planning and forecasting, particularly short-term forecasting, there are a significant number of data sets/demand signals to consider. These include orders, traditional demand plans, actual recent shipments, warehouse withdrawals, warehouse inventory (both at manufacturer and retailer), store inventory, and consumer sales/point of sale. There are also other causal inputs like seasonality, marketing/promotion spend, weather and, new for 2020, pandemic closings/openings. If that sounds like a complicated, confusing set of data, it is. Traditionally, companies have only used one or two of the elements or applied causal factors as a forecast attenuation overly.

The emergence of artificial intelligence tools, and their application to complex solves like demand sending and forecast, offers an opportunity to dramatically improve the forecasting process and drive down both customer service failures and overall inventory costs. Terra Technologies, now a part of E2open, was an early pioneer in the use of AI to help in the demand planning process and continues to offer sophisticated tools to the marketplace. Its demand-sensing capabilities include pattern recognition, automatic model generation, and iterative tuning:

- Algorithms look at customer orders for correlation between data elements and orders.
- Algorithms automatically derive the key relationships and generate the requisite models.

- AI engine tests and validates the models when it receives new orders.
- Models self-tune each week to incorporate the latest information.

This effectively reduces the data noise in demand planning. Pattern recognition technology creates product-customer clusters that are either similar or predictive. Data for many products, certainly lower moving stock-keeping units (SKUs), tends to be noisy, so larger logical clusters of similar items mean that data is no longer limited or sparse. The application of AI to demand sensing means more reliable and consistent time-series forecasts and tracks much more faithfully to changes in demand than traditional demand planning approaches.

### **Guidance**

There may well be no better place to adopt modern AI capabilities in the supply chain than demand sensing/planning. It has been the place where sophisticated algorithmic capabilities have been used for decades, but the broader data sets available to manufacturers require new approach. Although specific companies were unwilling to be named here, there are a number that have used the E2open approach with good success and been able to better manage uncertainty and disruption under most conditions.

## **Practice 3: Bridging the Disconnect Between Sourcing and Supply Chain at Belcorp**

### **Challenge**

Being a data-driven supply chain should be a worthwhile aspiration for all companies, indeed it is hard to shake the feeling that the best performing supply chains in the future will be those that better leverage the various and varied sources of data available to them. It is not enough, however, to stake a claim to being a data-driven supply chain, you must have the tools and applications to both make sense of the data and turn it into something that is actionable and insightful.

Belcorp, a cosmetics manufacturer serving South American markets, understands this and has been on a data-driven journey for some years now. Unlike its peers, indeed companies in most manufacturing segments, Belcorp has had a long established, dedicated team to support data analysis and supply chain modeling. Indeed, it is part of its DNA – so when a disruption occurs, the company can "hit the ground running" and respond more quickly than its competitors. Critically, the company also has an artificial intelligence-infused network optimization tool that can link procurement and supply management with its S&OP process, so that, when COVID-19 hit in 2020, the company was both prepared to handle any anticipated disruptions and nimble enough to respond to unanticipated ones. COVID-19 challenged the company in both areas.

### **Example**

Belcorp operates in a complex environment. Although it sells approximately 1,500 stock-keeping units to its customers, the company is dealing with many thousands more in the form of ingredients and work-in-process items. Further, operating in South America, the company is constantly dealing with country border complexities in terms of both sourcing/manufacturing and selling to customers. Although its manufacturing is done mostly in Colombia, Belcorp does have manufacturing facilities in Ecuador, Peru, and Mexico. Customers span the full region. This complexity resulted in an ongoing problem linking procurement to the supply chain and to the S&OP process specifically. A lack of alignment between sourcing vendors and the Belcorp supply chain meant delays and excess cost. Although these problems had existed prior to the COVID-19 pandemic, supply disruptions as a result

of the pandemic certainly added additional challenges. Having a network optimization tool is critical given that Belcorp fragmented business across many product categories and countries.

Belcorp has a dedicated team to support supply chain modelling, and being data-driven is part of its corporate culture and a point of pride in its supply chain organization. The company has been using a supply design tool for almost a decade, initially with an IBM product called LogicNet, then with LLamasoft Guru after LLamasoft purchased LogicNet in 2016. Over the years, LLamasoft Guru has been enhanced with AI capabilities, and on the heels of its subsequent acquisition by Coupa, it now strengthens the linkage to procurement and supplier risk.

For Belcorp, network optimization is a must and spans its supply chain from tier 1 suppliers all the way to its distribution channels. The company is also able to use the tool to create and operate a supply chain digital twin based on network complexity including suppliers, manufacturing sites, and distribution centers. This spans thousands of finished goods, tens of thousands of ingredients and work-in-process inventory, and three different transportation modes. The digital twin is a replica of the entire end-to-end supply chain with precise and exact mapping to the "live" supply chain to enable sophisticated scenario planning and full end-to-end optimization.

Ultimately, a data-driven culture and sophisticated network optimization tool has allowed Belcorp to better meet its service obligations at lower cost and with greater flexibility while ensuring that the company is planning for potential future supply chain risk/disruption.

## **Guidance**

The key lesson for Belcorp has been the importance of better management of supply chain risk and potential disruption and the democratization of optimization tools, particularly through a pandemic. COVID-19 has been hard on Belcorp cash management, so every leverage was used to make sure that it could manage working capital optimally. Although there were some opportunities in payment terms, inventory presented a much larger opportunity. Belcorp introduces new products every three weeks and in aggregate those account for 20-30% of annual revenue. Inventory must not get in the way of this innovation pace, but it also can be optimized to ensure efficiency. As a result of network optimization and the embedded AI-driven modelling tools, Belcorp was able to reduce inventories in 2020 by almost 25%.

Future work plans include looking into inventory optimization more closely and better understanding the network impact on mapping sustainability, specifically the ability to better manage carbon footprint/ sustainability/efficiency trade-offs. At the core, though, there is the data-driven, analytics culture at Belcorp. It has the people, the data, and the tools to react quickly to risks/disruptions. That is the key to supply chain resiliency at Belcorp: see, analyze (no debate), and act!

## About IDC

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