The wake-up call:

Building supply chain resilience in consumer products and retail for a post-COVID world

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Introduction

The basic supply and demand foundations of the consumer products and retail (CPR) sector has been massively shaken by the pandemic. Take digital acceleration. Online sales are expected to increase at their fastest rate in 12 years, accounting for 20% of all retail purchases in 2020.[1] Grocery stores, pharmacies, and other essential retail outlets ran out of stock as the crisis first hit, with consumers stocking up on staples, from toilet paper to hand sanitizers.

The supply chain is bearing the brunt of these changes and disruptions. Sixty-six percent of organizations say they believe their supply chain strategy will change significantly in the next three years as they adapt to the pandemic post COVID-19. Key areas organizations are focusing on is investing in regionalizing and localizing their supplier and manufacturing base. Therefore, to understand the challenges that organizations face, and how they are responding, we launched a survey of more than 400 executives from CPR companies across eleven countries: China, France, Germany, India, Italy, Norway, the Netherlands, Spain, Sweden, the UK, and the US.

Drawing on the research, this report examines a number of themes:

- How is COVID impacting consumer products companies' and retailers' supply chains?
- How are consumer products and retail companies rethinking their supply chain in response to overcome disruptions?
- How can organizations accelerate supply chain resilience?

Executive Summary

COVID has had a massive impact on the sector's demand patterns and supply chain

- Eighty-five percent of consumer products companies and 88% of retailers say they have faced disruption.
- Tesco saw a months' worth of stock of essential products, such as sanitizer and toilet paper, selling out in one week.[2] Multiple FMCG companies faced a slump in sales, with a few going close to zero sales during March 2020.[3]
- Fluctuations in consumer demand, such as bulk ordering, disrupted supply chain forecasts. We found that 69% of retailers and 66% of consumer products companies had difficulties in demand planning due to lack of accurate and up-to-date information on fluctuating customer demand.
- The share of consumers preferring to shop with retailers who offer safe delivery practices increased to 59% in November 2020, up from 49% in April 2020.[4]

Organizations have modified their supply chains in response to COVID

- Sixty-six percent of organizations say they believe their supply chain strategy will change significantly in the next three years as they adapt to the pandemic post COVID-19.
- Organizations are actively investing in regionalizing and localizing their supplier and manufacturing base. Overall, both retailers and consumer products companies plan to reduce the share of pure global suppliers and manufacturers to around a quarter of their portfolio.
- Fifty-eight percent of retailers and 61% of consumer products companies say they will increase investments in digitization of the supply chain. The key areas where organizations will accelerate investments include automation, robotics, AI-ML, and cybersecurity.

Multiple factors critical to accelerate supply chain resilience

Drawing on this research, best practice examples, and our own experience working with clients on these issues, we recommend that organizations focus on three areas:

- Realign supply chain strategy adapting new ways to handle disruptions and assess supply chain resilience for visibility through demand sensing and control towers, agility, diversification, and contingency planning
- Industrialize automation across the entire supply chain
- Overhaul last-mile delivery to ride through disruptions through optimized store network, flexible workforce policies, and collaborative models.

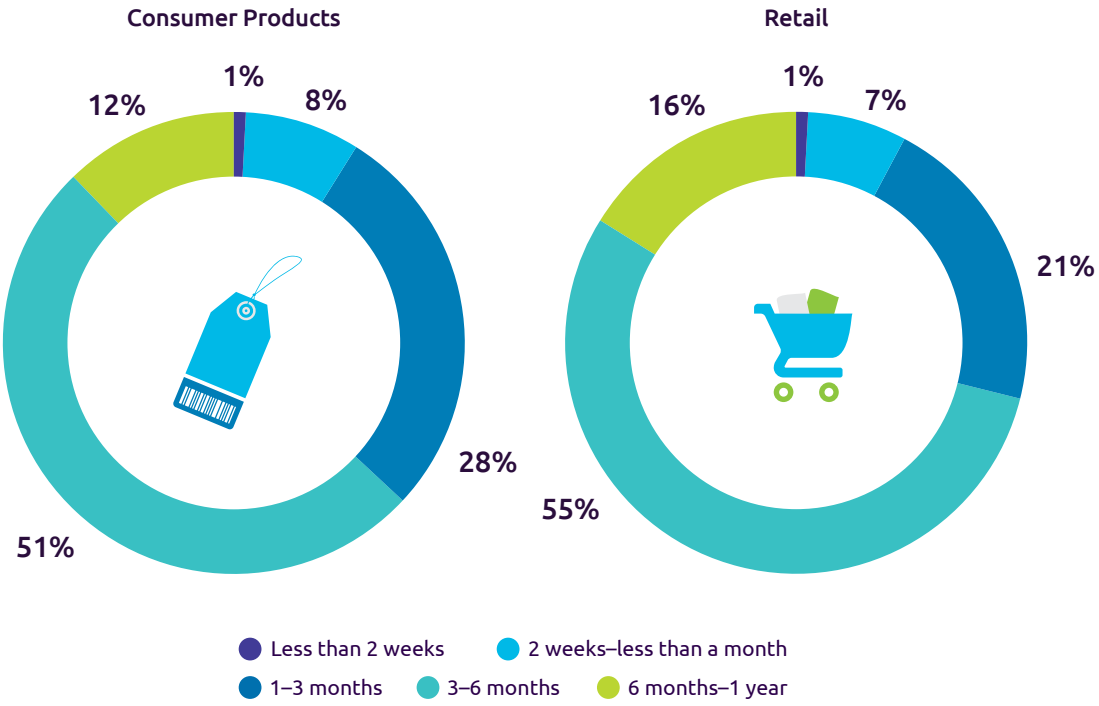
How is COVID affecting CPR organizations' supply chains?

CPR organizations faced a significant disruption to their supply chain early in the pandemic

COVID-19 has had a huge impact on the supply chains of leading CPR players: 63% of consumer products companies and 71% of retailers say it took at least three months for their supply chain to recover from the disruptions (see Figure 1).

Figure 1. Supply chain in CPR companies have been significantly impacted due to COVID-19

Please select the time that it took or might take for your supply chain to recover from the disruptions (i.e., to resume operations) caused by the COVID-19 crisis?



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=344 consumer products and retail organizations.

Fluctuating demand and changes in consumer behavior – coupled with transport and logistics restrictions – challenged supply chains on many levels, as Figure 2 shows:

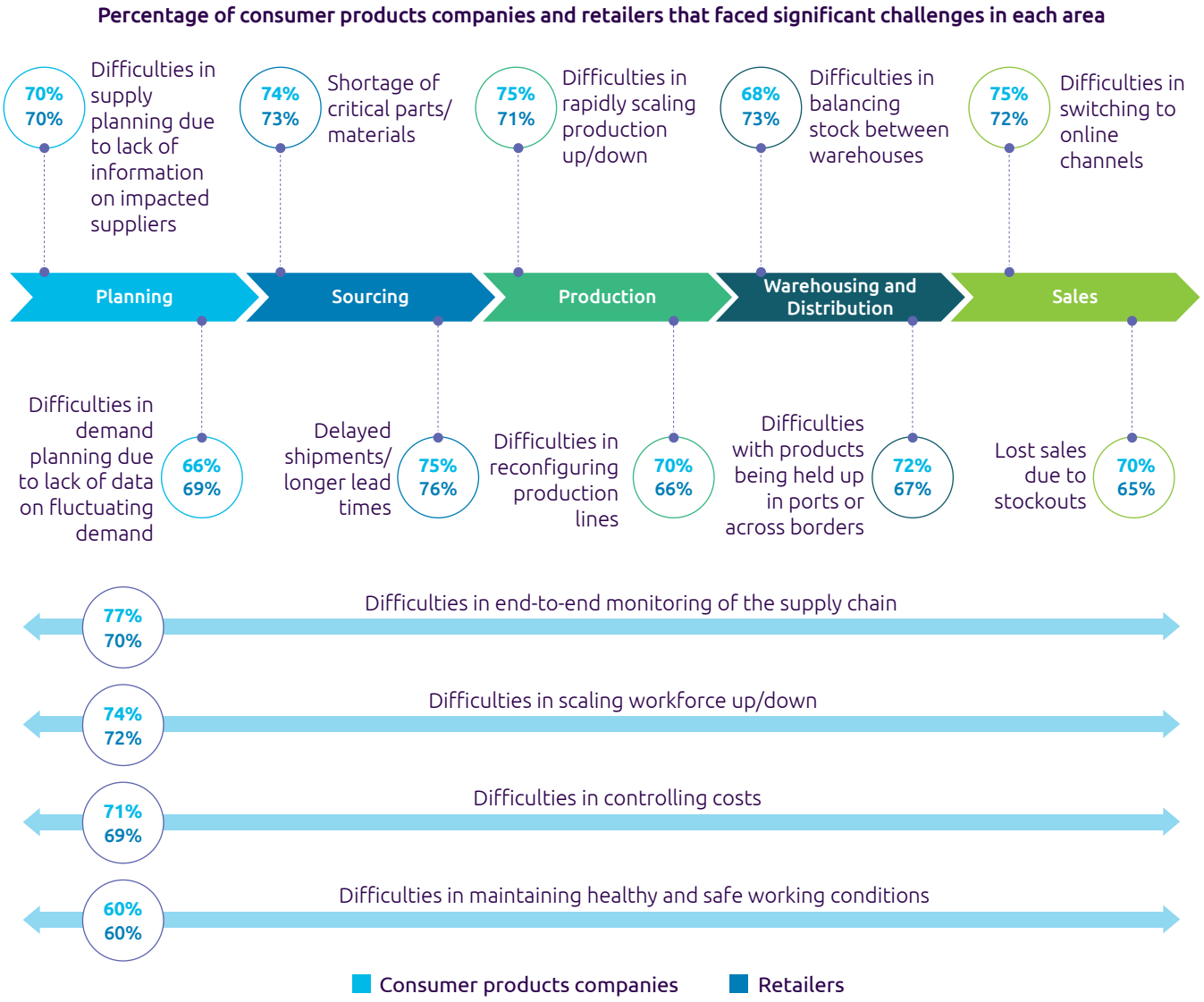
- Seventy-seven percent of consumer products companies and 70% of retailers had difficulties in end-to-end monitoring of the supply chain.
- Seventy-five percent of consumer products companies and 71% of retailers faced difficulties in scaling production capacity either up or down.
- Sixty-six percent of consumer products companies and 69% of retailers had difficulties in demand planning due to lack of data on fluctuating demand.
- The majority of retailers were affected by delayed shipments and longer lead times, which led to stockouts in warehouses and outlets.

Mark Schneider, CEO of Nestlé, for example, outlined how organizations are struggling to meet demand. *"You do have logistics constraints – sometimes you need to resort to air-freighting; sometimes even that takes longer, or capacity is limited. It's really all about managing, in very tight knit way, this crisis and ensuring flexibility. And this is what our teams are focused on right now."*[5]

The challenges faced by retailers and consumer products companies during the pandemic will have a long-term effect on their production, supply chain, delivery, and other operations. Lowe's, an American home improvement retailer, is installing lockers at its stores for customers to pick up items purchased online by scanning their phones.[6] Walmart introduced the Scan & Go app to its supercenters in 2019, but did not gather any traction at that time. During the pandemic however, demand for Walmart+, the membership program of Walmart, spiked due to the access to Scan & Go app.[7] Customers are developing new habits of limited trips to the store and contactless purchase and delivery, and this could continue post pandemic.

Sixty-eight percent of US shoppers will do more curbside pickups in the future and 60% of them will collect more of their online purchases from lockers or pickup points inside the store. The shift in consumer demand will affect retailers' staffing and resource considerations. Walmart and Target are working on cross-training their employees to have a more flexible workforce.[8]

Figure 2. Top supply chain challenges faced by CPR companies



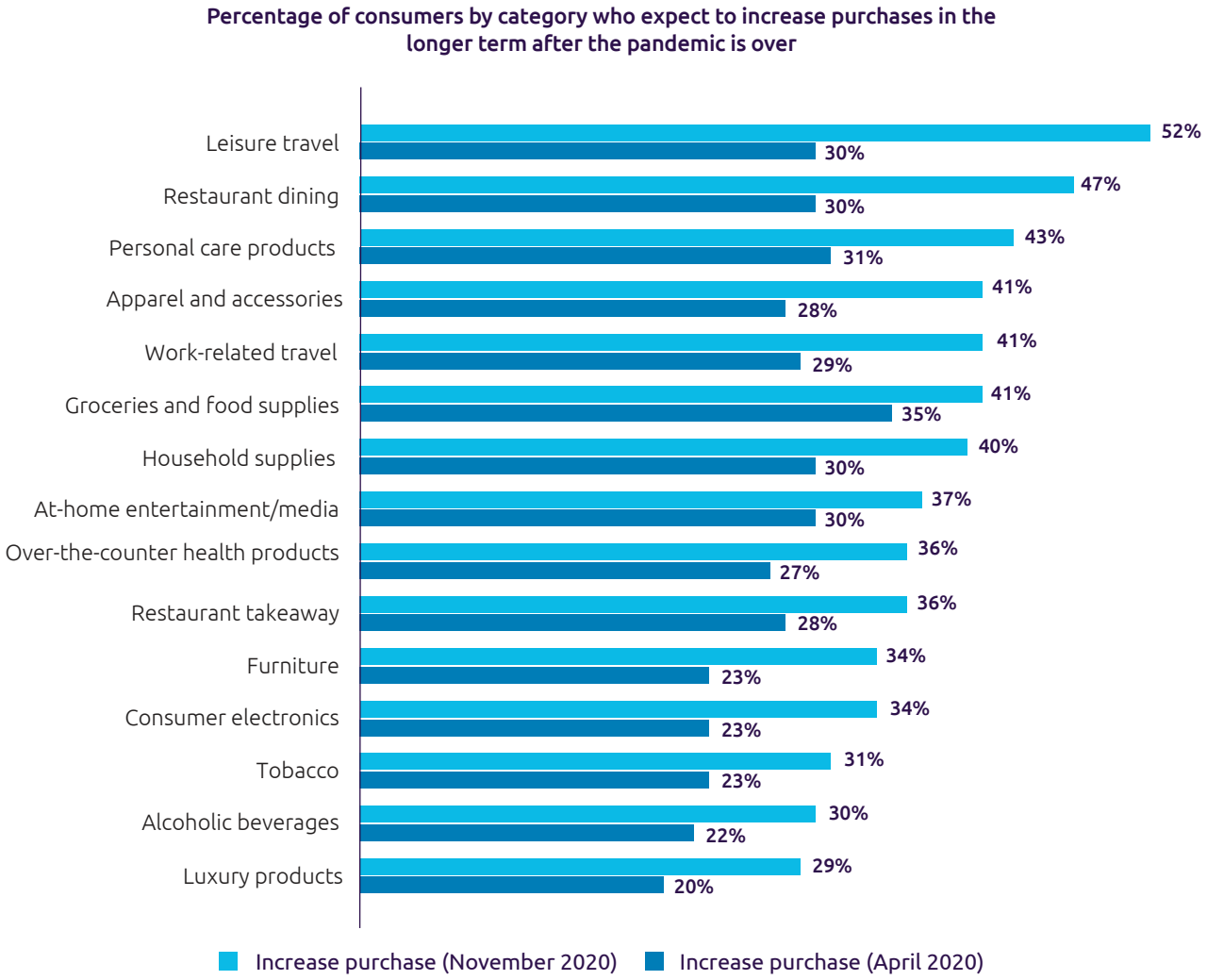
Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 consumer products and retail organizations.

Consumer demand shifted rapidly, leaving supply chains vulnerable

Lockdowns and other guidelines in multiple countries created anxiety and uncertainty among consumers. This anxiety, coupled with a shift to working from home, led to panic-buying and inevitable stockouts. We found that 70% of consumer products companies and 65% of retailers lost sales due to frequent stockouts.

At the same time, consumer preferences shifted extremely quickly. For instance, in November 2020, 43% of consumers said they would buy more personal care products post COVID, a 12% rise from the figure in April (see Figure 3). Similarly, 29% of consumers said they would buy more luxury products post COVID, a 9% rise over April.[9] The significant and quick shift in

Figure 3. Shift in consumer purchase preferences due to COVID-19



Source: Capgemini Research Institute, Consumer Behavior Survey, April 4–8, 2020, N=11,281 consumers, Consumer Behavior Survey, October 27–November 5, 2020, N=11,108 consumers.

consumer preferences, along with panic buying, is creating fluctuating demand patterns globally. The pandemic and lockdowns have forced many retailers and brick-and-mortar stores to close down and move sales to an online model. The balance between online and offline sales has skewed towards online during the course of a few months.

However, effective demand planning became increasingly difficult without accurate and up-to-date information from stores and outlets. We found that 69% of retailers and 66% of consumer products companies had difficulties in demand planning because accurate and up-to-date information on fluctuating customer demand was lacking.

Safety also became paramount. In November, the share of consumers preferring to shop with retailers that offer safe delivery practices increased to 59% – up from 49% in April 2020.[10] Doug McMillon, CEO of Walmart, says: *"Before this crisis, we were already seeing robust adoption of online pickup and delivery in our business. As this crisis created the need for social distancing and required people to stay at home, customers embraced the pickup and delivery experience even more."*[11]

However, we found that 60% of organizations had difficulties in maintaining safe and healthy working conditions.

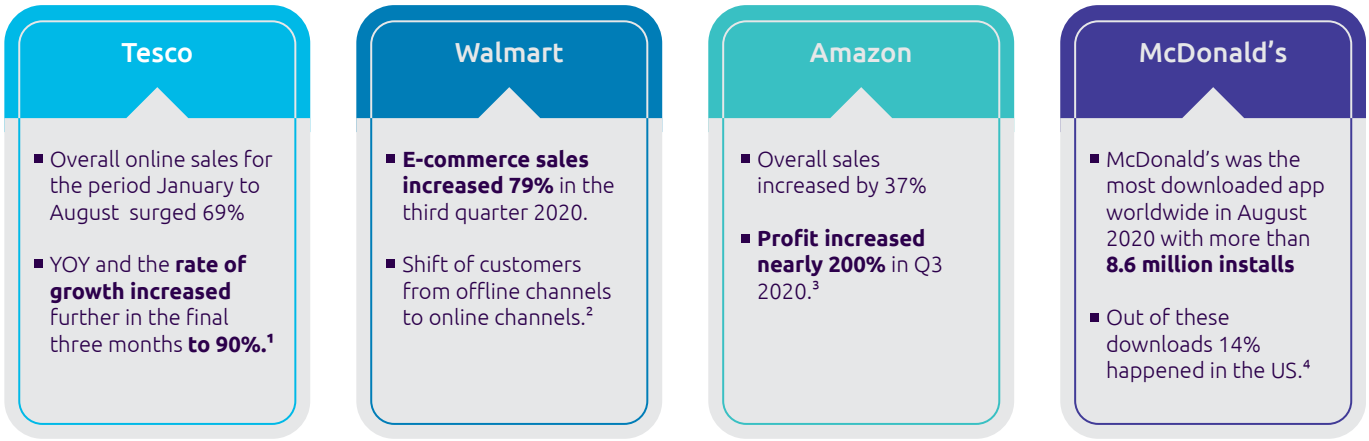
How consumers think about packaging is also shifting because of safety and hygiene issues:

- Forty percent of consumers prefer their products in disposable packaging due to health and safety concerns.[12]
- This has led to an increase in demand for disposable packaging and a shortage of packaging materials. For instance, in Singapore, demand for food packaging products has doubled.[13]

E-commerce accounted for one-fifth of all retail purchases in 2020

Stay-at-home orders coupled with the closure of non-essential retail stores based on government orders led to a huge spike in online orders, with multiple retailers reporting a surge in online sales (see Figure 4). Online sales are expected to increase at their fastest rate in 12 years, accounting for 20% of all retail purchases in 2020 (up from 2019's 16%).[14] For instance, in the UK, the percent of internet sales as a percentage of total retail sales increased from 18.8% in May 2019 to 32.8% in May 2020.[15]

Figure 4. Huge spike in e-commerce during COVID-19

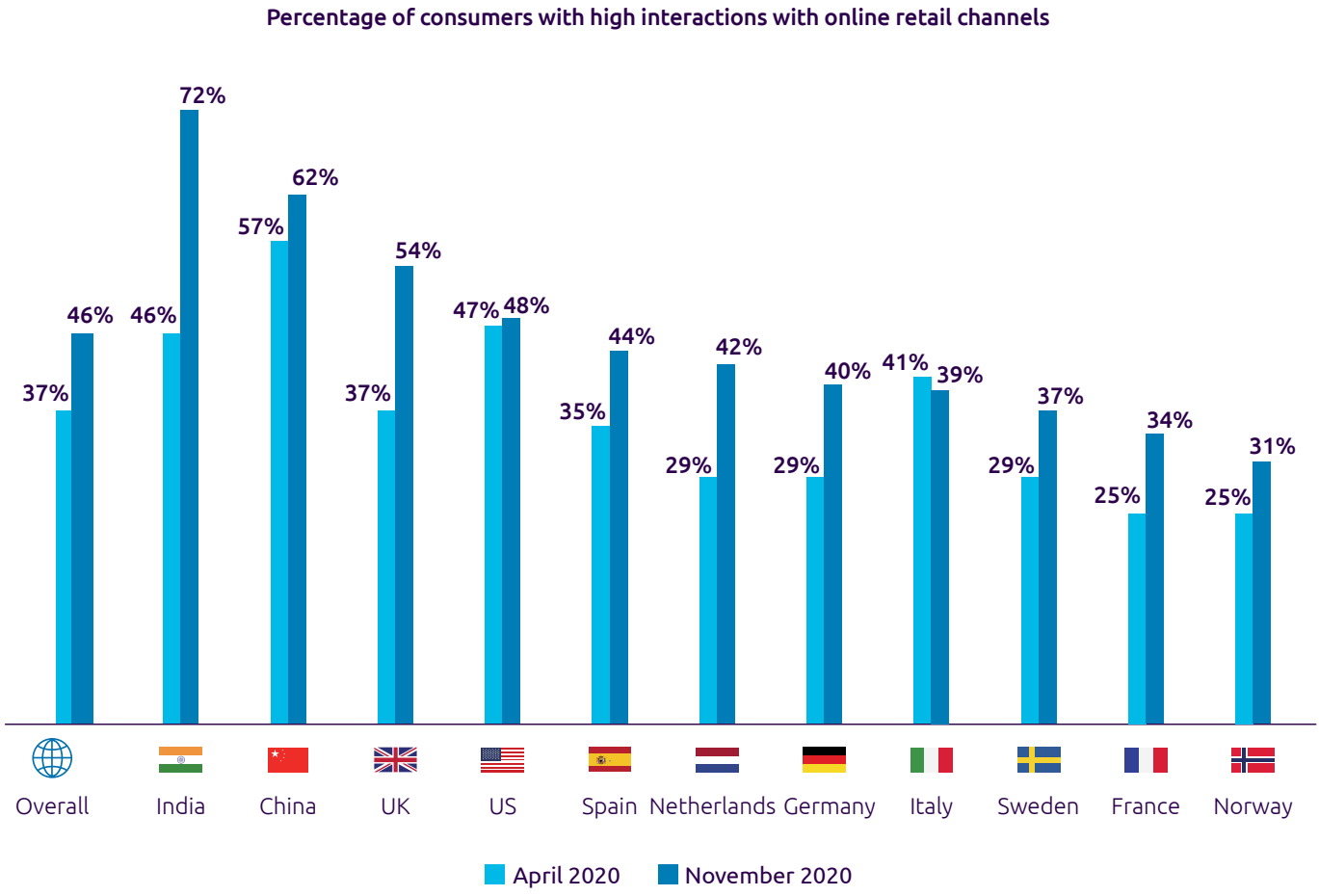


Source:
1.Essential Retail, "Tesco Reports 69% Growth In Online Sales As Profits Surge," October 7, 2020
2.The New York Times, "As Customers Move Online, So Does the Holiday Shopping Season," November 23, 2020
3.The New York Times, "As Customers Move Online, So Does the Holiday Shopping Season," November 23, 2020
4.Sensor Tower, "Top Food Delivery Apps Worldwide For August 2020 By Downloads," September 16, 2020.

In earlier research, we found that only 24% of customers were willing to go to physical retail stores in April 2020 compared to 59% before the pandemic.[16] This increased to 34% in November 2020.[17] Chip Bergh, CEO of Levi's, says: *"The deeper the economic impact is and the longer everybody is cooped up, the more of a shock there will be to the system and it may take longer for the consumer to come back."*[18]

Also, before COVID-19, only 30% of consumers had a high degree of interaction with online retail channels,[19] but this continued to increase during the pandemic – 37% by April 2020 and 46% by November, as Figure 5 shows. *"The shift in purchasing patterns at the start of the pandemic amounted to three to five years of acceleration in e-commerce, really in a period of weeks and months,"* said Brett Biggs, CFO of Walmart.[20]

Figure 5. High growth in customer interactions with online retail channels leading to shift in demand forecasting



Source: Capgemini Research Institute, Consumer Behavior Survey, April 4–8, 2020, N=11,281 consumers; Consumer Behavior Survey, October 27–November 5, 2020, N=11,108 consumers

High degree of interaction with online retail channels continued to increase during the pandemic

37% by April 2020 and 46% by November

How Chinese companies are driving supply chain innovation in response to COVID

- Staffing issues: Organizations are looking for innovative and creative ideas to solve staffing problems. One such initiative is the labor-sharing practice adopted by Hema (Alibaba's supermarket chain) and restaurant chains, including Xibei and Yunhaiyao. More than 20,000 restaurant workers faced unemployment as restaurants closed, whereas online retailers such as Hema were facing staff shortages because of a surge in online orders. Through labor sharing, restaurant employees joined Hema on a temporary basis, which improved delivery times, the number of customers served, and overall service quality.[1]
- Contactless delivery has become the new normal and retail players are frontrunners in implementing large-scale autonomous delivery services:
  - JD.com is delivering medical supplies to hospitals and groceries to local communities, using autonomous vehicles in Wuhan.
  - Meituan Dianping (a local delivery app) is deploying autonomous delivery vehicles on public roads for the first time.
  - Ele.me (one of the largest food delivery service platforms) has deployed delivery robots to send meals to rooms in a quarantined hotel.[2]

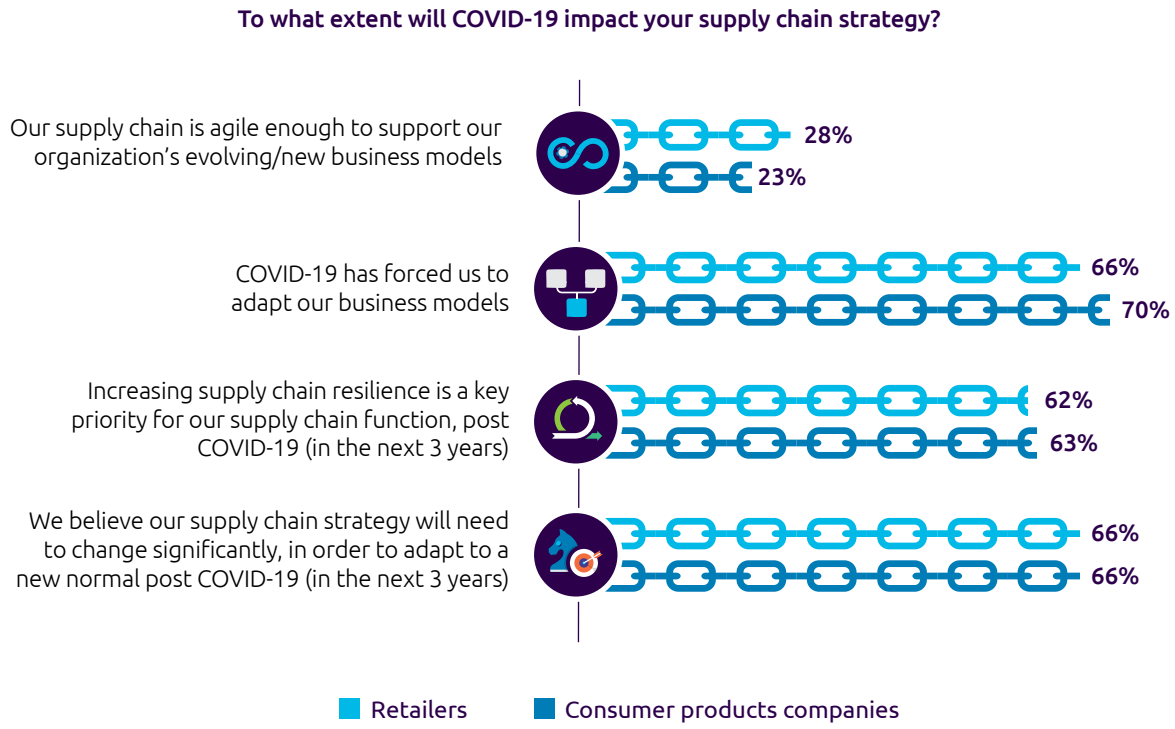
Source:
1.CGTN, "Employee sharing helps companies survive COVID-19," March 10, 2020.
2.TECHINASIA, "China's e-commerce giants deploy robots to deliver orders amid coronavirus outbreak," February 21, 2020.

How CPR organizations are rethinking their supply chains to overcome disruptions?

The pandemic is forcing CPR organizations to change their business models and their supply chain strategies:

- Over two-thirds say that COVID-19 has forced them to modify their business models to adapt to the new normal (66% for retailers; 70% for consumer products).
- Given shifts in consumer demand and the e-commerce surge, organizations are planning to realign their supply chain strategy: 66% say they believe their supply chain strategy will need to change significantly in the next three years to adapt to the post-COVID new normal.

Figure 6. Effect of COVID on supply chain strategy



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 consumer products and retail organizations.

Lockdowns and limits on supply chain movement within countries affected demand:

- Coca-Cola saw heightened demand for its drinks from neighborhood stores and online grocery platforms as customers started to stockpile.
- On the other hand, demand via restaurants, movie theatres, and sports events plummeted.
- The organization needed to rapidly re design their distribution channels to address these demand fluctuations. James Quincey, CEO of Coca-Cola, says: *"The supply chain is creaking around the world. There are flash points when it's getting a little harder to get ingredients through, whether it's delays at the borders, the big changes in channel mix."*[21]

International travel and cargo movement restrictions have created a bottleneck for shipping. Increased turnaround time for the ships due to precautionary measures and docking restrictions in various countries, including China and UK, created container shortage, resulting in inflated spot rates for shipments. Freight rates from China to the US and Europe increased 300% from March 2020 to January 2021.[22]

The COVID-19 pandemic caused significant bottlenecks in Europe due to increased checks at ports, slowing the entire process and causing congestion and severe disruptions to inbound operations. Organizations are actively looking for efficient and cheaper alternatives. China Railway Express reported an 80% increase in the number of freight trains between China and Europe during January to September 2020.[23]

CPR organizations are shifting from globalization to localization of the supplier and manufacturing base

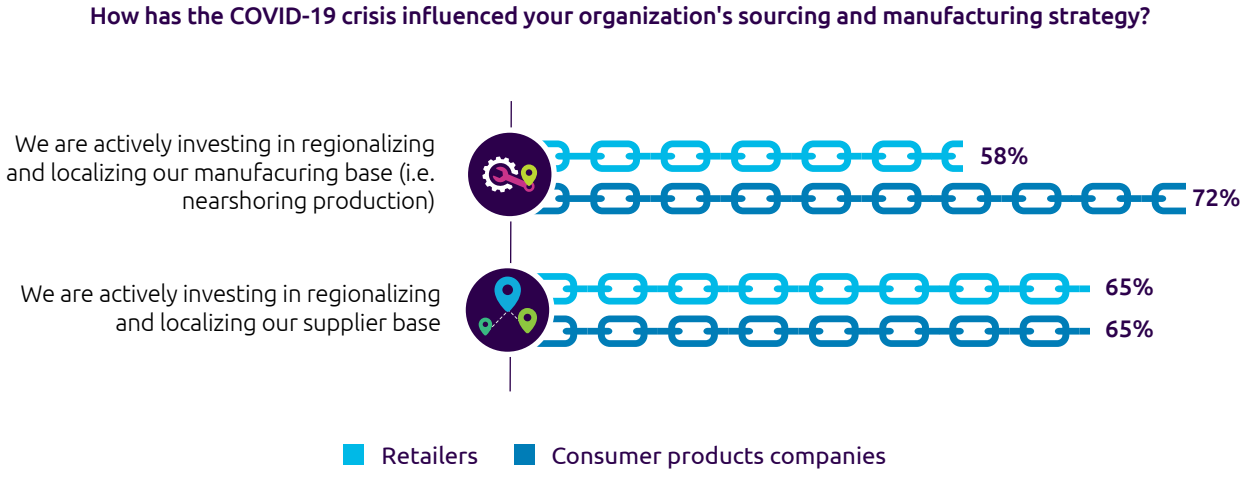
CPR organizations are actively investing in regionalizing and localizing their supplier and manufacturing bases:

- Seventy-two percent of consumer products companies say they are actively investing in regionalizing or localizing their manufacturing base or nearshoring production (see Figure 7)
- Sixty-five percent of the organizations are investing in regionalizing and localizing their supplier base.

66%

say they believe their supply chain strategy will need to change significantly in the next three years to adapt to the post-COVID new normal.

Figure 7. Shift towards regionalizing and localizing suppliers and manufacturers



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 consumer products and retail organizations.

Martin Thomsen, CEO of Rubix – Europe's largest supplier of industrial maintenance, repair and overhaul (MRO) products and services – said: *"The traditional global business supply chain is no longer fit for purpose. It is clear that we can no longer rely solely on extended and singular global supply chains – the diversification and broadening of a business's supplier portfolio is now essential to reduce risk, and a new balance needs to be struck between supply chain agility and efficiency."*[24]

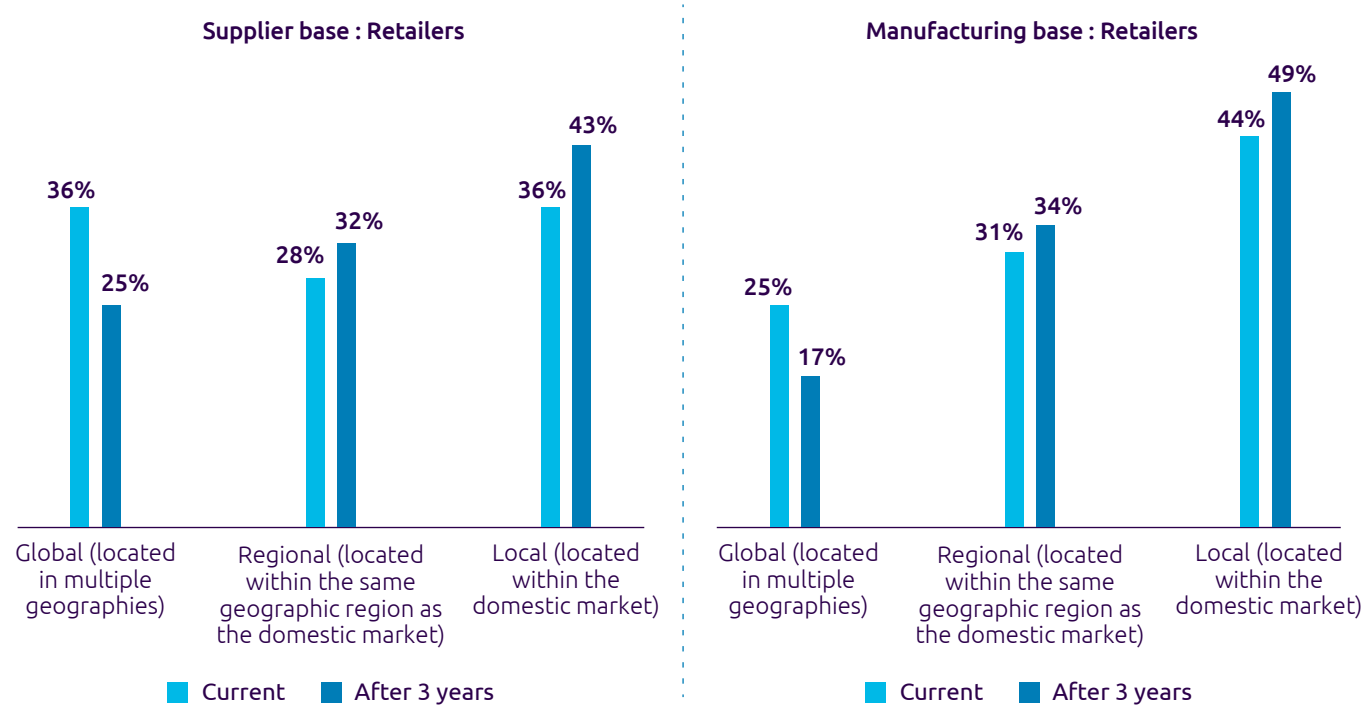
In the wake of the pandemic, electronics manufacturers are expediting their plans to move production beyond China. COVID-19 has exposed the fault lines in staking everything on one country and increased the need for a more diverse supplier and manufacturing base. Wistron Corp., one of Apple's manufacturing partners, said that half of its capacity would reside outside China within a year. It is earmarking USD 1 billion for expansion into India, Mexico, and Vietnam.[25]

Shifting from global manufacturing and supply to localized supply chain reduces complexity associated with demand planning and logistics. The increase in automation in shop floor leads to reduced production cost and facilitates sustainable localized production. Localized supply chains are preferred by retailers and consumer products companies for the coming years and this means shorter supply routes, fewer carbon emissions, and more self-sustainability.

As Figure 8 shows, both retailers and consumer products companies plan to reduce the share of global suppliers and manufacturers over the next three years, shifting to regional and local instead:

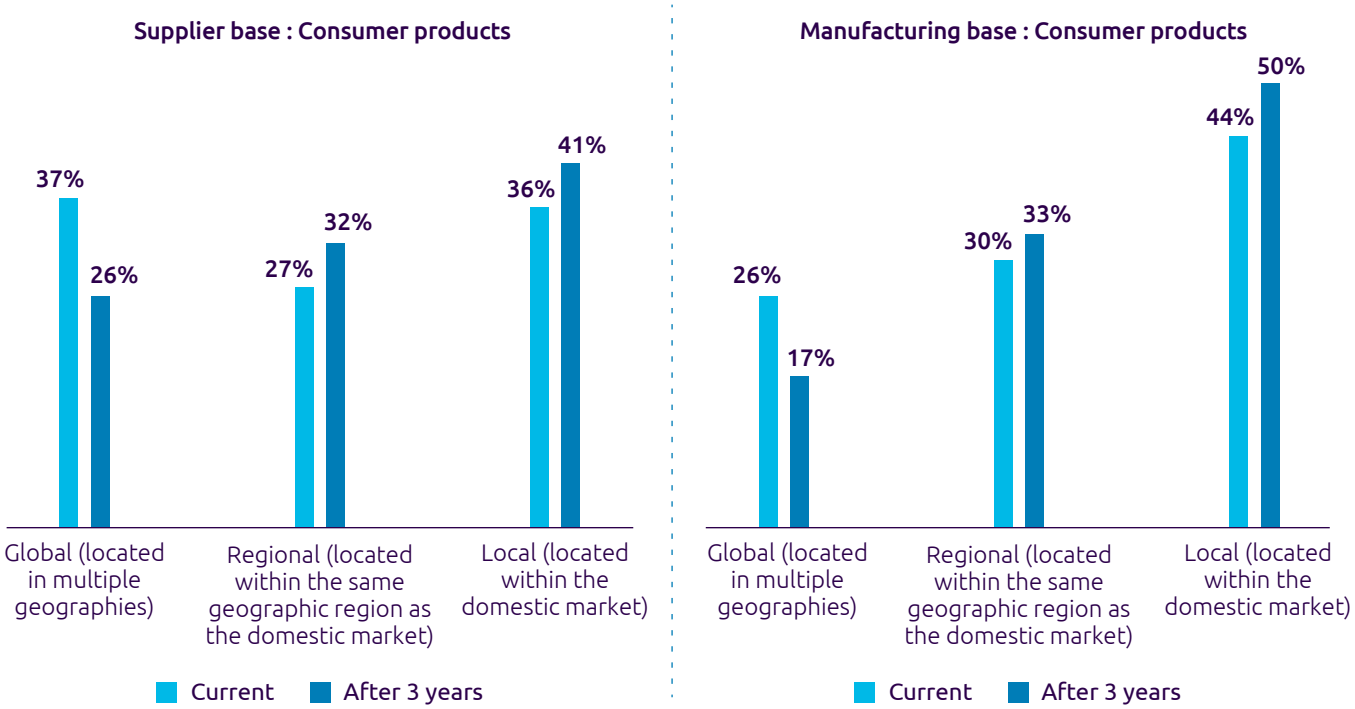
- In retail, global suppliers will represent just 25% of capacity.
- In consumer products, global manufacturers will represent just 17% of capacity.

Figure 8. Shift in retailers' supplier and manufacturer base



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 consumer products and retail organizations.

Figure 9. Shift in consumer products organizations' supplier and manufacturer base



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 consumer products and retail organizations.

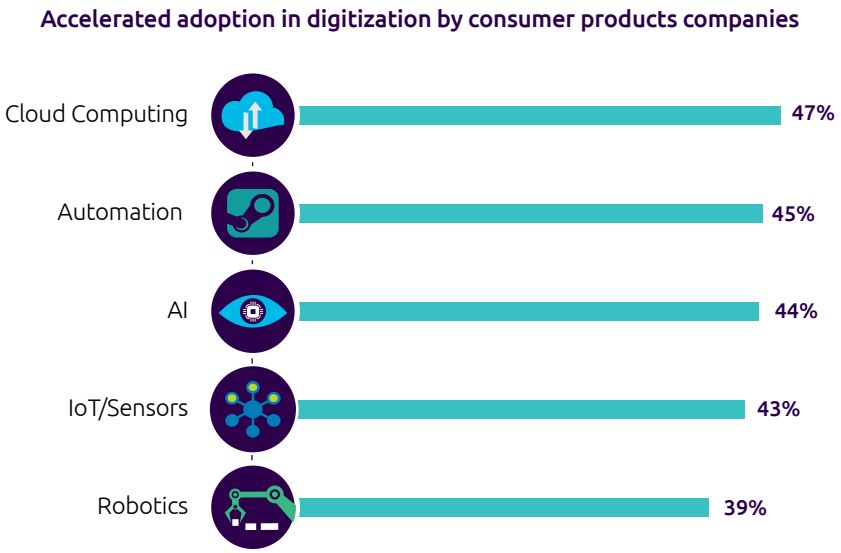
Overall, both retailers and consumer products companies plan to reduce the share of pure global suppliers and manufacturers to around a quarter of their portfolio

Supply chain digitization is gaining momentum

Organizations are accelerating their supply chain digitization investments. The majority (58% of retailers and 61% of consumer products companies) say they will increase investments in this space. Key areas of focus include automation, robotics, AI-ML, and cybersecurity. Automation is leading the way, with 49% of retailers saying they will accelerate investments in this technology (see Figure 11). Multiple retail companies are already investing in automation for warehouse management and inventory management.

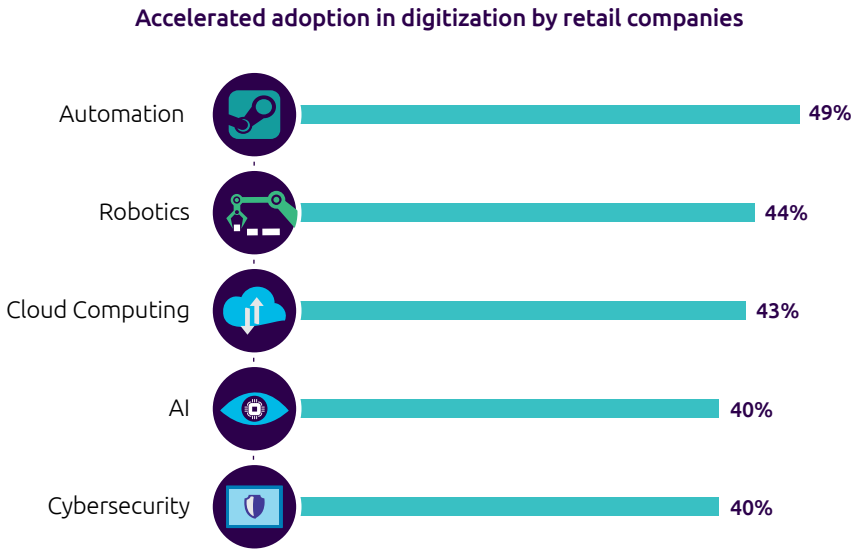
Hari Vasudev, Walmart Labs India head and senior vice-president, says *"Emerging technologies like artificial intelligence (AI) will become an eminent part of retail to understand dynamic demand signals, to realign supply chains, to redefine the need of essential workforces and strategy to adapt to the new normal. There is a need to have a robust supply chain mechanism powered by technologies such as AI and machine learning to predict demand and ensure in-time sourcing."* [26]

Figure 10. Investments in supply chain digitization, especially cloud computing, by consumer products companies set to increase



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 CPR organizations.
*Automation – business process automation, robotics process automation.

Figure 11. Investments in supply chain digitization, especially automation, by retail companies set to increase



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 CPR organizations.
*Automation – business process automation, robotics process automation.

Johnson & Johnson is responding to COVID by adopting technologies in a range of areas:

- Augmented reality is used both on the factory floor and in warehouse and distribution centers for remote maintenance and engineering support and training.
- Advanced automation and robotics are used to help frontline workers and address staffing constraints.
- 3D printing technology is used within Johnson & Johnson operations and in hospital systems for broader COVID response efforts.[27]

58%

of retailers and 61% of consumer products companies say they will increase investments in supply chain digitization

Sustainable supply chain for CPR organizations

In creating a supply chain that is resilient and robust, organizations should ensure that it is also sustainable. Customers alter purchase preferences based on social responsibility, inclusiveness, and environmental impact of their purchase. Consumers' sustainability priorities changed during the pandemic. Our research reveals that 68% of consumers plan to purchase more locally made products than imported or non-local products during the pandemic and 40% prefer to purchase products in disposable packaging in the short term during the pandemic.[1]

Reducing the carbon footprint and addressing sustainability are major focus areas for retailers and consumer products companies. H&M, the Swedish fast-fashion retail giant, is planning to implement energy efficient programs across their supply chain. Helena Helmersson, CEO of H&M, said: *"We will have to develop new technologies, new business models, new processes, and a new type of customer relations. We are currently implementing energy-efficiency programs throughout our supply chain in close cooperation with our business partners"* [2]

Increase in demand for safe and convenient home delivery and the shift of customers to online shopping have created a huge increase in the number of delivery runs made by each retailer during COVID-19. Organizations are therefore trying to limit and reduce the carbon footprint associated with meeting this extra demand by enabling the supply chain infrastructure to be more sustainable, for instance shifting from fossil fuel to electric:

- Amazon, for example, is planning to use electric delivery vans (e-delivery) in the US to fulfill their last-mile delivery, with the aim of having 10,000 operational by the end of 2022. The longer-term goal, as part of its carbon-free delivery initiative, is to have 100,000 e-delivery vehicles in the US by 2030. Ross Rachey, director of Amazon Global Fleet and Products, says: *"We wanted drivers to love using it and customers to feel excited when they saw it driving through their neighborhood and pulling up to their home. We're trying to build the most sustainable transportation fleet in the world."* [3]
- Coca-Cola focuses on reverse logistics and recyclable packaging as part of its green supply chain initiative. The organization has already created plant-based bottles and is using recycled materials for new packaging. It also works in close collaboration with retail companies and local dealers to have recyclable bottles and cans returned, recycled or repurposed. The vision is to make 100% of packaging recyclable globally by 2025 and use at least 50% of recycled material in packaging by 2030.[4]
- Picnic, an e-grocery firm from the Netherlands, has created a delivery model called Milkman, which focuses on less waste and fewer miles travelled. Picnic has a fleet of small electric vans, which buy and deliver food locally. Joris Beckers, Picnic's co-founder, says: *"Our aim is to create a sustainable infrastructure for food delivery. We are disrupting and significantly improving the e-commerce experience."* [5]
- Bring and Posten, the leading cargo and package distributor in Scandinavia, is launching an electric truck delivery system in Q1 2021. The company will use purpose-built fully electric 16-ton delivery truck for their inner-city pickups and drop-offs. Per Öhagen, executive vice president of E-commerce and Logistics at Bring, says: *"Bring wants to be a world leader in making transport climate friendly. By 2025, our goal is that all our vehicles and buildings will be emission neutral."* [6]

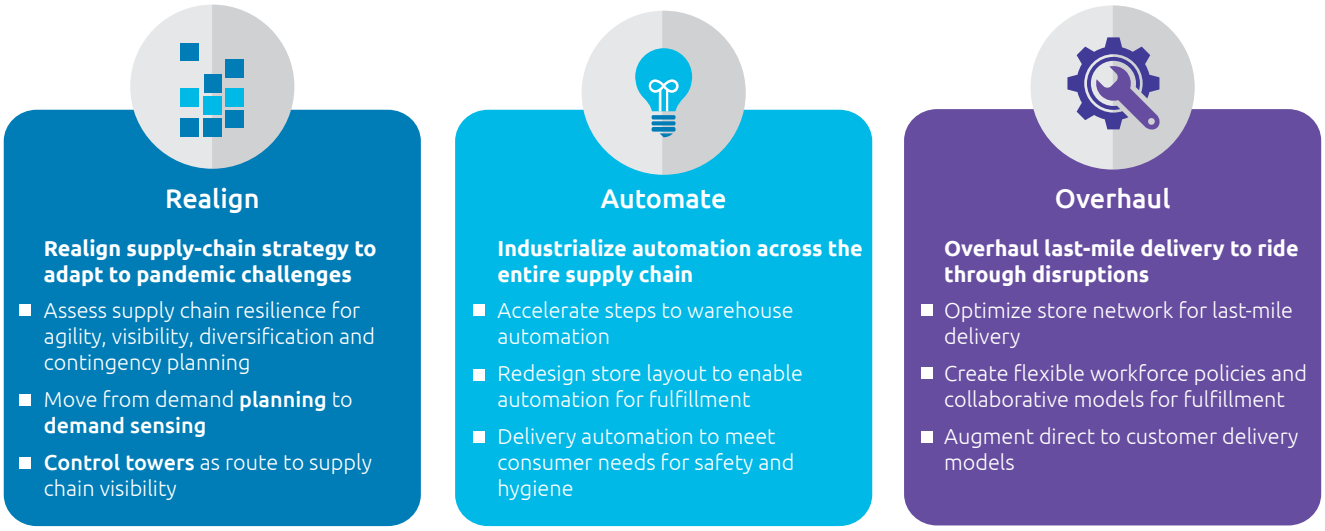
Source:
1.Capgemini Research Institute, Sustainability in Consumer Products and Retail Survey, March 2020, N=7,520 consumers.
2. Inside Retail, "Many companies had been planning to go carbon neutral. Then came Covid-19," April 6, 2020.
3. INHABITAT "Amazon goes green with electric delivery vans", October 30, 2020.
4. The Coca-Cola Company, "Sustainable Packaging Design."
5. CityLogistic, "Dutch Picnic: Milkman 2.0" January 2020.
6. Auto Futures, "Volta Trucks Chosen by Bring and Posten for Electric Delivery Trial in Nordic Markets," June 30, 2020.

How can organizations accelerate supply chain resilience?

Drawing on this research, best practice examples, and our own experience working with clients on these issues, we recommend that organizations focus on three priorities to build supply chain resilience:

- Realign supply chain strategy, adapting new ways to handle disruptions and assess supply chain resilience for agility, visibility, diversification, and contingency planning.
- Industrialize automation across the entire supply chain.
- Overhaul last-mile delivery to ride through disruptions through optimized store network, flexible workforce policies, and collaborative models.

Figure 12. Accelerate supply chain resilience



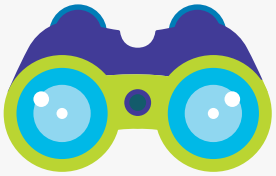
Source: Capgemini Research Institute Analysis

Realign supply chain strategy to adapt to pandemic challenges

The pandemic has challenged even the most resilient and efficient supply chains. Bart Talloen, VP of Supply Chain Innovation at Johnson & Johnson, said: *"While today's supply chains have better visibility and resilience than ever before, they still aren't resilient enough. Understanding the multidimensional nature of risk and creating a resilient supply chain is essential to minimizing risk, especially when disruptions seem poised to occur more frequently and with greater severity"* [28]

The first step in building a resilient and sustainable supply chain is to assess and understand its current levels of resilience. We found that only 23% of consumer products companies and 28% of retailers believe that their supply chain is agile enough to support the organization's evolving business requirements.[29] This means that many organizations should take an urgent look at their supply chain practices to understand if they have a resilient supply chain. The critical features and KPIs (See Appendix) that organizations must assess for performance of their supply chain are agility, visibility, diversification, and contingency planning (see Figure 13):

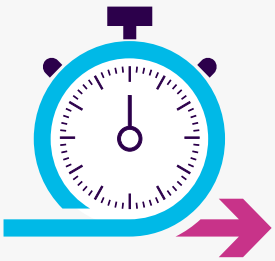
Figure 13. Features of a resilient supply chain



Visibility

Visibility across the entire supply network for real time forecasting through availability of data of stock levels at tier 1 suppliers, manufacturers, warehouses

Visibility through supply chain control tower and real time forecasting through demand sensing

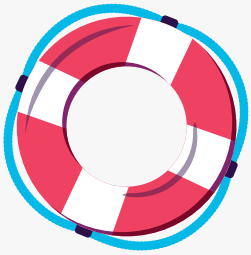


Agility

Reconfiguring production lines in an agile manner – pre and post COVID-19

Diversification

Diversifying supplier and manufacturing base Diversity in transportation options pre and post COVID-19



Contingency planning

Increasing crisis preparedness using simulations –pre and post COVID-19

Source: Capgemini Research Institute Analysis

Visibility:

Organizations require visibility across the entire supply network for real-time forecasting. Forecasting efforts that extrapolate past data provide weak signals on current trends. Given pandemic-era shifts in consumer consumption patterns, visibility can help make supply chains more robust. Visibility ensures availability of data in the decision-making process, improved planning, forecasting, and demand signals that can be shared across the supply chain. We found that:

- Sixty-six percent of organizations plan to segment supply chains according to demand patterns, product value, and regional dimensions post COVID.
- Fifty-four percent say they will be using supply chain analytics/AI-ML for demand forecasting to cope with the impact of COVID-19.

Move from demand planning to demand sensing

Traditional demand planning uses one set of data to forecast for the next 30–60 days and therefore does not account for short-term shifts that occur in real time. We found that over two-thirds (68%) of organizations say they faced difficulties in demand planning due to lack of accurate and up-to-date information on fluctuating customer demand due to the COVID-19 outbreak.

Demand sensing uses recent intelligence from social listening – as well as consumption, engagement, and conversion data – to transform demand forecasting. This, in turn, streamlines the supply chain forecast.

Nike has been transforming its supply chain by using data to fine-tune operations, with a focus on inventory and demand sensing. John Donahoe, CEO Nike, says: *"Digital retailers who are already set up to share inventory data with Nike will help the brand maintain precisely tuned global inventory levels. Inventory data, as well as consumer data from retail partners and Nike's own digital sales channels, will feed digital demand sensing tools the company has been developing to inform product development and order size.*[30]

Control towers as route to supply chain visibility

In order to overcome supply chain disruptions, organizations require a more sophisticated way to forecast and provide inventory visibility. A control tower is a central hub with the required technology, organization, and processes to capture and use data for short-term and long-term decision making. It offers real-time visibility of the end-to-end supply chain network to improve stock rebalancing, supplier collaboration, and to provide the latest consumer trends and provides alerts when rapid decision making is needed. Given the vast shifts we are seeing in consumer purchase patterns, it can also improve forecasting and enable advanced analytics for better insights and decision. Unilever uses real-time customer insight at the center of decision making. Alex Owen, Consumer and Market Intelligence, vice-president and global head of People Data Centers and Consumer Data Governance says: *"We started to see the massive impact of digital connections on consumers. We realized that if we didn't change we wouldn't remain relevant, either within the organization as a function or – more importantly – with consumers.*[31] We found that 56% of consumer products companies and 62% of retailers say they have invested in supply chain control tower solutions, which covers their supply chain fully or partially.

Agility:

The speed at which the supply network can respond to shifts in the environment, such as scaling production up/down, reconfiguring plants and logistics networks, opening new demand channels (for example shifting from a brick-and-mortar model to e-commerce) is critical for consumer products and retail companies.

Ensure plant and process are designed for increased agility and sustainability

To create the agility to respond to sudden shifts in demand, consumer products companies must identify opportunities to ensure the supply chain across multiple areas, including product design, processes, choice of materials, and packaging can quickly be modified. This can help deal with the challenge of scaled production – 75% of consumer products companies said they faced difficulties when they had to quickly increase or decrease production capacity due to COVID.

Organizations also had to quickly reconfigure the production lines in response to COVID. Seventy percent of consumer products companies faced difficulties in reconfiguring production lines during COVID. An agile supply chain model across the organization ensures changes can quickly be implemented, which enables them to recover from disruptions quickly.

Unilever adapted its factories around the world to produce hand gel, increasing the capacity by 600 times within weeks and was able to launch this product in 50 markets in less than 100 days. Victoria Cuthbert, head of Supply Chain Home Care, Unilever, adds: *"This crisis has highlighted that global, agile, and adaptive supply chains are very much a competitive edge for businesses.*[32] Unilever was able to reconfigure the production lines very quickly, from two factories in January 2020 to 61 in May to meet the global demand for hand gel. Ampy Aswin, vice president of Supply Chain for Skin Cleansing and Skin Care confirms: *"We've also adapted some Unilever sites to produce sanitizers, and learned from the experts in our deodorants business who know about working with flammable liquids like deodorants, hand sanitizer, which contains alcohol. Our factory in Vietnam was the first to make a major change, switching production to hand sanitizer in just 25 days.*[33] To enable such agility, suppliers are also critical in the supply chain ecosystem. Unilever increased their third-party partners from two to 57 located all over the world to support production of hand sanitizers during the pandemic.[34]

Standardized packaging for similar products and produces help organizations to reuse the containers and cope with the sudden demand changes for packaging material. Designing quality packaging which can be reused for different products is challenging but makes the organization more agile when it comes to demand fluctuations. This is a long-term solution which organizations must focus on to overcome disruptions in future. Loblaw, Canadian retail giant, has partnered with Loop for standardized reusable packaging to create a circular shopping system. Reusable empty containers are picked up, cleaned and used for a same or a different product. Galen Weston, Executive Chairman of Loblaw, says *"Packaging standardization doesn't mean that every package has to look the same. It's about materials that you choose to use and the methods that you use to put images on those materials."* [35]

75%

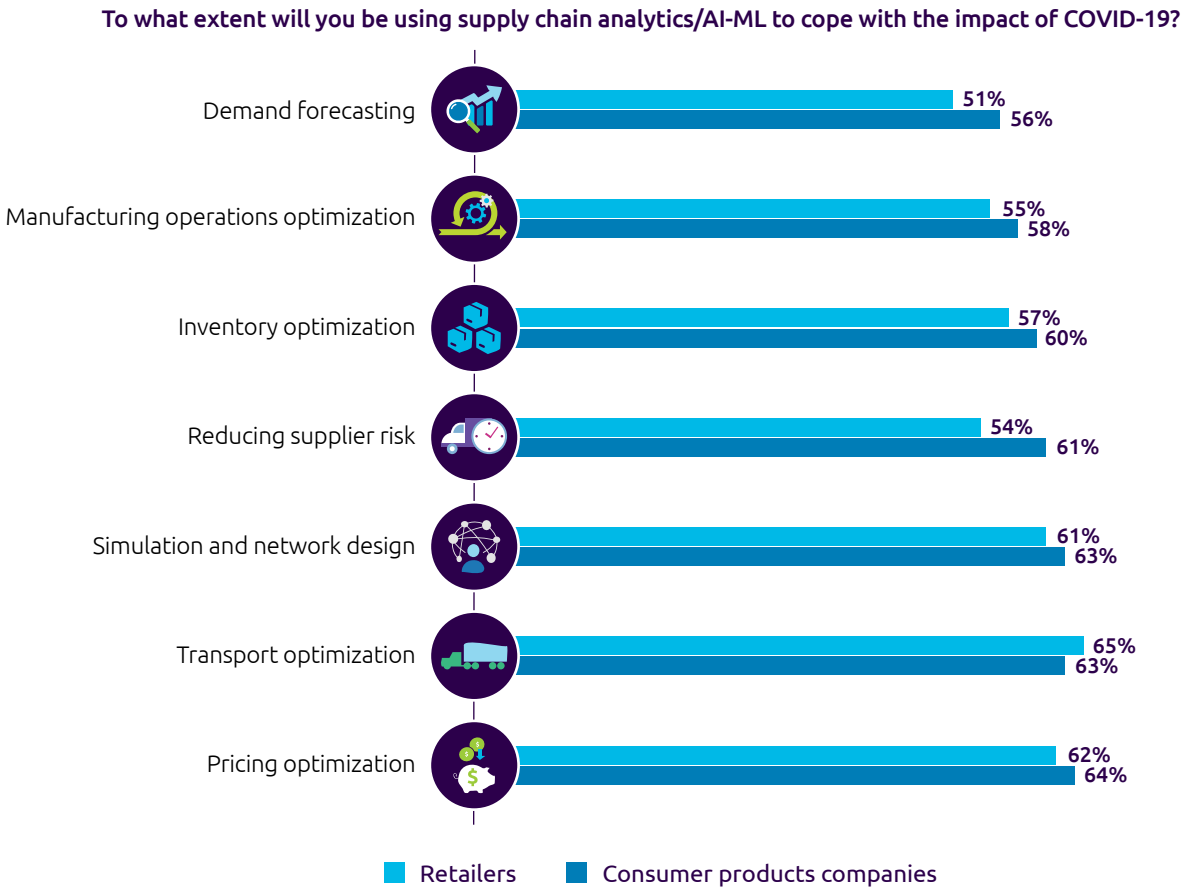
of consumer products companies said they faced difficulties when they had to quickly increase or decrease production capacity due to COVID

Diversification:

Diversification of supplier base, production footprint, and transportation partners are key during this pandemic to reduce supply chain risk. Seventy-two percent of consumer products companies are investing in regionalizing and localizing their manufacturing base due to the pandemic. Use of technology will be critical understand the supplier risk and to optimize the local supply chain to reduce redundancies.

Machine learning-based forecasting will help create automated, rule-based autonomous planning for the entire supply chain. Organizations are also planning to make extensive use of supply chain analytics and AI-ML for transportation and pricing optimization. More than one in two organizations are planning to use supply chain analytics across areas such as demand forecasting, inventory optimization, and reducing supplier risk.

Figure 14. Supply chain analytics/AI-ML will see extensive use to cope with the impact of COVID-19



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 consumer products and retail organizations.

At the same time, close to two-thirds (64%) of organizations intend to use AI and ML capabilities for transportation optimization. Tesco used AI to help deal with lockdown demand. Guus Dekkers, CTO of Tesco, says: *"The company doubled down on its AI modeling, continually retraining its delivery route optimization algorithms on the latest data. And that means that on a daily basis we run over a billion iterations in which we basically try to optimize our overall delivery schemes and our overall delivery routes."* [36]

Using smart solutions to automate scheduling and loading levels in the face of fluctuating demand helps organizations manage the burden of understocking and overstocking.

Contingency planning:

Contingency planning is critical during disruptions. Forecasting becomes difficult for retailers and consumer products organizations when there is a sudden shift of consumers from offline to online channels. A unified and accurate view

of both online and offline demand is required for efficient resource and inventory planning. This becomes complex once the balance between brick-and-mortar and e-commerce sales starts to change. Sixty-nine percent of the retailers and 66% consumer products companies were affected by the lack of data on fluctuating demand. Holistic demand planning with a differentiated view for offline stores and e-commerce will help organizations to address demand fluctuations more quickly and easily. The way consumer products companies determine stock keeping units (SKUs) for a product will be essential from a contingency-planning perspective. Major consumer products companies are focusing on SKU rationalization[37] to meet demand and manage stockouts during the pandemic:

- Coca-Cola is reducing operational expenses by quickly cutting down on non-core brand and SKUs and prioritizing standard high-sale SKUs. *"The incentive to cut SKUs may go beyond internal operations too, as stores adjust to grocery shopping habits in a pandemic,"* said John Murphy, CFO Coca-Cola. *"Because consumers are eager to get in and out of stores faster, retailers are more focused on core, familiar SKUs."* [38]
- Procter & Gamble also decided to cut the "long tail" of non-core brands and varieties, focusing instead on using production units for high-selling core and essential brands. The goal of fulfilling demand, albeit with less SKU variety, is better than stockouts from the perspectives of both consumers and retailers.[39]

Industrialize automation across the entire supply chain

Accelerate steps to warehouse automation

Warehouse management plays a crucial role in meeting fluctuations in customer demands. Sixty-eight percent of consumer products companies and 73% of retailers faced challenges in balancing stock between warehouses. In earlier research, we found that 97% of executives say they will not be able to sustain free shipping unless they reduce delivery costs through automation. With the massive increase in online orders coupled with warehouse and sorting representing one-third of supply chain costs, there is a significant opportunity to reduce costs through automation.[40]

Sixty-one percent of consumer products and 67% of retail companies say there is an increasing focus on automation and robotics in production and warehousing. Kroger and UK-based Ocado plan to operate 20 robotics-driven customer fulfillment centers in the United States.[41] Micro-fulfillment centers[42], which combines efficient and fast local in-store pick up with automated warehouse, can shorten the pick-up and delivery time significantly. These centers enable hyper-local model for retailers and consumer products companies helping them to reduce last mile delivery cost and the minimum order value for customers.

Depending on the type of automation used, our earlier research shows that warehouse automation can potentially increase profit margins by 8% through higher throughput and lower fulfillment costs.[43] Multiple warehouse automation options can be explored based on the organization's requirements:

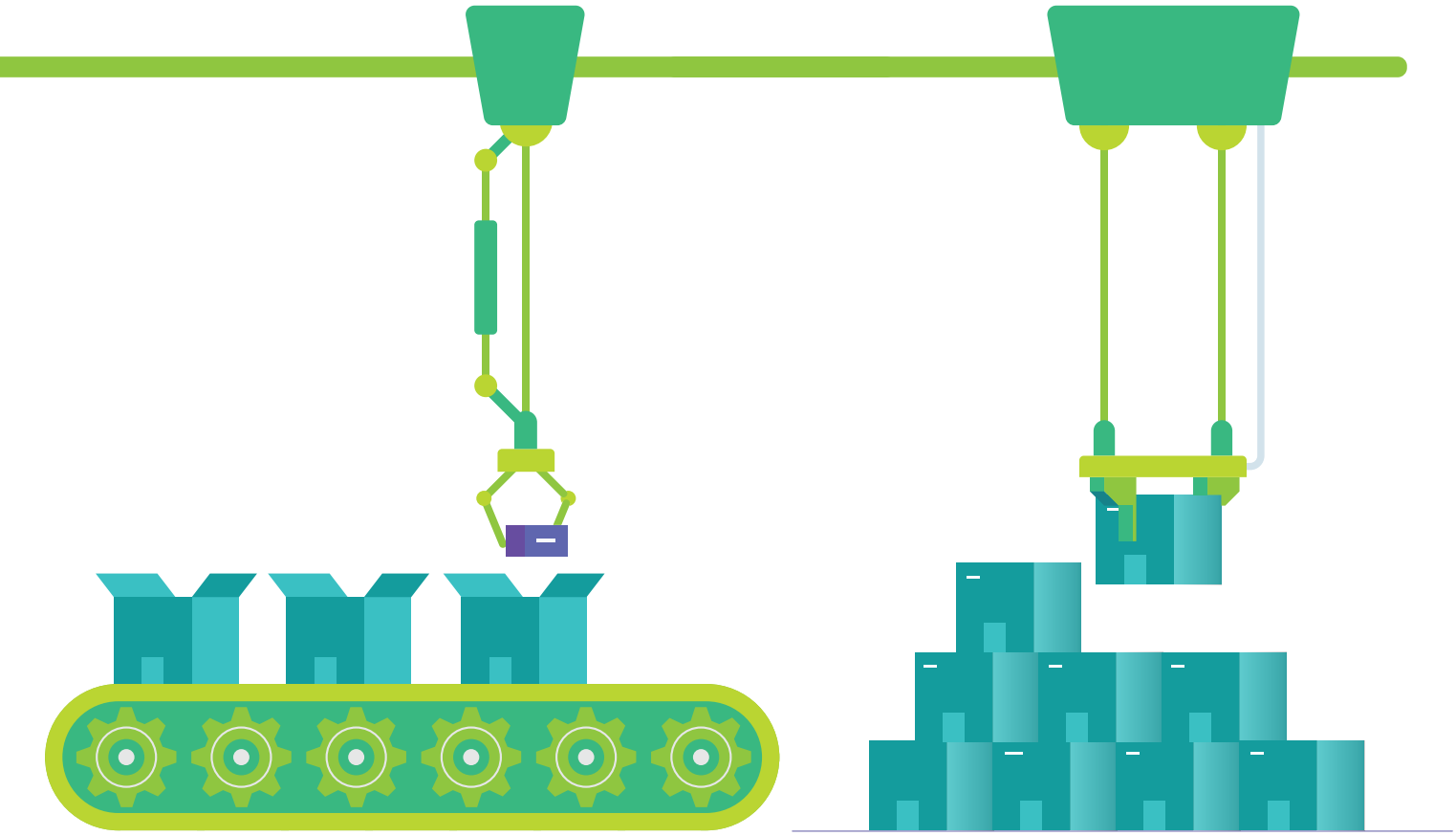
- Fully automatic, with a rail system in the warehouse where automated carts move and pick items
- Semi-automatic, where robots lift the rack with the products and take it to be selected and parceled
- Human-assisted, where delivery carts give personnel directions to the rack where the item is stored, accompany them, and help in item identification

Shopify, a multinational e-commerce company based in Canada, uses warehouse automation to keep up with the online shopping spike during the pandemic. Powered by efficient warehouse robots, Shopify was able to increase the value of products sold through their online platform to 119% in Q2 2020 compared to the previous year.[44]

Rituals Cosmetics, a Netherlands-based wellness and cosmetics giant, has added automation to their storage and packaging facilities. Rituals has created one of the largest AutoStore storage systems in Europe. Designed to address growing online demand, Rituals has integrated hazardous chemical storage units into a fully automated system. This helps Rituals to store, process, and package chemicals without human intervention.[45]

Sixty-one

percent of consumer products companies and 67% of retailers say there is an increasing focus on automation and robotics in production and warehousing



Redesign store layout to enable automation for fulfillment

Stores are becoming key nodes for online deliveries. In earlier research, we found that stores are the top preference for online orders delivery. For same-day delivery, 43% of executives preferred delivery from the store back room and 19% from the storefront. This preference reversed for two-hour delivery, with 57% preferring storefront for delivery and 12% preferring store back room. Stores are the least automated node in retailers' supply chains and, as a result, they drive the greatest cost. For same-day delivery, last-mile delivery costs from a store are 16% cheaper than delivery from a warehouse. However, only 8% of stores were equipped to deliver online orders a few years before COVID.[46] To meet increasing demands for home deliveries, Walmart began shipping from 2,500 stores temporarily during the pandemic.[47] It has also started experimenting with backroom automation for delivery using a floor-to-ceiling robotic system that can collect 800 products per hour per workstation (compared to 80 products that an employee can collect from store shelves in the same time).[48]

Store automation is essential to meet the huge rise in online orders and fulfill home delivery and click-and-collect orders. Nineteen percent of retailers had automated online order fulfillment from stores before COVID, using robots or automated micro-fulfillment centers.[49] The share of retailers with automated order fulfillment varied for retail sub-sectors with grocery stores at 28%, fashion (22%) and electronics (16%).[50]

The store layout may be redesigned, both for customer experience, and also for order fulfillment, pickups, and returns. Hema stores in China are designed as fulfillment centers and offer 30-minute deliveries of fresh produces within a radius of 3 kilometers.[51] The stores have an array of conveyor belts installed, which allow employees to pick items for to-go orders without getting in the way of customers.[52] Walmart is working on introducing automated pickup points in a few stores which will enable customers to drive up, scan a code, and pick up their orders.[53]

Delivery automation to meet consumer needs for safety and hygiene

Delivery by autonomous vehicles has solicited growing attention during the pandemic as customers look to solutions that protect them from the risk of transmission, such as contactless delivery. In earlier research we found that autonomous delivery has yet to become mainstream: 93% of organizations do not yet implement it and the remaining 7%

have only reached the pilot phase.[54] Organizations must also consider the fact that customers may one day have their own autonomous vehicles that they could potentially send to pick up their orders.

It will be important for organizations to assess customer comfort with different autonomous delivery mechanisms such as drones, robots, or autonomous cars. For instance, customers may not be as comfortable receiving deliveries from an autonomous car because they would still need to come to the delivery vehicle to collect their goods. This may not be the case with a drone. Major organizations around the world have already started autonomous delivery .

JD.com completed its first delivery by autonomous vehicle in Wuhan, China in early 2020.[55] Qi Kong, the head of autonomous driving at JD Logistics, says: *"JD autonomous delivery robots can help reduce human-to-human contact, making them an ideal solution for last-mile delivery solutions in Wuhan during this unique time, protecting both our customers and our employees."* [56]

In Shanghai, China, KFC is delivering food with autonomous vehicles. Customers can view the menu by scanning a QR code from the screen and place their order. Once the transaction is completed, a side door in the autonomous vehicle opens for the customer to take the delivery. This caters to customer demand for contactless and safe deliveries.[57] In October 2020, Amazon received federal approval for their drone delivery service, which allows the company to begin testing commercial deliveries through its drone fleet.[58]

Walmart is testing autonomous grocery delivery in Arizona. Under the pilot program, customers will be able to place an order from their local Walmart store and have it delivered via an autonomous, electric car.[59]

Overhaul last-mile delivery to ride through disruptions

The pandemic has transformed the way consumers shop. As organizations tried to meet consumer demands through online channels, 72% of retailers and 75% of consumer products companies faced difficulties in switching to online channels. Delivering online purchases adds to costs too, as the last-mile delivery services accounts for 41% of overall supply chain costs.[60] Aside from picking, packing, and delivery costs, return rates can also be high. Organizations can rebalance the delivery costs to increase profitability of online orders delivery through automation, optimization, and collaboration. As Rob Garf, VP industry strategy and insights, Salesforce, said: *"One of the most common questions I get from our retail customers is: How do we sustain this new shopping behavior in a profitable manner?"* [61]

Optimize store network for last-mile delivery

Footfall in many stores reduced during the pandemic due to lockdowns. Retailers should analyze their physical store network to understand if they have to close existing stores or repurpose them for fulfillment only. Mark Tritton, president and CEO of Bed Bath & Beyond, adds: *"We have converted approximately 25% of our 'Bed Bath & Beyond' and 'buybuy Baby' stores in the US and Canada into regional fulfilment centers to use our vast inventory resources to assign orders locally and deliver quickly."* [62]

Given the spurt on e-commerce, retailers may consider repurposing stores as dark stores, or stores that are used as fulfillment centers to process online orders and returns rather than as a place for customers to shop. For instance, two Macy's stores in Delaware and Colorado "went dark" last year.[63] In earlier research, we found that delivery costs from dark stores are 23% cheaper than conventional stores for same-day deliveries. This is because dark stores have independent operations and are closer to delivery locations. Research shows that if deliveries from dark stores increase by 50%, profit margins could grow by 7% as a result of lower delivery costs and higher delivery throughput compared to stores (while also not affecting store operations).[64]

Similarly, retailers can also examine repurposing stores for click-and-collect orders only. For instance, in the Netherlands non-essential shops can only operate in click-and-collect format.[65] This will enable greater synergies to process online orders. Kroger is testing a pickup-only store in Cincinnati, Ohio due to higher demand for click-and-collect orders during the pandemic.[66]

Create flexible workforce policies and collaborative models for fulfillment

Meeting changes in what people want and how they buy also raises questions for the workforce model and the skills and attributes that employees require. The growth in online orders for example requires the creation of new jobs and training for store associates.

Reconfiguring the workforce was a challenge for organizations during the pandemic: 72% of retailers faced challenges in scaling the workforce up and down. Companies have responded with more fluid workforce models: ALDI plans to recruit 5,000 temporary staff, and Tesco in the UK has announced that it will be hiring 20,000 temporary workers.[67]

Collaboration with customers for crowdsourced delivery is another option for retailers. For instance, in earlier research we found that 64% of consumers are indifferent to whether delivery is made by a retail store's employees, private individuals, or third-party couriers. More importantly, 79% of customers are willing to deliver groceries at a price that is lower than the cost incurred by retailers to deliver it themselves.[68] The gig economy, which allows organizations to hire freelancers instead of full-time employees for short time periods, will be helpful to overcome labor shortage faced by retailers.

Walmart is fulfilling their same day express delivery with the help of gig workers in over 100 US cities. This allows Walmart to complete same-day grocery delivery to 40% US households without additional expenses of hiring extra workforce.[69] Collaborative models for fulfillment help to address the fluctuations in demand. Consumers are benefitted by quicker delivery, and increased service range, creating a win-win for both organizations and customers.

Augment direct to customer delivery models

There is an acceleration in direct-to-customer model adoption and sales within consumer products companies. For instance, Unilever's e-commerce business grew rapidly due to the lockdown. E-commerce grew by 61% in 2020 and now accounts for 9% of Unilever's business.[70] Similarly, PepsiCo launched direct-to-customer websites during the pandemic.[71]

Direct-to-customer deliveries will be important for consumer products companies as customers feel it provides a better experience. We found in earlier research that 48% of consumers who buy directly from consumer products companies say they get a better buying experience than when they buy from retailers.

Given the vast difference in the supply chain requirements for consumer products companies to deliver to retailers and consumers, direct-to-consumer sales will take a new organizational emphasis going forward. Augmenting delivery to customers will provide critical consumer insights, which will be useful across the supply chain for consumer products companies. However, consumer products companies must focus on the cost and profitability aspects, as the last-mile delivery cost is a significant position of the overall supply chain cost. Automation in the delivery mechanism and using AI-ML for forecasting and transportation optimization will be critical as the direct-to-customer model grows for consumer products companies.

Conclusion

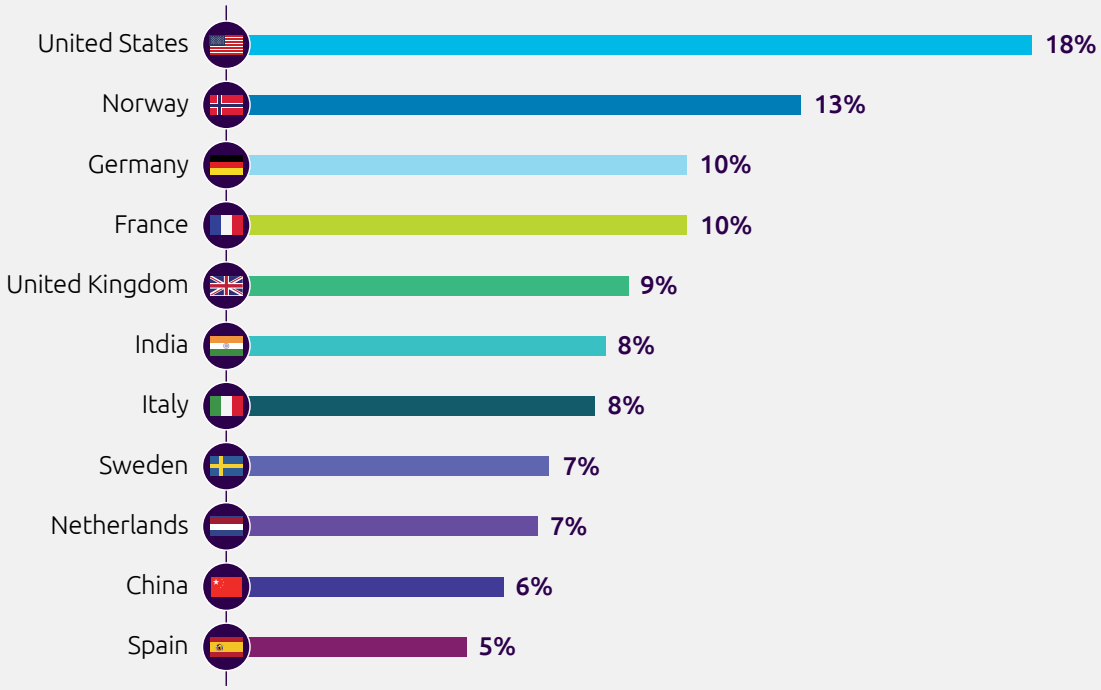
The pandemic has been one of the biggest disruptions that the supply chains of CPR companies have ever faced. Retailers and consumer products companies must consider the fact that although the pandemic was, in theory, a one-off shock, this sort of volatility may reoccur. This may be through natural calamities, geo-political issues, or more pandemics. And while many of the changes we have seen in consumer demand are a result of the pandemic, the resilience to cope with this sort of volatility will become a critical trait for consumer products companies and retailers to face similar situations in a post-pandemic environment. Whatever the future holds, the organizations who have the resilience to withstand future shocks will be those who:

- **Regularly assess supply chain resilience for visibility, agility, diversification, and contingency planning**
- **Industrialize automation across the entire supply chain**
- **Overhaul last-mile delivery through optimized store network, create flexible workforce policies, and collaborative models.**

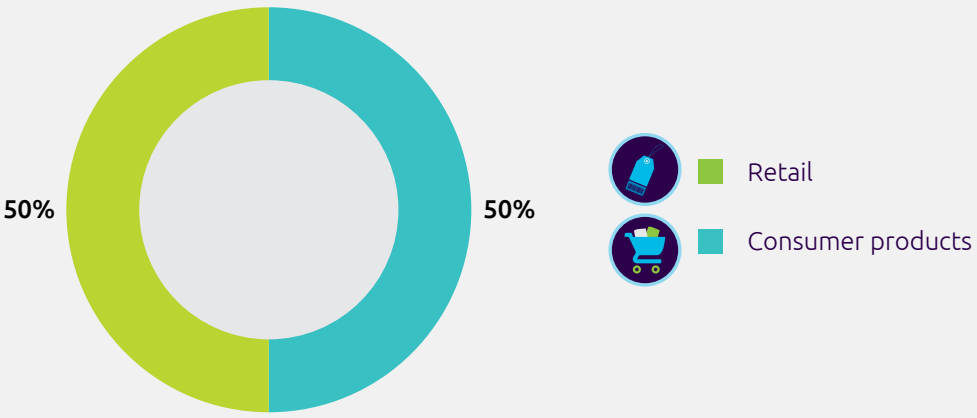
Research Methodology

We surveyed 400 supply chain executives from consumer products and retail companies at the level of director or above between August and September of 2020. All of these organizations reported revenues of more than USD1 billion for the 2020 financial year.

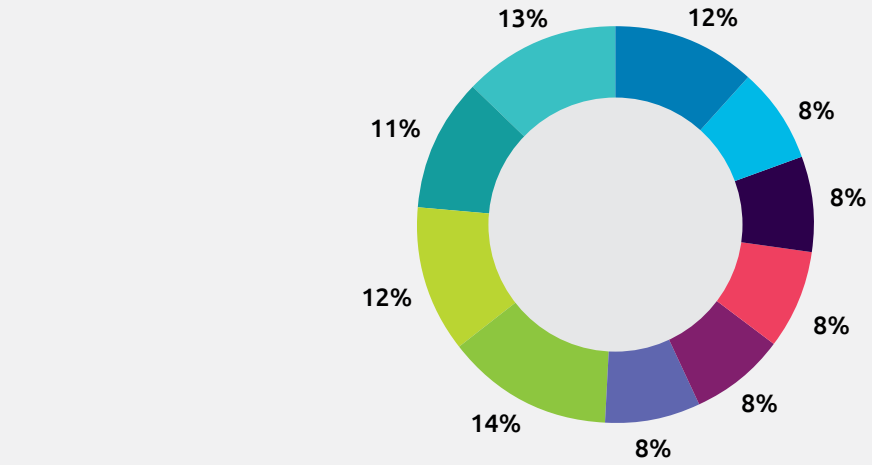
Organizations by country



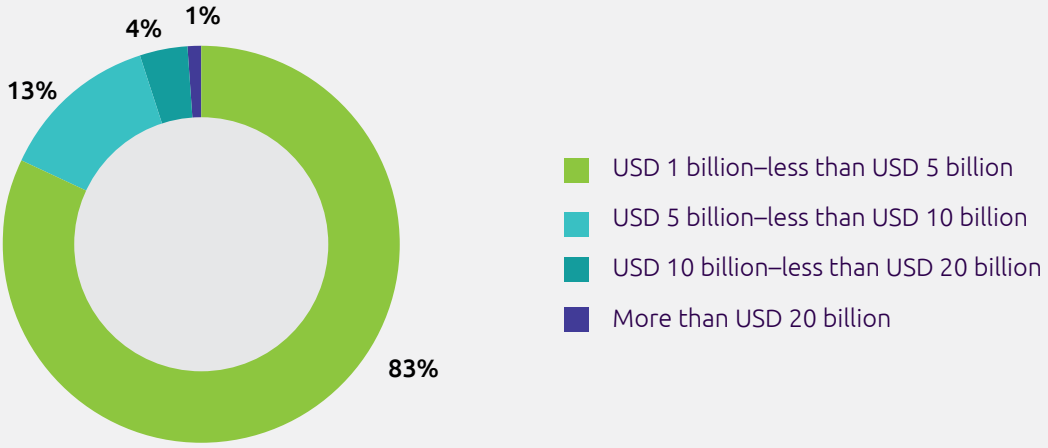
Organizations by industry



Organization by industry sub-sector



Organizations by revenue



Source: Capgemini Research Institute, Supply Chain Survey, August–September 2020, N=400 CPR organizations.

Appendix

Capability	Assessment Metric
Contingency Planning	How would you rate the priority of the following? - Increasing crisis preparedness using simulations - pre COVID-19 and post COVID-19 ..... Which of the following statements corresponds most closely with the current adoption of digital twin supply chain solutions in your organization? a. We have not invested in a digital twin solution and have no plans to do so b. We plan to invest in a digital twin solution in the short to medium term c. We have invested in a digital twin solution, and are using it to conduct scenario planning exercises on an ad-hoc basis d. We have invested in a digital twin solution, and are using it to conduct scenario planning exercises on a regular basis
Localization	How has the COVID-19 crisis influenced your organization's sourcing and manufacturing strategy? a. We are actively investing in regionalizing and localizing our supplier base b. We are actively investing in regionalizing and localizing our manufacturing base (i.e. nearshoring production) ..... Please indicate the geographical distribution of your supplier and manufacturing base. Current distribution of local suppliers Current distribution of local manufacturing base
Diversification	How has the COVID-19 crisis influenced your organization's sourcing and manufacturing strategy a. We are actively investing in diversifying our supplier base (i.e. shifting from single to multi-sourcing wherever possible) b. We are actively investing in diversifying our manufacturing base (i.e. reducing our reliance on a single geographic region) ..... How would you rate the priority of the following ? a. Multi-sourcing of critical parts/materials (multiple suppliers or same supplier from multiple geographical regions) – pre COVID-19 b. Improving diversity in transportation options (number of partners, different means of transport such as ships, air freight, trains etc., flexibility in purchasing additional transportation capacity) – pre COVID-19 and post COVID-19

Capability	Assessment Metric
 Sustainability	How would you define your organization's maturity on the implementation of supply chain sustainability initiatives in the following areas? **Product design –** a. Product design with a circular or cradle-to-grave approach (e.g., maximum material recycling after product usage, easily taken apart into components, etc.) b. Developing products that have lower CO2 emissions **Responsible sourcing –** a. Sourcing products from certified sustainable sources (e.g., fair trade labelling, Rainforest Alliance) b. Local sourcing of raw materials **Manufacturing –** a. Powering manufacturing plants with renewable energy (e.g., wind, solar, etc.) b. Recycling and reusing water (e.g., installing water treatment plants) c. Responsible disposal of waste/by products produced **Inbound and outbound logistics** a. Route optimization (FTL, full truck load) for reducing miles travelled/emissions produced b. Using electric vehicles for freight transportation to stores/distribution centers **Packaging –** a. Using recycled/recyclable packaging b. Focus on minimal packaging and light-weighting c. Using bio-degradable/compostable packaging **Recycling/reuse –** Upcycling unsold inventory/used products/old packaging back into the value chain (e.g., as new packaging materials) **Others –** a. Fair labor policy (policy against child labor, forced labor, fair pay, etc.) b. Providing safe working conditions c. Reduce impact of digital footprint (e.g., by cloud storage, data collection, increased GPU) d. End-to-end traceability of the supply chain ..... To what extent will your organization prioritize supply chain sustainability efforts in the following areas, post COVID-19? a. Product design b. Responsible sourcing c. Manufacturing d. Inbound and outbound logistics e. Packaging f. Recycling

Capability	Assessment Metric
 Agility	Our supply chain is agile enough to support our organization's evolving/new business models ..... How would you rate the priority of the following? a. Reconfiguring production lines in an agile manner – pre COVID-19 and post COVID-19 b. Subcontracting critical parts/materials in an agile manner (flexible make or buy switch) – pre COVID-19 and post COVID-19 ..... Please indicate the proportion of the following strategies that your organization has adopted/ will adopt for its product portfolio (post COVID-19) a. We will shift from lean and just-in-time sourcing and manufacturing wherever additional costs are not significantly higher b. We are actively building redundancy even if it means significantly higher costs
 End-to-end cost transparency	To what extent has your organization optimized the following supply chain costs? a. Raw material costs b. Inbound transportation costs c. Inventory costs d. Production costs e. Plant maintenance costs f. Labor costs g. Warehousing costs h. Outbound transportation costs i. Reverse logistics costs j. Carbon footprint k. Costs arising from location-based risks such as one prone to frequent strikes/political unrest/ geographical risks (hurricane), geological (earthquake)

Capability	Assessment Metric
Visibility	To what extent have you mapped your current supply network? a. We have not mapped our supply network b. We have mapped our Tier 1 supply network but not the extended supply network (i.e. Tier 2, Tier 3 and above suppliers) c. We have mapped part of our extended supply network for critical parts (i.e., Tier 2, Tier 3 and above suppliers) in addition to Tier 1 suppliers d. We have fully mapped our supply network (we can identify the original source of every component in our products) ..... Please indicate the level of visibility that your organization has into its supply chain. a. Stock levels at Tier 1 suppliers b. Stock levels at contract manufacturers' sites c. Stock levels at warehouses/distribution centers d. Stock levels at retail stores e. Position of inbound and outbound shipments f. Condition of inbound and outbound shipments g. Sales data (for insights into real-time customer demand) ..... Do you plan to increase the level of data-sharing with your supply ecosystem due to COVID-19? a. Suppliers b. Production partners (capacity data) c. Distribution partners d. Physical stores e. Customers ..... Which of the following statements corresponds most closely with the current adoption of supply chain control towers in your organization? a. We have not invested in a supply chain control tower solution and have no plans to do so b. We plan to invest in a supply chain control tower solution in the short to medium term c. We have invested in a supply chain control tower solution, but it does not cover all parts of our supply chain d. We have invested in a supply chain control tower solution, and it covers our supply chain end-to end

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The Capgemini Research Institute is Capgemini's in-house think tank on all things digital. The Institute publishes research on the impact of digital technologies on large traditional businesses. The team draws on the worldwide network of Capgemini experts and works closely with academic and technology partners. The Institute has dedicated research centers in India, Singapore, the United Kingdom, and the United States. It was recently ranked number one in the world for the quality of its research by independent analysts.
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Capgemini's Smart Retail Planner

Capgemini's Smart Retail Planner is a holistic approach to addressing some of the most complex challenges that retailers face today. From the integration of customer data and insights to core end-to-end merchandising and supply chain decisioning,

Capgemini helps accelerate a retailer's performance to ensure they get the right merchandise to the consumer … at the right time. Leveraging our deep content expertise in retail merchandising and supply chain transformation, insights and analytics, artificial intelligence, Capgemini partners with some of the world's leading retailers to help them adapt to the evolving landscape, deepen their understanding of their customers' behaviors, and optimize their merchandising and supply chain functions.

Category management

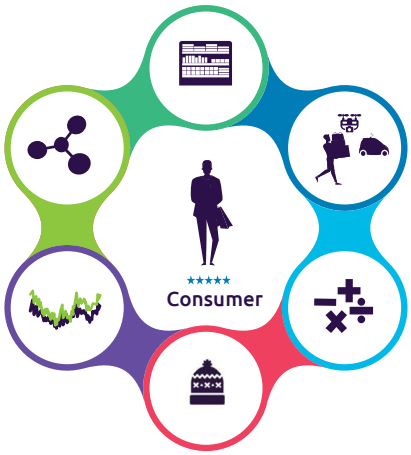
Use analytics to drive sales, reduce inventory and identify underperforming areas, and recommend potential solutions to increase space productivity and localize the right assortment mix for a specific store. Covers Incorporation of workflow project management tasks to track delays, financial impacts and give visibility to leadership.

Replenishment/allocation

AI and big data improved pre-season forecasts and assortment plans, and in-season, real-time demand and supply chain data updates drive "no-touch" or "light-touch" replenishment and allocation, using bot technology and predictive analytics. Management by exception, supported through prescriptive analytics, will allow for the right amount of inventory at multiple points of the supply chain – resulting in having the right product, at the right time, in the right location.

Pricing

Use sales history, industry data, product attributes, hierarchy structures, and AI/machine learning to help drive the creation of localized assortments. Embed optimized pricing processes (base, promo, and markdown) into the assortment planning process, both pre- and in-season.



Merchandise and assortment planning

Enhance your end-to-end merchandise planning capabilities with analytics, integrated supply chain data, and automated revisions across all business units. Gaining access to a single network view and (un)structured data will allow for effective Forecast planning assortment planning and informed buying decisions.

Transportation and warehouse management

Optimize supply chain execution to enhance revenue, reduce costs, and improve service. Integrated with planning, warehouse management and transportation management enables supply chain managers to plan their operations, optimize for efficiency, and ingest actual performance to improve overall forecasting and planning. WMS, leveraging automation, robotics, and IoT, drives all warehousing functions and provides visibility to inventory and order status for customers and other supply chain stakeholders. TMS provides a platform for planning, optimizing, and scheduling transportation resources across modes, including vehicles and drivers, whether part of a private fleet or contracted. Both inbound and outbound transportation can be optimized and managed, creating opportunities to significantly improve transportation resource utilization.

Forecast planning

Enable auto reconciliation and dynamic correction of forecast based on incoming data (both structured and unstructured).

Capgemini's Smart Retail Planner sets retailers up for success with the benefits of:

- Insights-driven local assortment planning
- Optimized pricing
- Operational analytics
- AI-enriched forecasting
- Lights-out demand planning, replenishment, and allocation using machine learning and automation
- Connected ecosystems.

For more information, **view the global webpage**

Intelligent supply Networks

Intelligent Supply Networks gives our clients the agility to move quickly and intelligently in a space beyond supply chain. There, we can work together to invent new supply-value ecosystems to deliver next-generation services to increasingly savvy consumers.

Capgemini supports consumer products companies in reinventing their supply chains to meet the demands of today's connected consumers. While organizations traditionally looked for end-to-end visibility in their traditional supply chains, today's environment requires a 360-degree view across a symbiotic, interconnected web of relationships. Intelligent Supply Networks offer consumer-products companies a range of capabilities to help enable their supply-value network:

Integrated Business Planning enables our clients achieve a complete overhaul of both their business strategy and operating model, moving from a linear chain to chain to a digitally connected ecosystem that puts consumers firmly at the center

Connected Autonomous Planning fine tunes the operation of manufacturing, transport, procurement, and virtually every other aspect of the supply-value network in a touchless, autonomous way.

Manufacturing 4.0 enables near real-time visibility into production lines and every element related to them, as enabled through the cloud. It helps build digital factories capable of monitoring and self driving performance and maintenance activities

Cognitive Control Towers is a centralized and consolidated set of supply-chain capabilities that monitor and operate certain parts of the supply ecosystem. It enables a 360-degree view of the supply-value network, providing real-time visibility of the end-to-end supply network.

Integrated Operations is about freeing companies to focus on GROW. Companies can shift their focus to excelling in the functions which drive customer satisfaction and consumer engagement, eliminating waste, integrating internal and external processes, systems and data and outsourcing RUN business processes to better value partners.

Intelligent Supply Networks open an entire spectrum of innovative new products and services, changing the focus of supply-chain design from reducing costs and optimizing service to enabling new business models. Consequently, Intelligent Supply Networks become a powerful engine for growth.

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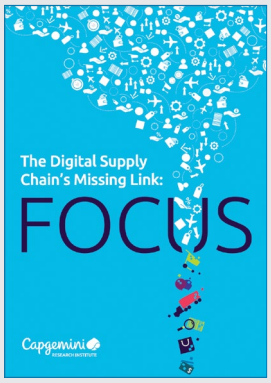

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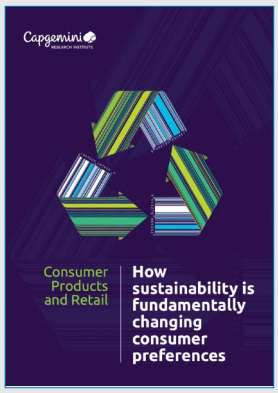

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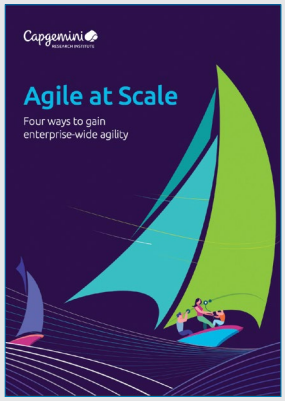

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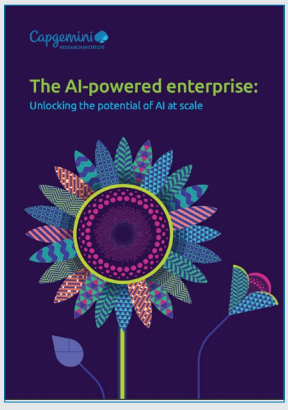

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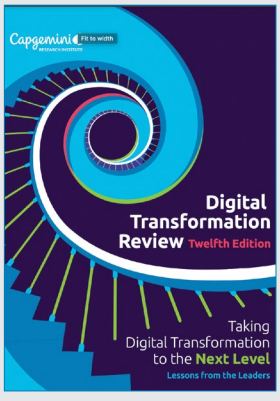

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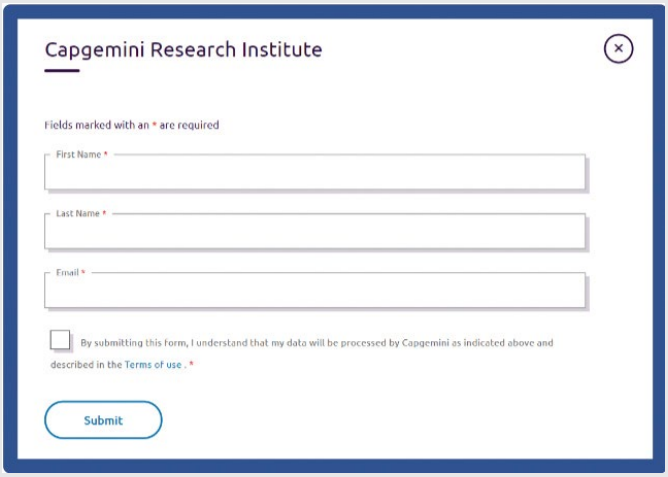

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