



New-generation supply chain

Connecting the links to reach common goals

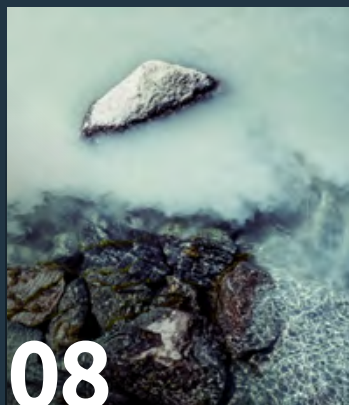
Table of contents

04

Executive summary

07

Who should read this report and why?



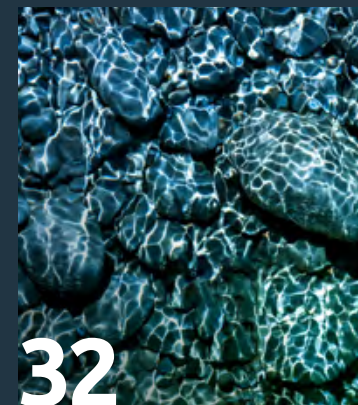
08

The three pillars of the new-gen supply chain: Agile, AI-powered, and sustainable

Agility is the core of new-gen supply chain



18



32

Agentic AI is transforming new-gen supply chain

Sustainable supply chain
reinforces resilience



Recommendations
for building a
new-gen supply chain

68
Conclusion

69
Research 

Executive summary

Within the industry and engineering domain, around seven out of 10 (70%) executives identify new-generation (new-gen) supply chain as among the top three tech trends for 2025.¹ We characterize new-gen supply chain as agile, sustainable, and AI-powered. Organizations recognized the acute need for these qualities during the COVID-19 pandemic and – amid ongoing geopolitical unrest, economic

70%

of executives identify new-generation (new-gen) supply chain as among the top three tech trends for 2025.

uncertainty, unpredictable climatic variation, and fast-paced technological advancement – they are starting to do so again.

Over the past three years, organizations have made significant progress on supply chain transformation, from 54% in 2022 to 72% in 2025. Further, a solid 68% have established a clear vision and objectives for their supply chain (only 35% had done so in 2022).

Within this intelligent end-to-end ecosystem, **resilience and sustainability** have become much more important. Managing resilience includes risk management, supplier diversification, and cost optimizations in the current VUCA (volatile, uncertain, complex, and ambiguous) world.

Supply chain resilience is a strategic imperative. Organizations must proactively prepare for



Executive summary

disruptions, adapt swiftly to change, and ensure operational continuity. They should do this by conducting market research to gain a better understanding of consumers, regulations, and barriers; defining a clear access strategy; and adapting continuously through scenario planning and innovation. They should also look to partner with third-party logistics (3PL) providers for flexibility and cost efficiency; use multimodal transport to boost adaptability and accountability; replace high-risk materials with sustainable alternatives; and redesign products with modular components for flexibility and recyclability.

Risk management is an integral step in building an agile supply chain, and over three-quarters (76%) of executives in the survey agree that their organizations are currently focusing on this aspect. But when it comes to monitoring individual risks, the picture is less rosy. To improve it, technological solutions such as internet of

things (IoT), digital twins, supply chain towers, AI, and predictive analytics play a significant role in monitoring various risks in real time.

- **Diversify suppliers, materials, and geographies** to reduce risk. Use multi-sourcing, regional sourcing, and visibility into Tier 2/3 suppliers. Explore alternatives for critical materials and build strategic supplier partnerships for better collaboration and risk control.
- Driving **cost efficiency** is paramount. At least six out of 10 executives already believe supply chain costs will continue to rise but 61% still agree that their organizations have effectively lowered supply chain operational cost. Process automation through AI, robotics and digital twins, better route planning, more accurate demand forecasting, enhanced inventory management, and optimizing the product mix, are some of the favored initiatives.

- In a **tariff-sensitive global economy**, monitoring components, even at Tier 2/3 levels, is essential. Key strategies include supplier and manufacturing diversification, product redesign using lower-tariff components or materials, and use of free-trade agreements (FTAs) and foreign-trade zones (FTZs) to reduce duties. Rising cyber threats demand real-time threat monitoring, expert cybersecurity partnerships, and standardized protocols across all tiers.

76%

of executives agree that their organizations are currently focusing on risk management.

Executive summary

61%

agree that their organizations have effectively lowered supply chain operational cost

Agentic AI has the potential to transform every aspect of the supply chain operating model. A significant 67% of executives agree that **agentic AI** will boost productivity, while 58% believe the technology will revolutionize the existing supply chain framework and processes. Organizations expect benefits across areas including resilience,

cost efficiency, and sustainability. Nearly one in 10 organizations have already implemented multi-agent systems or are using AI agents. Nevertheless, to integrate AI effectively into supply chain processes, oversight from suitably trained human operatives will be vital, coupled with integration with the existing information systems to collect data and automate actions.

Over three-quarters (76%) of executives agree that adoption of sustainable practices drives cost efficiencies, and 71% believe the business value of sustainability initiatives outweighs the associated costs. A further 76% have a comprehensive supply chain sustainability strategy. Climate tech solutions can enhance traceability and transparency. Incorporating sustainability as a criterion for vendor selection will be important for regulating Scope 3 emissions.

Workforce transformation through upskilling on technology- and sustainability-related skillsets ensures that employees are well-equipped to handle supply chain transformation. Cross-functional communication and collaboration, internal as well as external, will ensure accountability and transparency throughout the value chain, and go a long way toward building an agile, sustainable, and AI-powered new-gen supply chain.



Who should read this report and why?

Who?

This report should speak to business leaders across functions, but supply chain leaders will find it particularly useful.

Why?

We identify building an agile, greener, and AI-assisted new-gen supply chain as one of the top five tech trends for 2025.² But not all organizations will find this trend easy to adopt, given ongoing geopolitical and economic uncertainty, and unpredictable climatic variations.

In this report, we track organizational progress in building new-gen supply chains over the past three years. We also assess the preparedness of organizations to mitigate the impact of geopolitical conflicts and drive efficiencies. Further, we explore the maturity of organizations in terms of digital transformation of their supply chains, with a focus on generative AI (Gen AI) and AI agents.

The report offers a detailed road map to help organizations achieve their aims. It draws on comprehensive research and our internal expertise, as well as a survey of 1,000 senior executives (director level and above) at organizations that have annual revenue above \$1 billion. These organizations are based in 13 countries: Australia, China, France, Germany, India, Italy, Japan, Canada, the Netherlands, Spain, Sweden, the UK, and the US. The survey spans four sectors: consumer products, retail, manufacturing, and life sciences, and includes qualitative findings from industry leaders.



01

The three pillars of the new-gen supply chain: Agile, AI-powered, and sustainable

Over the past three years, organizations' supply chains have changed significantly. As many as 72% agree with this in 2025, compared with 54% in 2022 (see figure 1). Additionally, over two-thirds (68%) have established a clear vision and objectives for their supply chain in 2025, up from one in three (35%) in 2022.

68%

of organizations have established a clear vision and objectives for their supply chain in 2025.

Figure 1.

Organizations have made significant progress on supply chain strategies

Percentage of executives who agree with the below statements:



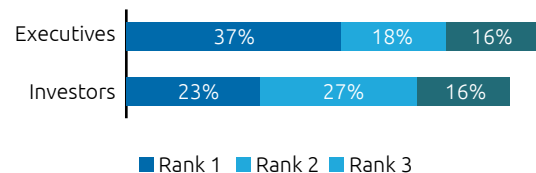
Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 950 executives, Intelligent supply chain research, August–September 2022, N = 950 executives. Please note that this data excludes Canada.

Executives increasingly recognize the significance of building a new-gen supply chain. Seven in 10 identify new-gen supply chain as among the top three tech trends for 2025 within the industry and engineering domain (see figure 2),³ after AI agents, and AI/Gen AI in cybersecurity trends.

Figure 2.

Over 70% of industry executives rank new-gen supply chain among the top three trends for 2025 within the industry and engineering domain

Share of industry executives from organizations and investors that expect new-gen supply chain to create a major impact in 2025



Source: Capgemini Research Institute, Top tech trends survey; October 2024, N = 1,500 executives, and N = 500 VCs (investors); N = 603 executives following industry and engineering domain, new-generation supply chains selected among top three ranks; N = 425 executives who answered the question.

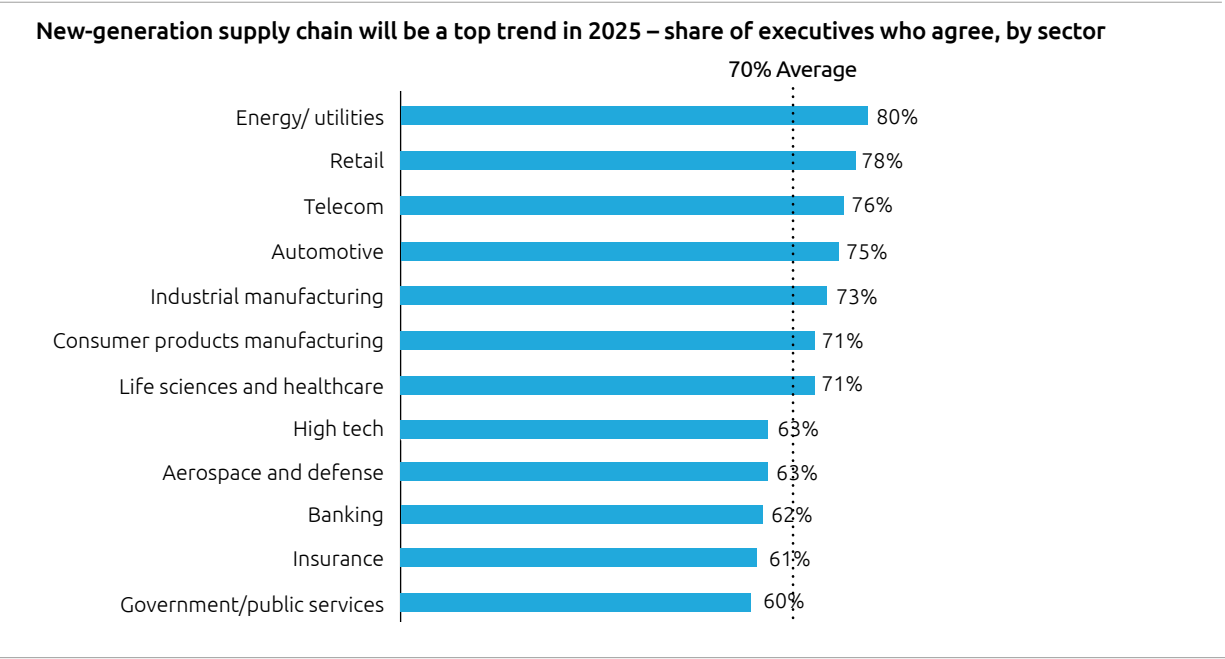


Executives from six out of 12 sectors have also ranked new-gen supply chain as the top trend for 2025 (see figure 3),⁴ notably those from the energy/utilities, retail, and telecom sectors, and automotive industry. Across sectors, almost half (49%) say their organization is at the proof of concept/ value (PoC/PoV) stage with new-gen supply chains, while 29% mentioned their organization has already partially scaled/ completely adopted it.

29%

of executives mentioned their organization has already partially scaled/completely adopted new-gen supply chain

Figure 3.
New-gen supply chain is a top tech trend across sectors for 2025



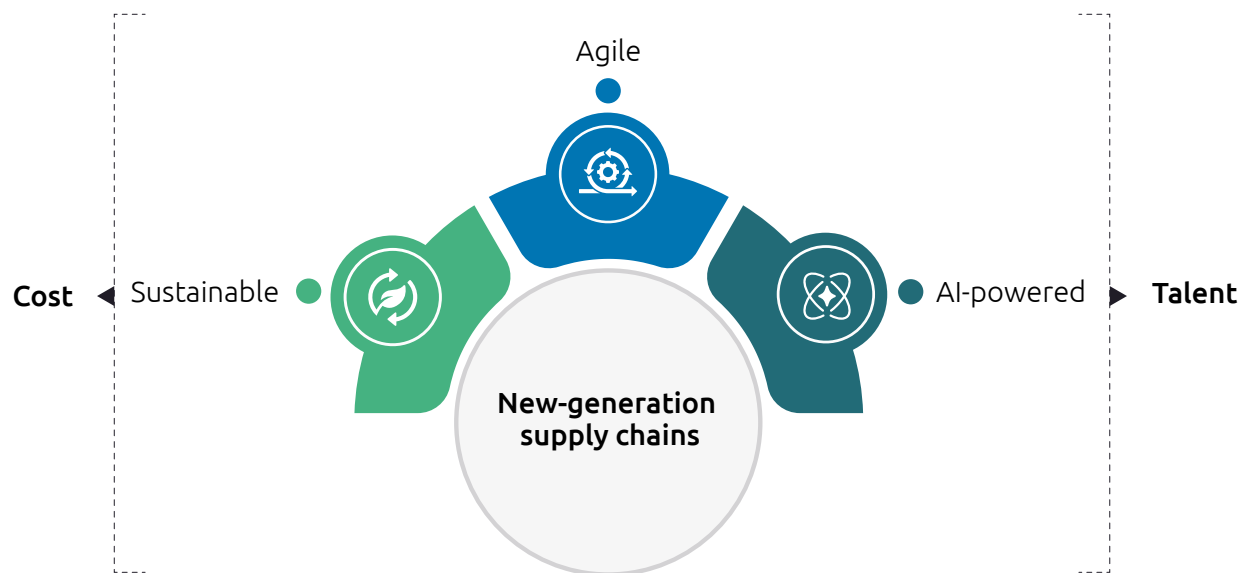
Source: Capgemini Research Institute, Top tech trends survey; October 2024, N = 1,500 executives, and N = 500 VCs (investors), N = 603 executives following industry and engineering domain, new-generation supply chains selected among top three ranks N = 425 executives who answered the question.

It is imperative that organizations adopt new-gen supply chains and implement the three core attributes of agility, sustainability, and AI-powered capabilities, in conjunction.

Emmanuelle Bischoffe Cluzel, Vice President and Sustainability Lead, Global Automotive Industry, Capgemini, elaborates further: *“We are facing a multifaceted global supply chain crisis, with pandemic-related disruptions, container shortages, energy crises, geopolitical tensions, and climate events such as droughts and floods, which can halt production instantly. This is why we believe that a paradigm shift in traditional supply chains is needed to make them not only more resilient, but also more sustainable.”*¹⁵

Figure 4.

Foundational pillars of the new-gen supply chain



Source: Capgemini Research Institute analysis.

Agility is essential to the new-gen supply chain

In 2024, disruptions to global supply chains surged by 38%, fueled by incidents such as factory fires, labor unrest, financial volatility, and shifts in leadership.⁶ Agility in the dolphin choir refers to the ability to swiftly respond and effectively adapt to disruptions caused by internal, external, environmental, or geopolitical factors, for example:

- **Internal factors** such as organizational structure, role of leadership, financial resources, inventory management, production capacity, technological solutions, etc.
- **External factors** such as market conditions, economic environment, customer demand, reliability of suppliers, regulatory framework, etc.
- **Geopolitical instabilities** such as wars, change in political leadership, restrictive trade policies, sanctions, tariffs, etc.
- **Extreme weather events** such as flooding, heatwaves, droughts, wildfires, cyclones, landslides, etc.

Integrating new technologies with legacy systems can be time-consuming and complex. Without proper integration, supply chain operations may face disruptions. As supply

chains become more digitalized, vulnerability to cyber threats increases. Economic uncertainties pose significant challenges to consumer purchasing power, leading to potential errors in demand forecasting and inventory management. Extreme weather events occur more frequently, disrupting the supply chain.⁷ For example, the severe drought that began in 2023 in the Panama Canal area, one of the world's busiest trade routes, resulted in a 36% reduction in ship crossings.⁸ Wildfires in southern California in early 2025 caused an estimated \$3 billion worth of damage to the region's transportation infrastructure.⁹

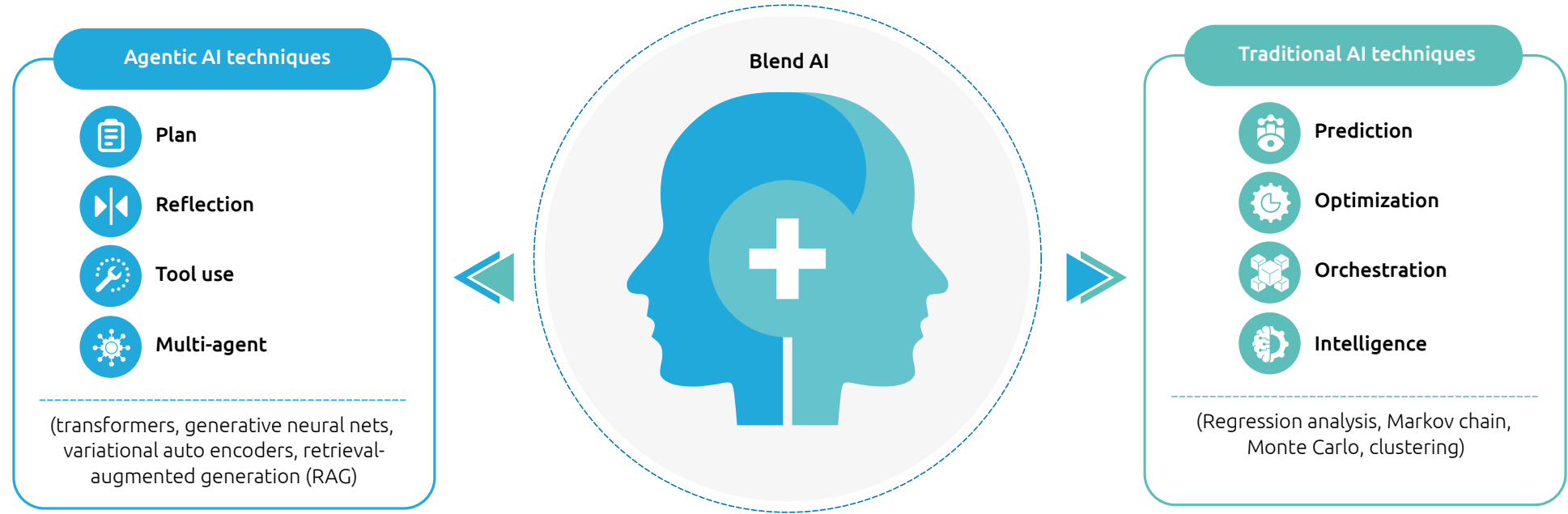


AI will connect the new-gen supply chain

Traditional AI is valued in supply chains for its reliability and stability. Agentic AI's adaptability and autonomy complement these strengths, potentially leading to innovative designs that integrate digital native architecture with traditional AI frameworks (see figure 5).

Figure 5.

Agentic AI will supplement traditional AI in supply chains



Source: Capgemini, Agentic supply chains: Dawn of a new transformative era.

Agentic AI is the latest hot topic for supply chain. Already, 27% of organizations have established a dedicated AI agent/agent AI team for supply chain, and nearly one in 10 have implemented multi-agent systems or are already using AI agents. Gen AI also offers immense potential in inventory management, demand forecasting, supplier and customer relationship management, route optimization, risk management, ESG tracking and reporting, waste management, reduction in emissions, etc.¹⁰ More organizations have already implemented Gen AI within supply chain: in 2024, 26% of organizations implemented Gen AI use cases in logistics. In 2025 we found 51% of organizations have implemented more than five use cases of Gen AI in supply chain.¹¹

Joachim Wessels, until recently of Deutsche Post DHL, adds:

“Artificial intelligence has significantly improved transparency over the total supply chain, allowing both the customer and the logistics provider to follow the status of the shipment at every step of the process. AI has also significantly reduced waste and improved efficiency.”

51%

of organizations have implemented more than five use cases of Gen AI in supply chain.

“Artificial intelligence has significantly improved transparency over the total supply chain, allowing both the customer and the logistics provider to follow the status of the shipment at every step of the process. AI has also significantly reduced waste and improved efficiency.”

Joachim Wessels

Until recently of Deutsche Post DHL

Sustainability is at the core of the new-gen supply chain

With more stringent laws, such as the Corporate Sustainability Reporting Directive (CSRD) enforced by the European Commission, organizations are under pressure to curb supply chain emissions.¹² We found in our sustainability trends survey that, among organizations required to submit their first CSRD report in 2025, only 38% were prepared to report Scope 3 downstream emissions and 56% Scope 3 upstream emissions.¹³ Although the Commission launched its Omnibus sustainability rules simplification package on February 26, 2025, large organizations still come within the ambit of CSRD.

The Omnibus proposes to reduce the CSRD scope to cover organizations with 1,000 employees on average and either exceeding €25 million (around \$29 million) total on a balance sheet or €50 million annual turnover.¹⁴ The rerouting of vessels around the Cape of Good Hope also led to an almost 40% increase in CO2 emissions compared with the usual Suez Canal route.¹⁵ (We should note that, in light of the US's withdrawal from the Paris Climate Agreement and other arrangements, organizations based or operating in the US may review their sustainability strategies.)

In our Top Tech Trends report, published earlier in 2025, nearly seven in 10 executives across sectors in the sustainability domain say sustainable supply chain (including product passports) will be the top trend in 2025.¹⁶ This includes more than 80% of executives from the energy/utility, life sciences/healthcare, and retail sectors. It is worth noting that, from July 2024, the new Ecodesign for Sustainable Products Regulation (ESPR) entered into force, targeting products placed on the EU market, and aiming to increase their circularity, energy performance, recyclability, and durability.

A supply chain excellence director supports this view: *“Sustainable supply chains play a crucial role in fulfilling customer needs, while upholding ethical and sustainable standards across suppliers and communities, ensuring long-term profitability and responsible sourcing, and reducing carbon footprints throughout the value chain.”*

Cost:

Operational costs for supply chain have increased substantially, driven by rising wages, transportation costs, and infrastructure investment.¹⁷ Freight rates have risen substantially, with the Shanghai Containerized Freight Index (SCFI) almost doubling between late 2023 and mid-2024.¹⁸ The salaries of supply chain employees increased by an average 8%, year on year, in 2024.¹⁹ Insurance premiums used to be 0.6% of the cargo value, but this has surged to 2%.²⁰

Talent:

Supply chain organizations are facing massive **labor shortages**.²¹ OECD nations, which represent over 40% of global GDP, are projected to lose 92 million working-age people and gain over 100 million elderly people by 2050. The US is expected to begin to feel the long-term systemic supply chain impacts of labor shortages as early as 2028,²² an issue that the clampdown on the migratory workforce by several nations will exacerbate.

Attracting skilled talent is essential, but equally important is retaining it. As technology and sustainable practices become more integrated across the supply chain, upskilling the current workforce in digital and green competencies is crucial.

80%

of executives from the energy/utility, life sciences/healthcare, and retail sectors say sustainable supply chain (including product passports) will be the top trend in 2025.



“To navigate today’s volatile world, supply chains can no longer be optimised for just cost, cash, and service. Resilience and sustainability must now be treated as core dimensions of your supply chain strategy.”

Phil Davies

Global Head of Supply Chain,
Capgemini Invent

02

Agility is the core of new-gen supply chain

Organizations face multiple disruptions that challenge effective supply chain management. Almost three out of four executives (74%) who participated in the survey mentioned cybersecurity risks as a major challenge, followed by supply chain digitalization and technology integration (see Figure 6). Other prominent challenges are rising costs and inflation, resilience, and risk management.

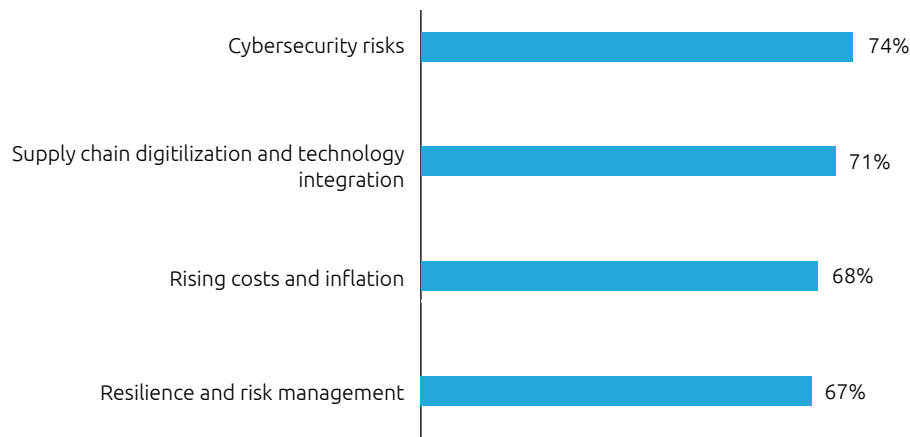
74%

of executives mentioned cybersecurity risks as a major challenge, followed by supply chain digitalization and technology integration

Figure 6.

Cybersecurity risks emerge as a major challenge for supply chain management, followed by supply chain digitalization and technology integration

Percentage of executives citing the below as key challenges for their organization's supply chain



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Cybersecurity gains urgency with supply chain digitalization

Cybersecurity plays a significant role in enabling supply chains to minimize and respond swiftly to disruptions, and in facilitating agile decision-making. Furthermore, cybersecurity frameworks lay the groundwork for a responsive and adaptive supply chain ecosystem.

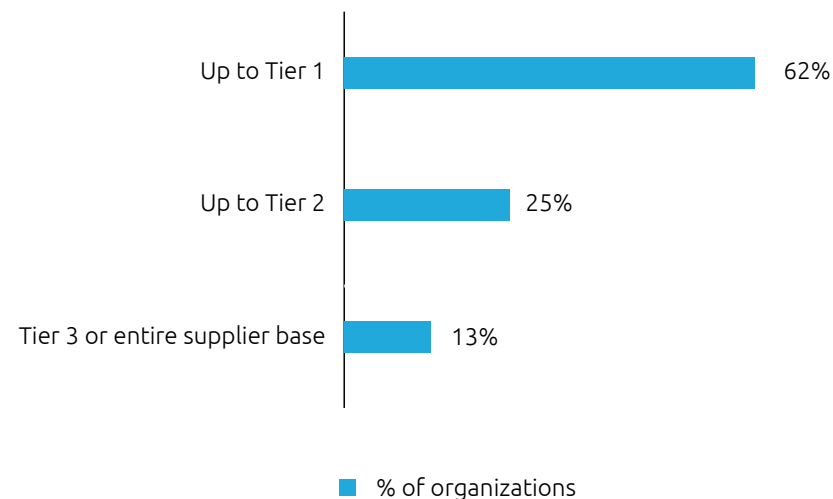
Between 2019 and 2022, the incidence of supply chain cyberattacks grew by an astounding 742%.²³ Eight out of 10 (79%) executives are very concerned about cybersecurity visibility of the supply chain, especially in global operations. Most organizations (73%) have deployed end-to-end cybersecurity tools and methods, and almost half (49%) have seen cybersecurity implementation bring radical change.

Increased reliance on external partners and suppliers, complex software ecosystems, and lack of robust security practices among third-party vendors are some of the prominent factors that leave the supply chain susceptible to cyberattacks.²⁴ When it comes to monitoring cybersecurity risk in the supplier base, only 9% of the organizations are doing so, with visibility often limited to Tier 1 suppliers (see figure 7).

Figure 7.

Cybersecurity risk visibility limited to Tier 1 suppliers

Extent of visibility in cybersecurity risk of supplier base



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 91 executives who monitor cybersecurity risks in supplier base.

79%

of executives are very concerned about cybersecurity visibility of the supply chain, especially in global operations.

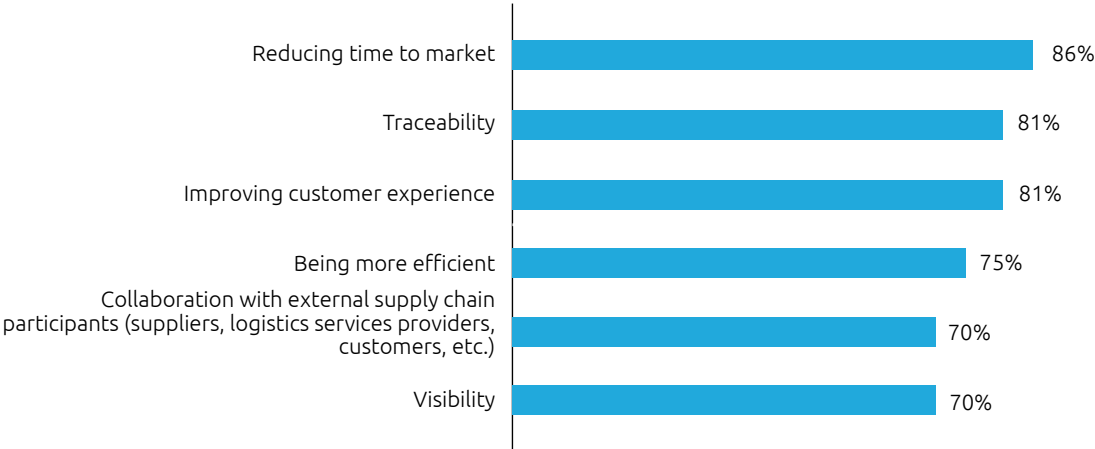
Digitalization and tech integration are imperative

Supply chain digitalization and technology integration are fundamental to building an agile supply chain. Reduced time to market is the key driver for supply chain digitalization, followed by traceability and enhanced customer experience (see figure 8). Increased efficiency, transparency, and better collaboration among stakeholders to ensure seamless flow of information are other important drivers.

Figure 8.

Reducing time to market is the main driver for supply chain digitalization

Percentage of executives citing below drivers for investments in supply chain digitalization

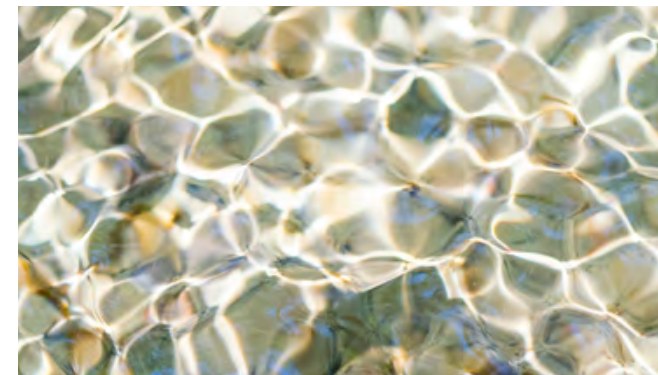


Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.



Technologies such as IoT, radio frequency identification (RFID), and digital twins offer real-time visibility, while automation tools such as robotic process automation (RPA) and AI accelerate workflows and reduce errors. Advanced analytics and machine learning (ML) support proactive planning through accurate forecasting and risk

identification. Cloud platforms and application programming interfaces (APIs) facilitate seamless data sharing, and digital tools such as blockchain and cybersecurity frameworks enhance traceability and resilience. Overall, digital infrastructure empowers scalable, adaptive, and agile supply chain operations.

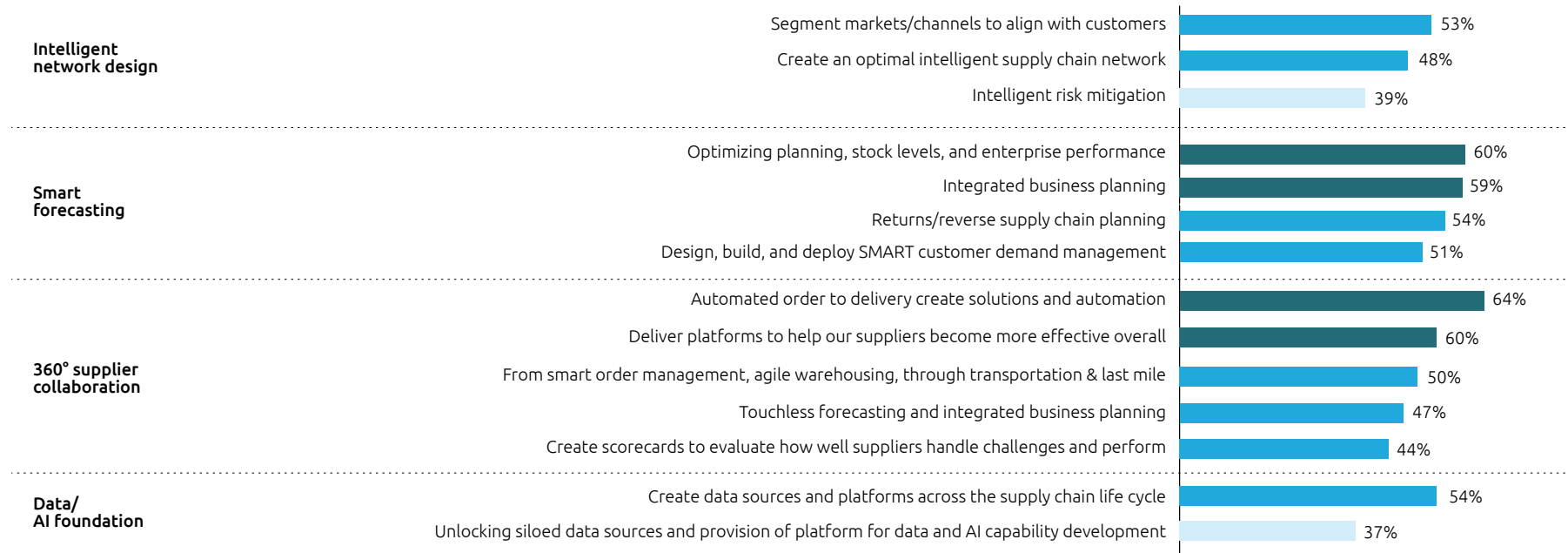


Most organizations are quite mature in relation to smart forecasting (see figure 9). But they still lag significantly when it comes to intelligent risk mitigation and unlocking siloed data sources.

Figure 9.

Most organizations are quite mature on aspects related to smart forecasting

Percentage of executives citing their organization's "high maturity" for the below supply chain implementation trends



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Increased digitalization within the supply chain can also create sources of revenue. The success of e-commerce and q-commerce can be attributed to these technological advancements.

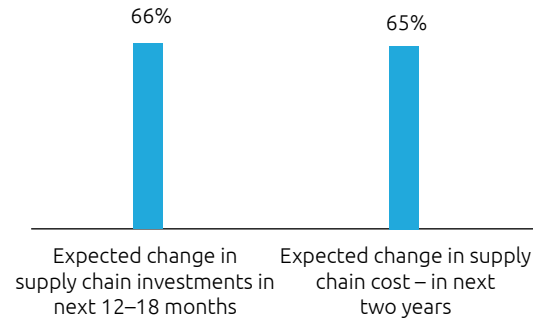
Rising costs and inflation make cost efficiency an imperative

Against the background of fluctuating (and rising) oil prices and energy costs, unpredictable inflation rates, and erratic trade policies, cost optimization becomes even more important.²⁵ At least two out of three executives agree that supply chain investments and costs are likely to increase (see figure 10).

Figure 10.

Most executives believe that supply chain investments and costs will rise

Percentage of executives who stated that the following are likely to increase:



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.



Most executives (60%) believe that logistics and transportation costs in the supply chain will impact the consumer significantly in 2025. At least four in 10 executives acknowledge that risk-management initiatives can impact consumer prices.

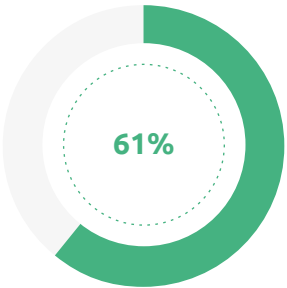
In the face of tighter margins and challenging decisions, organizations are re-evaluating their costs, pricing strategies, and sourcing. Almost six in 10 executives agree that their organization has significantly reduced the cost of supply chain operations (see figure 11).

60%

of executives believe that logistics and transportation costs in the supply chain will impact the consumer significantly in 2025

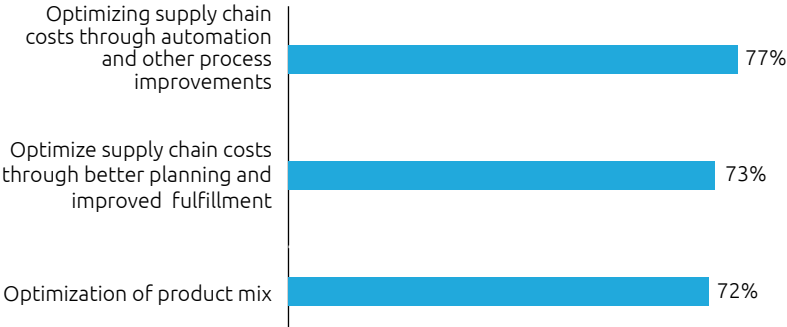
Figure 11.
Most (61%) executives agree their organization has reduced supply chain operations cost

Percentage of executives who agree with the statement "We have made great progress in reducing our supply chain operations cost"



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Percentage of executives who cite the below strategies to improve margins for their organizations' supply chains



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Effective strategies currently being considered by organizations to improve margins are:

- **Automation and other process improvements:** Automation in the supply chain, powered by AI, robotics and digital twins, helps streamline processes and reduce errors, wastage, and labor costs.²⁶
- **Better planning and improved fulfillment:** Route planning, accurate demand forecasting, and optimized inventory management help reduce transportation costs, stockholding costs, and maximize resource utilization.²⁷
- **Optimization of product mix:** Accurate demand forecasting also helps plan the entire product line efficiently, balancing supply with demand, which helps optimize raw materials sourcing and production and inventory costs, minimizing waste and enhancing cashflow management.²⁸

Resilience and risk management are vital for operational continuity

Organizations have made progress in building resilience into supply chain. In 2025, over seven in 10 organizations (73%) can quickly and cost-effectively adjust to short-term disruptions, compared with only four in 10 (39%) in 2022.

73%

organizations can quickly and cost-effectively adjust to short-term disruptions in 2025

Here are a few examples of resilience strategies:

- Dutch beer manufacturer Heineken has implemented Blue Yonder Cognitive Demand Planning, a cloud-native, microservices-based software-as-a-service (SaaS) solution that uses AI and machine learning (ML) to enhance forecast accuracy, future-proof demand planning, manage complexity, improve data-driven decision-making, and offer a more agile response to exigencies.²⁹
- Kraft Heinz uses AI, ML, automation, and a dedicated control tower, built in collaboration with Microsoft, to increase quality, efficiency, and visibility within its supply chain.³⁰
- DHL deployed 100 Locus Robotics autonomous mobile robots (AMRs) for warehouse maintenance, resulting in a 50% reduction in quality issues; a 60% cut in cycle time; and a 50% drop in training time.³¹ DHL Supply Chain also

announced orchestration, robotics, and AI as key priorities for 2024, to drive efficiency, agility, and sustainability within its supply chain.³²



- Mercedes-Benz is harnessing AI, IoT, and digital twins within its “Digital First” MO360 ecosystem to streamline EV production and optimize its supply chain, particularly for batteries and EV-specific components. This includes AI-powered predictive maintenance, real-time decision-making through digital twins, and automated quality control. The organization is also diversifying its supplier network, strengthening domestic battery supply chains, and collaborating with suppliers for sustainable material sourcing, as well as exploring lower-risk alternatives.³³
- John Deere, US farm machinery giant, has enhanced precision agriculture, achieving yield improvements of 10–25% in general farming through its digital tools, including the JD Operations Center platform. This system aims to collect data from over 500 million acres via more than 1.5 million connected machines, transmitting over 15 million data points every second.³⁴
- C.H. Robinson leveraged its digital platform, Navisphere, to scale global real-time operations, onboarding over 200,000 shippers and contract carriers.³⁵
- AstraZeneca is advancing resilient, sustainable health systems through global partnerships that reduce disease burden and drive evidence-based policy change. Its collaboration with LSE and the WEF through PHSSR spans 30+ countries, producing over 30 reports with actionable strategies to strengthen health system governance, resource use, and transparency.³⁶

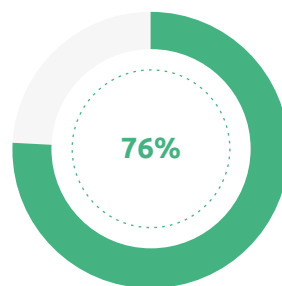
The Supply Chain Resilience Agreement, which entered into force on February 24, 2024, and has been signed by the members of the Indo-Pacific Economic Framework (IPEF), focuses on diversification of suppliers, improvement of logistics, and enhanced international collaboration.³⁷

Risk management is an equally vital part of building an agile supply chain. Three out of four executives (76%) state that their organization currently focuses on managing supply chain risk (see figure 12).

Figure 12.

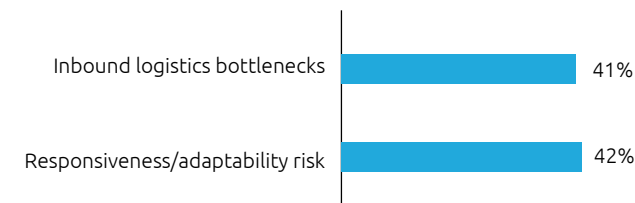
Three-quarters of organizations currently focus on managing supply chain risk

Percentage of executives who agree with the statement “We focus on managing risks in the entire supply chain”



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Percentage of executives citing the below risks being monitored in their organization's supply chain base



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

The top supply chain risks currently being monitored by organizations are responsiveness/adaptability and supply-side logistics bottlenecks (see figure 12).

Geopolitical conflict is a major external supply chain disruptor

Executives who participated in this survey voiced similar sentiments, citing global conflict as the most significant disruptor (41%) of supply chain management, followed by tariffs (31%) (see figure 13).

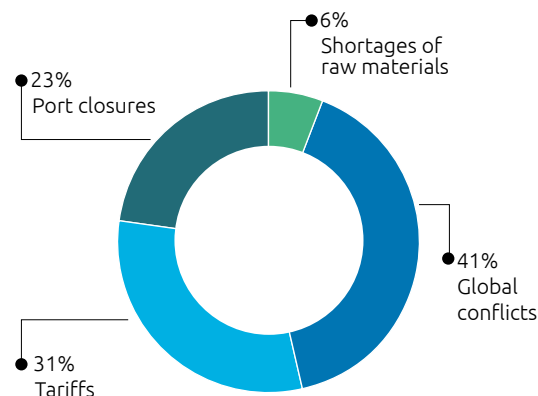
41%

of executives cite global conflict as the most significant disruptor of supply chain management.

Figure 13.

Global conflicts and tariffs are top supply chain disruptors

Percentage of executives who cited the below factors as most disruptive to their organization's supply chain



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Ongoing geopolitical conflicts in the Middle East, the Red Sea crisis, and the Ukraine-Russia war have adversely affected trade routes between Asia and Europe, forcing a 74% year-on-year increase in the first half of 2024 in shipping organizations taking the longer and costlier route around the Cape of Good Hope.³⁸ This rerouting has also resulted in a 50% decline in volume of trade through the Red Sea³⁹ and a 40% decline in income from canal tolls for Egypt.⁴⁰

Global conflicts have had a cascading effect on the **availability and cost of essential materials** such as lithium, cobalt, platinum, iridium, nickel, manganese, etc., required for electric vehicles (EVs), batteries, and semiconductors.⁴¹ These shortages will also slow the transition to “greener energy” solutions.⁴² Related **sanctions**, such as those imposed on Russia, have led to disruption of energy supply and higher energy prices.⁴³ **Resource nationalism** among resource-rich nations has led to the renegotiation of mineral development agreements. Some African regimes have utilized this to maximize revenue generation, while countries such as Australia use their positions to mitigate risks associated with global trade wars.⁴⁴

Given this background, it is imperative for organizations to develop fast transfer of goods, mitigate risk exposure, and undertake workforce transformation. Re-engineering products which are resilient against volatility is another initiative that involves diversification of components and more robust product composition.

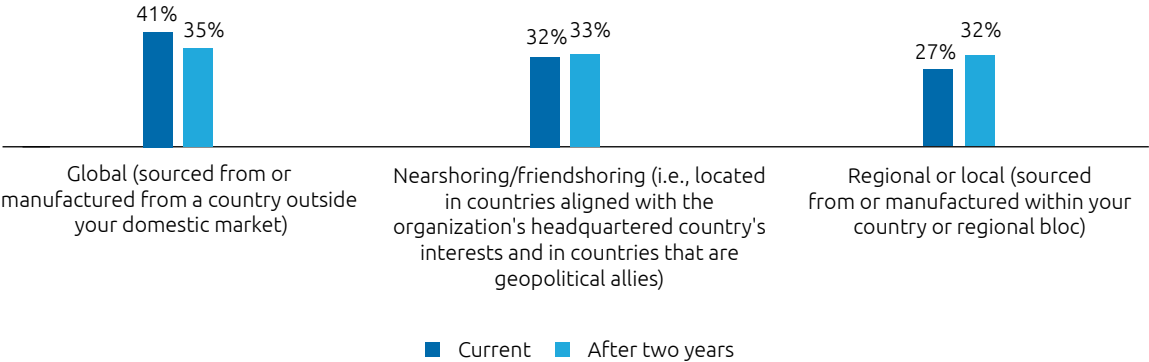
A significant 64% of executives cite “supplier diversification ratio” as the top metric/KPI of supply chain resilience. Executives state that their organizations are planning to reduce the global distribution of their Tier 1 suppliers. This will coincide with an increase in regional or localized sourcing over the next couple of years (see figure 14).

64%

of executives cite “supplier diversification ratio” as the top metric/KPI of supply chain resilience.

Figure 14.
Reduction in global distribution of Tier 1 suppliers expected in next two years

Percentage-wise distribution of Tier 1 suppliers across the three geographic categories:



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Additionally, flexible supply chain with firmer control over Tier 2 and Tier 3 suppliers is required. An aerospace supply chain director reiterates the importance of diversification: *"To achieve robustness, future supply chains must plan differently, possibly by adopting dual sourcing strategies that combine localized sources with new development sources."*

Tariffs

Changes in political leadership

Since an incendiary policy announcement by the Trump administration in February 2025, tariffs have been global headline news. The outcome has been a tariff "war," with several nations announcing reciprocal tariffs on US imports. More than half (56%) of executives who participated in the survey cited import/export tariffs as a major challenge to their organization's supply chain. For example, the imposition of a 50% tariff on steel and aluminum will impact multiple industries such as food and beverages, automotive, and appliances.⁴⁵

The impact of tariffs on supply chain agility is both challenging and transformative. Higher tariffs result in restricted market access and a consequent loss of market share and, ultimately, jobs. These also mean higher operating costs and price volatility for imported goods, frequently passed on to consumers through

higher prices.⁴⁶ Organizations that previously focused on optimizing shipping logistics must now integrate trade compliance factors such as COO, tariff structures, and new documentation protocols.⁴⁷

While tariffs introduce complexity and cost, they also catalyze agile transformation, driving innovation in sourcing, logistics, and data management. Organizations that embrace flexibility, technology, and proactive planning are better positioned to thrive in this evolving trade landscape.

56%

of executives cited import/
export tariffs as a major
challenge to their organization's
supply chain.



"Agentic AI is fundamentally reshaping supply chain management by helping to enable autonomous decision-making, real-time adjustments and proactive inventory management."

Greg Arnold

Director - Technical Functions
Bosch in North America

03

Agentic AI is transforming new-gen supply chain

State of agentic AI implementation

Agentic AI refers to a class of AI systems that can operate and make decisions without constant human oversight. They differ from Gen AI systems and traditional AI systems, as Umesh Joshi, Director Supply Chain at Dabur, an Indian multinational consumer goods organization, explains: *“AI agents are being used for specialized tasks, such as reading and processing order data from PDFs and emails and feeding it into systems accurately. Unlike general AI, AI agents require customization to handle specific tasks effectively.”*

Alfredo Vidal, Director Risk Management – Commercial Supply Chain at a multinational biopharmaceutical organization, confirms: *“Integration of AI agents into the supply chain gives organizations real-time visibility to track shipments, monitor vendors and sites, and assess the impact of natural disasters, geopolitical issues, and other disruptions on specific suppliers or locations.”*

We found that organizations have high expectations of agentic AI:

- 67% think agentic AI systems will significantly boost productivity
- 60% say AI agents/agentic AI will streamline the supply chain workforce

- 58% believe AI agents/agentic AI will revolutionize existing supply chain framework and processes

Two-thirds (66%) of organizations claim that, in the next three to five years, agentic AI systems will take most supply chain decisions. Organizations have already laid the groundwork for agentic AI, with 27% having established a dedicated team. Nearly one in 10 organizations have already implemented multi-agent systems or are already using AI agents but not necessarily scaled, with 7% piloting initial use cases and 11% exploring options (figure 15).

E-commerce platform Alibaba International launched its AI agent, Accio, as an AI-powered B2B search engine for product sourcing. According to Alibaba's data, during the 2024 global e-commerce peak sales seasons in November and December 2024, more than 50,000 small- and medium-sized enterprises (SMEs) worldwide actively used Accio to source stock for Black Friday and Christmas.^{48 49}

66%

of organizations claim that, in the next three to five years, agentic AI systems will take most supply chain decisions.

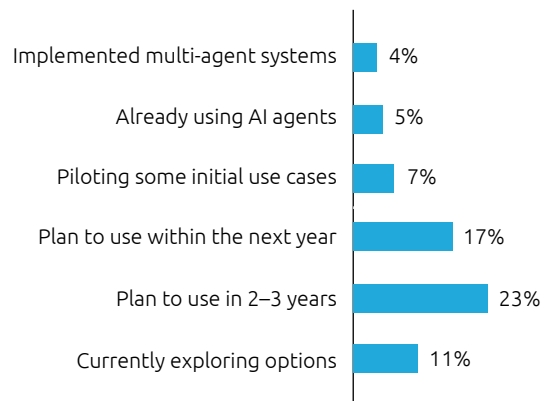
“AI agents are being used for specialized tasks, such as reading and processing order data from PDFs and emails and feeding it into systems accurately. Unlike general AI, AI agents require customization to handle specific tasks effectively.”

Umesh Joshi
Director Supply Chain at Dabur.

Figure 15.

One in 10 organizations already implemented* AI agents or multi-agent systems

Share of organizations at each AI agent maturity level



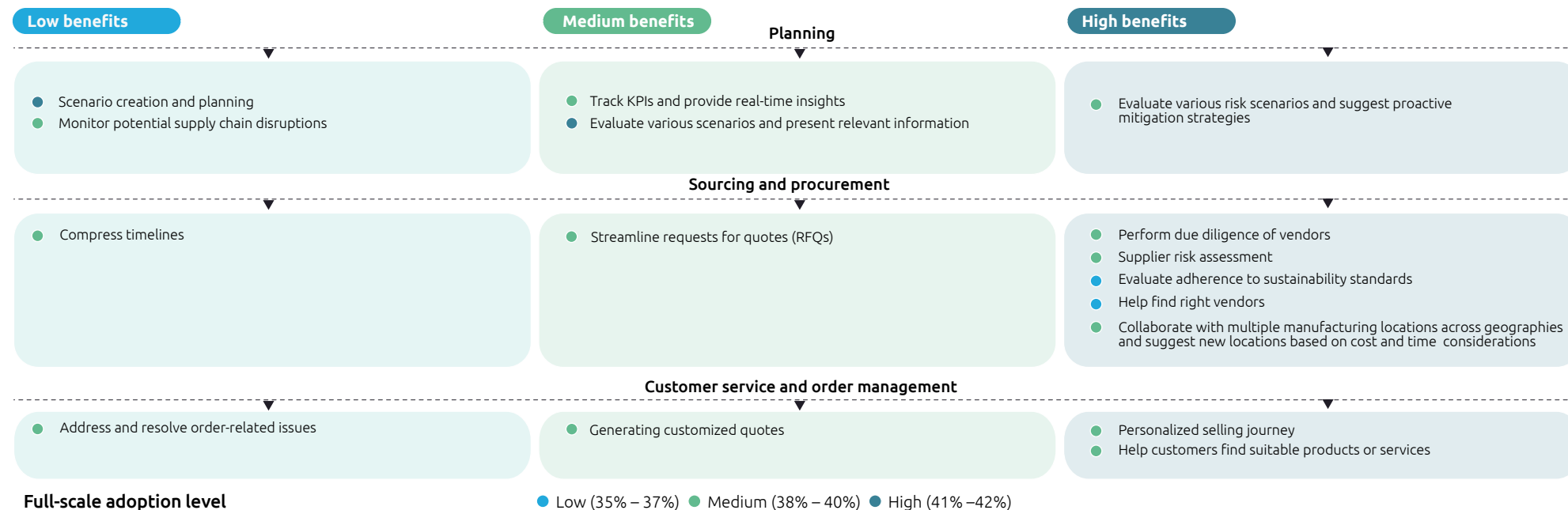
Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.
*Implemented but not scaled.



Overall, organizations are implementing many use cases for AI agents/agentive AI across the supply chain (figure 16). We have classified a range of uses with the accrued/anticipated benefits and the scale of implementation across supply chain planning, sourcing and procurement, customer service and order management, analytics, and sustainability.

Figure 16.

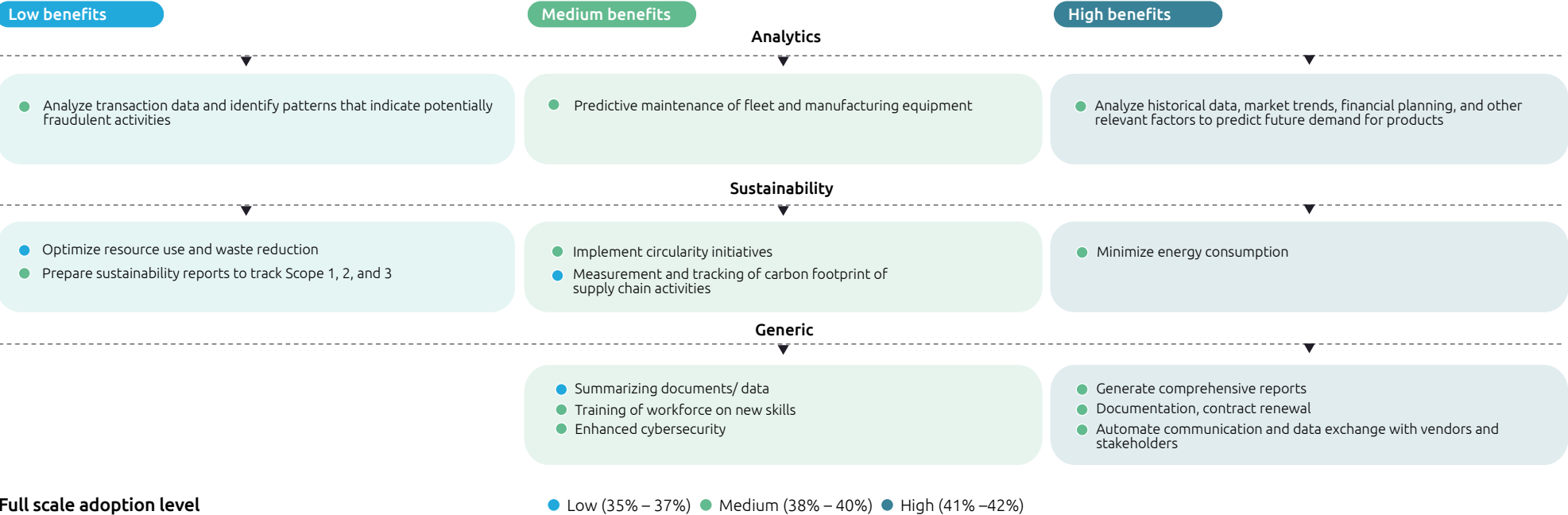
Organizations are implementing multiple use cases for AI agents/agent AI



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Figure 16.

Organizations are implementing multiple use cases for AI agents/agent AI



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.



"Leveraging Agentic AI can help organizations achieve new levels of adaptability and resilience, positioning themselves at the forefront of industry innovation."

Atul Jagtap

Manager – Digitalization & AI Innovation
Bosch in North America

Benefits of AI agents

Organizations expect a range of benefits from AI agents/ agentic AI (figure 17). A supply chain transformation director at a global retail store adds: *“Our supply chain control tower, featuring a digital twin, uses an AI agent to constantly monitor transactions and stock levels, providing real-time insights. This helps us understand regional demand fluctuations, such as increased sales during big events like the IPL [the Indian Premier League cricket tournament] and enables us to quickly and efficiently replenish stock or move products between warehouses.”*

Figure 17.

Organizations expect/have realized multiple benefits from AI agents/agentic AI

Percentage of improvement expected/realized for the below metrics



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 104 executives for ‘Increased automation;’ N = 100 executives for ‘Higher productivity;’ N = 100 executives for ‘Enhanced efficiency;’ N = 115 executives for ‘Increased agility;’ N = 104 executives for ‘Increased resilience;’ N = 105 executives for ‘Faster delivery;’ N = 118 executives for ‘Improved customer engagement and satisfaction;’ N = 111 executives for ‘Improved worker safety;’ N = 111 executives for ‘Enhanced collaboration among stakeholders;’ N = 118 executives for ‘Enhanced supplier-business relationship;’ N = 102 executives for ‘Reduced IT outages;’ N = 119 executives for ‘Improved decision-making capabilities;’ N = 102 executives for ‘Improvement in scalability and handling of large data volumes;’ N = 121 executives for ‘Improved cost efficiencies/decrease in operational cost;’ N = 141 executives for ‘Mitigated risk exposure/reduction in errors;’ N = 95 executives for ‘Reduction in Scope 3 emissions;’ N = 129 executives for ‘Improved performance on sustainability goals.’

"Integration of AI agents into the supply chain gives organizations real-time visibility to track shipments, monitor vendors and sites, and assess the impact of natural disasters, geopolitical issues, and other disruptions on specific suppliers or locations."

Alfredo Vidal

Director Risk Management
– Commercial Supply Chain at a multinational biopharmaceutical organization

Adoption of Gen AI use cases in supply chain

We analyzed multiple use cases for Gen AI in supply chain and found 15% of organizations have already implemented them in some/most functions/locations and 51% have implemented more than five use cases across pilots and in some or all locations/functions. Please refer to the appendix for the list of Gen AI use cases.

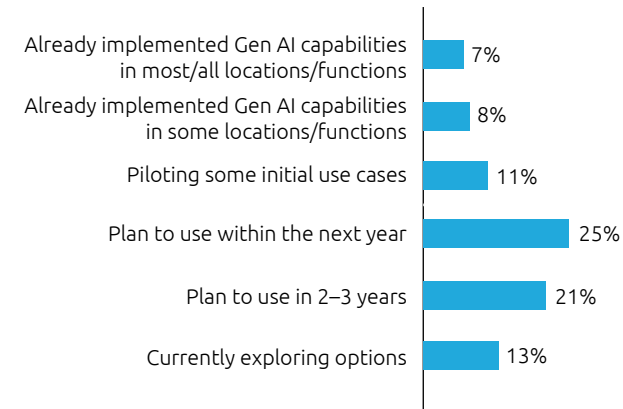
15%

of organizations have already implemented Gen AI capabilities in some/most functions/locations for supply chain.

Figure 18.

15% of organizations have already implemented Gen AI capabilities in some/most functions/locations for supply chain

Percentage of organizations at various Gen AI maturity levels



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Organizations are already using Gen AI in supply chain for route optimization:

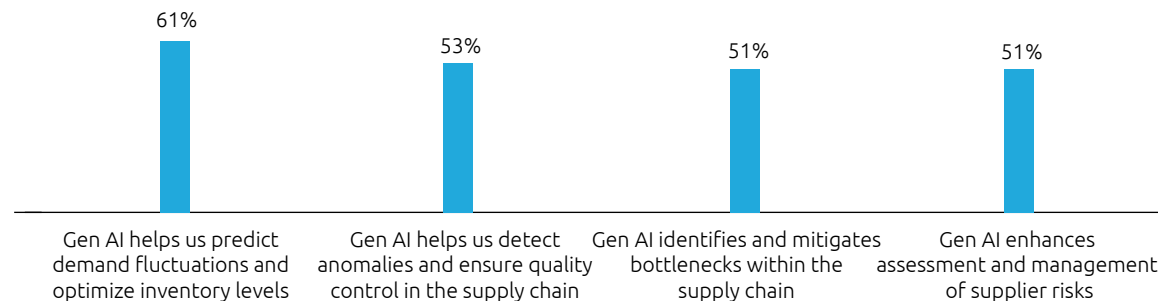
- Amazon uses Gen AI to optimize delivery routes, improve warehouse robotics, and streamline inventory for faster delivery. In 2024, 60% of Prime orders in the top 60 US metropolitan areas were delivered the same or next day, with over two billion items shipped in Q1 alone. Precise stocking also reduces travel distances, enhancing sustainability.^{50 51}
- UPS's On-Road Integrated Optimization and Navigation (ORION) system uses AI and advanced algorithms to optimize delivery routes in real time. The Gen AI models consider factors such as package volume, delivery windows, real-time traffic conditions, and even weather, to generate the most efficient routes. This reduces driving time per delivery, minimizes fuel consumption (ORION saves UPS over 10 million gallons of fuel per year), and shortens delivery times.⁵²

Organizations are reaping multiple benefits by using Gen AI in supply chain, together with dedicated optimization tools fueled with high-quality data for tackling prediction, optimizing inventory, and mitigating bottlenecks.

Figure 19.

Organizations are reaping multiple benefits from Gen AI in supply chain

Percentage of executives who agree with the below statements:



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.



"Agentic AI has the potential to enable autonomous and real time supply chains. However, it is still in its early stages, and companies are experimenting with various models to sift hype from reality and drive value in this fast changing environment."

Nitin Dsouza

VP, Supply Chain and Engineering, Capgemini Invent
Intelligent Industry - Supply Chain

04 | Sustainable supply chain reinforces resilience

Sustainability drives long-term resilience and cost efficiency

Sustainable supply chain has emerged as a principal driver of long-term resilience, innovation, and competitiveness. Organizations that have prioritized sustainable supply chains have reaped the benefits (see figure 20). A healthy 62% of organizations are investing in sustainability, particularly for waste reduction and water consumption savings.⁵³

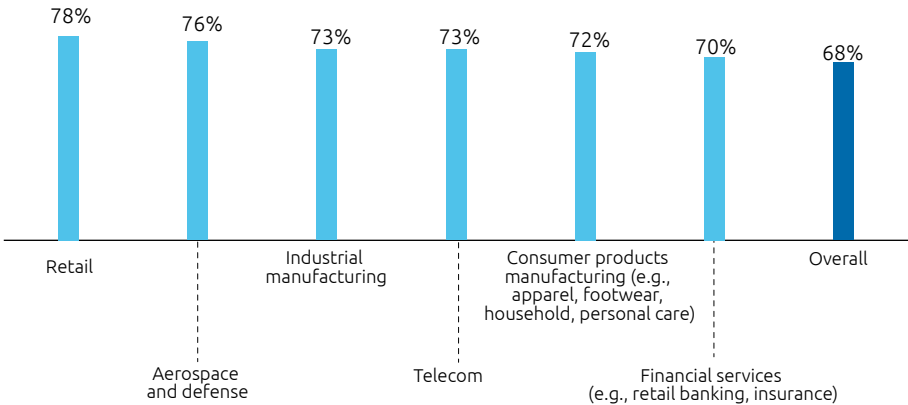
76%

of organizations surveyed agree that sustainable practices drive cost efficiencies

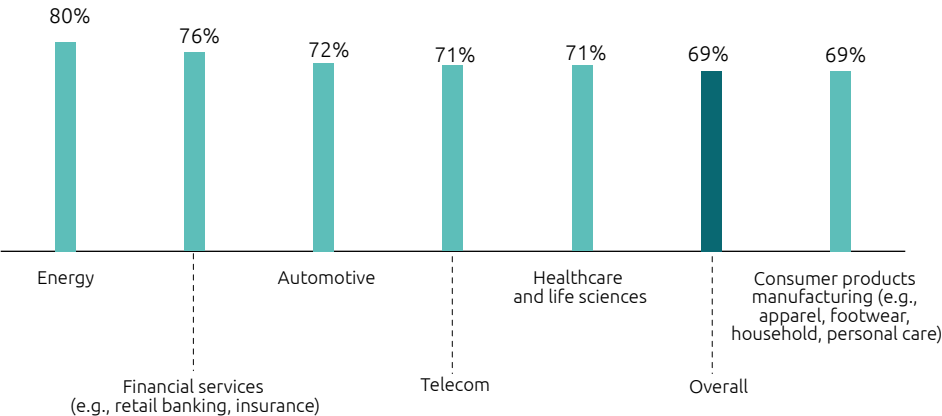
Figure 20.
Sustainability is driving cost efficiencies

Percentage of executives who agree with the below statements:

Industries that expect to save above 20% in supply chain costs in next three years



Industries that expect to save above 20% in supply chain costs in next three years



Source: Capgemini Research Institute, Sustainability business value survey, March 2025, N = 1,001 executives.

Three-quarters (76%) of organizations surveyed agree that sustainable practices drive cost efficiencies, while 71% mention associated business value.

Organizations are investing in sustainable supply chains to make them more resilient and agile.

SGD Pharma, for example, has committed a multi-million-euro investment to modernizing its global manufacturing sites, expanding its high-precision vial production, and upgrading its furnaces to cut carbon emissions and energy

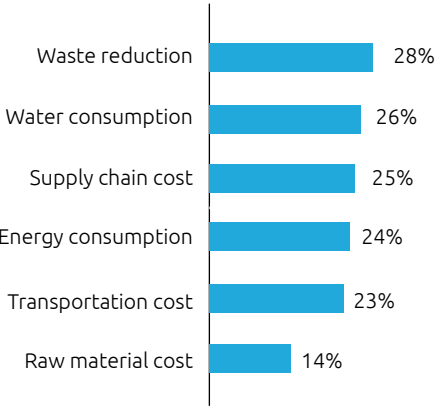
use.⁵⁴ Similarly, in 2023, Maersk commissioned its first methanol-enabled container ship, the Ane Maersk. It has ordered six more methanol-enabled ships, each with a capacity of 9,000 twenty-foot equivalent units (TEUs), scheduled for delivery in 2026–27.⁵⁵ These ships are expected to cut annual greenhouse gas (GHG) emissions by around 450,000 tonnes of CO₂ equivalent when using green methanol. As sustainability has gained significantly, there has been a parallel shift in organizational preparedness (see figure 24).



Figure 21.

Expected cost savings from sustainability

Extended cost savings in the next three years across different areas



Source: Capgemini Research Institute, Sustainability business value survey, March 2025, N = 1,001 executives. Figure shows weighted average of savings.

76%

of organizations have a comprehensive supply chain sustainability strategy in place.

Further, climate risks, particularly extreme weather events such as floods and wildfires, are significantly impacting global supply chains, leading to increased disruptions, longer delivery times, and higher costs. According to estimates, the projected cost of environmental risks in supply chains is \$120 billion by 2026 and, by mid-century, climate disruption to global supply chains could lead to up to \$25 trillion in net losses.⁵⁶ Organizations that embed sustainability into their risk management framework are better positioned to anticipate, respond to, and recover from climate-related disruptions.

Sustainable supply chains add business value

More than two-thirds (78%) of organizations consider sustainability leaders' inputs vital to areas such as network

design, sourcing, and supplier selection. Further, 76% have a comprehensive supply chain sustainability strategy in place. Digital product passports (DPPs) are streamlining supply chain transparency by tracking the origins, journeys, and final destinations of products to maintain detailed, accurate records that meet the ESPR transparency requirements, fostering the trust of customers and stakeholders. Pangaia, a well-known materials science organization, has developed the Pangaia DPP system.⁵⁷ Similarly, Bosch's MeasureOn app reduces paper waste through digital documentation, simultaneously minimizing human error and enhancing project management.⁵⁸ Arthur Edge, Senior Director, Global Supply and Strategy at AstraZeneca, agrees: "*Sustainability is not just a regulatory requirement but also a business driver. There is a change in customer preference and expectation for products that are not only effective but also have a minimal environmental impact.*"

78%

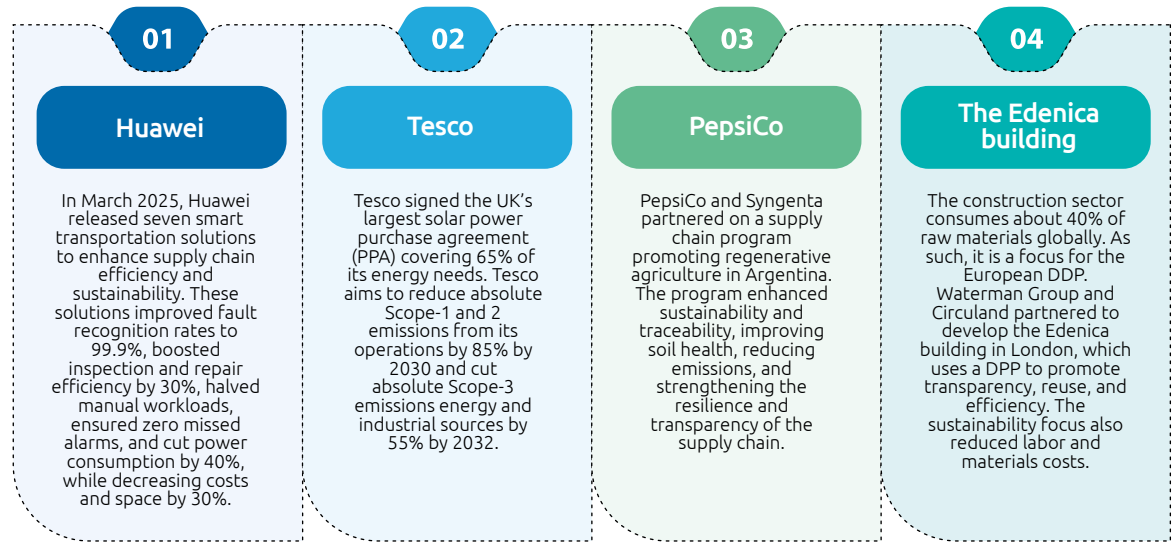
of organizations consider sustainability leaders' inputs vital to areas such as network design, sourcing, and supplier selection.

"Sustainability is not just a regulatory requirement but also a business driver. There is a change in customer preference and expectation for products that are not only effective but also have a minimal environmental impact."

Arthur Edge

Senior Director, Global Supply and Strategy at AstraZeneca.

Figure 22.
Notable examples of how sustainability can drive business value



Sustainability transforms supply chains by prioritizing ethical raw material extraction, and low-carbon logistics, reducing Scope 3 emissions through renewable energy adoption and circular design. It extends to manufacturing through waste-reduction strategies such as zero-waste facilities and energy-efficient processes, while end-of-life management uses closed-loop systems where materials (e.g., cobalt in batteries, rare earth elements) are recycled, diverting millions of tons from landfills annually.

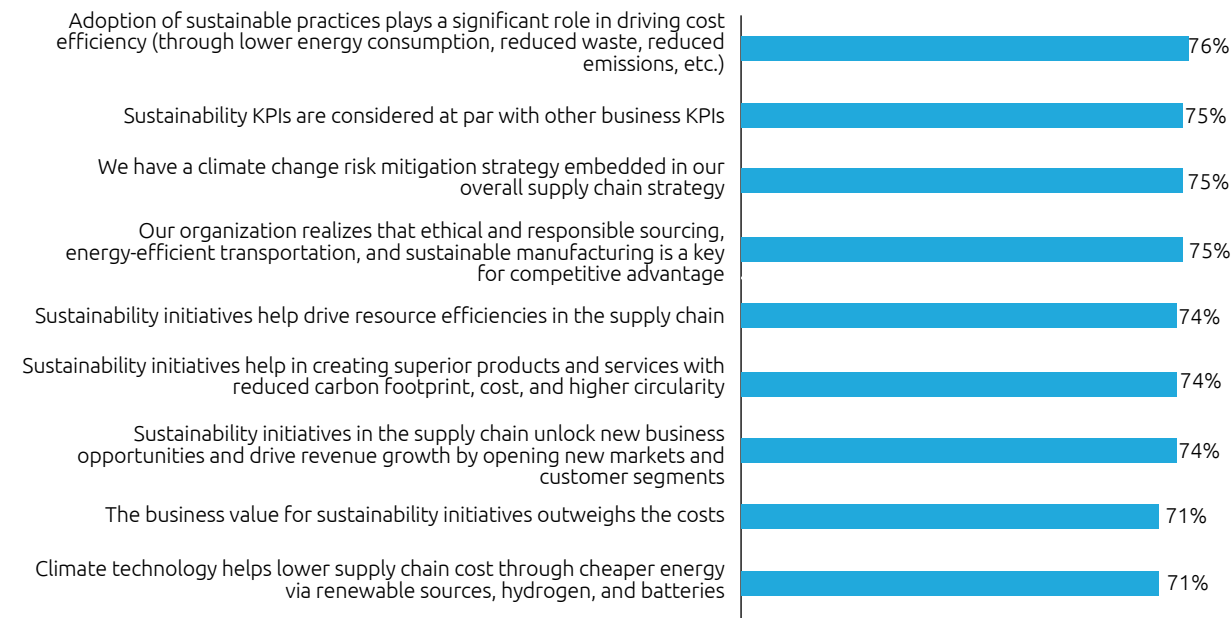
As consumer expectations around sustainability evolve, organizations embracing sustainability have seen an increase in customer loyalty. Patagonia, for instance, has seen a 35% increase in customer loyalty and a 50% increase in revenue over the past decade.⁵⁹ Further, its transparent supply chain practices have won it a 65% retention rate.⁶⁰

Source: Capgemini Research Institute analysis.
 Huawei, "Huawei Releases Seven Smart Transportation Solutions to Accelerate Intelligence," March 2024.
 Tesco PLC, "Tesco agrees largest UK corporate PPA for solar power in landmark infrastructure project," October 2024.
 FactFile, "Edenica, 100 Fetter Lane, London," https://steelconstruction.info/images/4/46/Edenica_100_Fetter_Lane.pdf; "Early Examples of EU Digital Product Passports in Action," April 2024.
 Syngenta, "Syngenta and PepsiCo reward farmers for regenerative farming practices," March 2025.

Figure 23.

Organizations recognize sustainable supply chain as a business value driver

Share of organizations agreeing with the following statements



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

The short-term investments in supply chains can reap long-term impacts (as we see in the section below), organizations are now capable of handling sustainable supply chain challenges much better than three years ago.



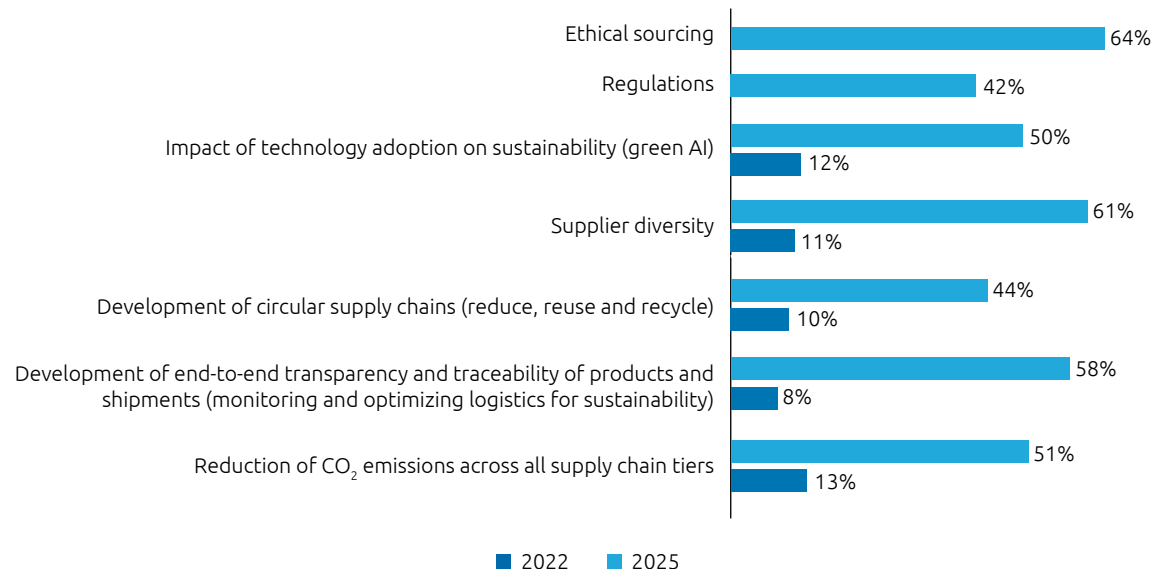
There has been a dramatic improvement in organizational supply chain capabilities

Organizational capacity to handle supply chain trends has improved dramatically since 2022 through better platforms for planning and resource management, in the process marginally reducing the impact of these trends on the supply chain (see figure 24). Eszter Haberl, Sustainability Director at Tenneco, comments: *“Organizations are now much better equipped to handle changes in sustainability trends due to the availability of better tools to manage and predict supply chain sustainability. AI is helping companies bridge the gap between identifying the underlying issues and decision making.”*

Figure 24.

Organizations are now well equipped to handle sustainability trends

Organizations' ability to address these sustainability trends in their supply chains



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 950 executives, Intelligent supply chain research, August–September 2022, N = 950 executives. Please note that this data excludes Canada.

Regulatory developments and improved supply chain strategies are driving this preparedness. More than four in five (83%) organizations have now identified potential ESG risks throughout the supply chain, including climate change impacts, human rights violations, and regulatory non-compliance. We expect them to formulate mitigation strategies. This heightened ability to tackle these sustainability trends has subdued the impact of disruptions on supply chains compared with 2022 (see appendix).

83%

of organizations have now identified potential ESG risks throughout the supply chain, including climate change impacts, human rights violations, and regulatory non-compliance.

Figure 25.

Organizations have strengthened their supply chain strategies

Percentage of organizations implementing the following in their supply chains



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

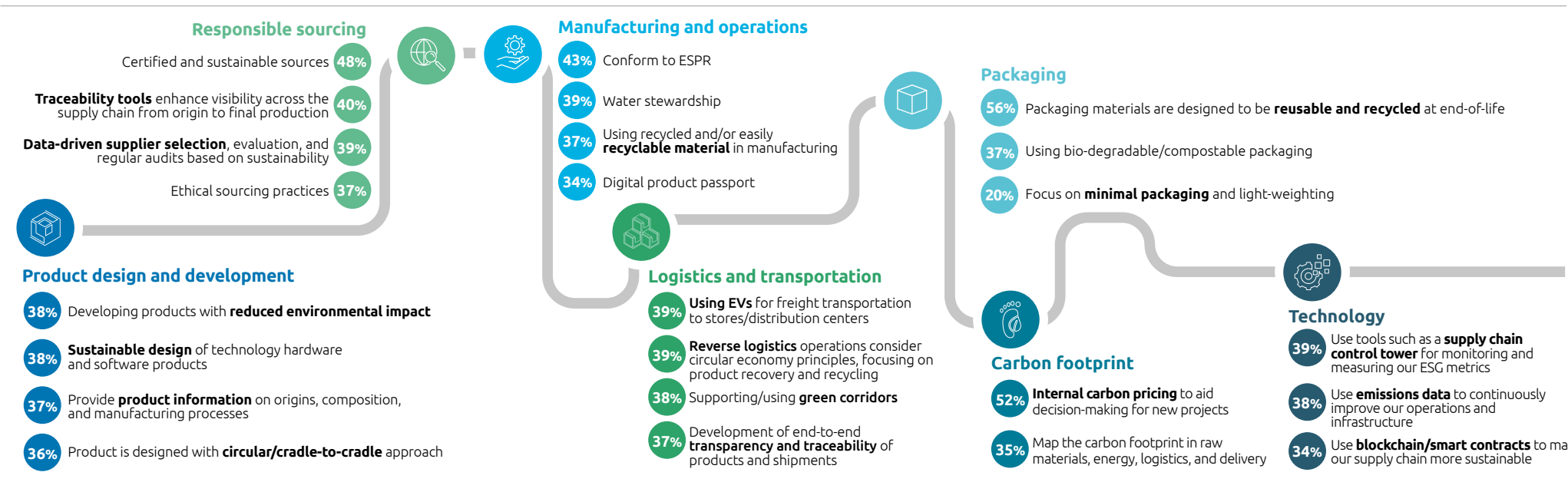
Organizations today harness multiple technologies to improve supply chain transparency and implement sustainable sourcing practices. These technologies allow them to adapt quickly to

market fluctuations. HP's Multi Jet Fusion (MJF) technology exemplifies the profound impact of sustainability on business operations. By consolidating parts and replacing components

with 3D-printed designs, the organization achieved a 50% reduction in costs, a notable decrease in material usage, and a remarkable 95-fold reduction in carbon footprint.⁶¹

Figure 26.

Maturity of sustainable supply chain trends



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.



"To build resilient supply chains, organizations must embrace circular economy principles and sustainable design—not as future costs, but as strategic investments. By reimagining products as services, enabling reuse and repair, and scaling digital innovation, organizations can reduce waste, extend product lifecycles, and align with the values of sustainability-conscious consumers."

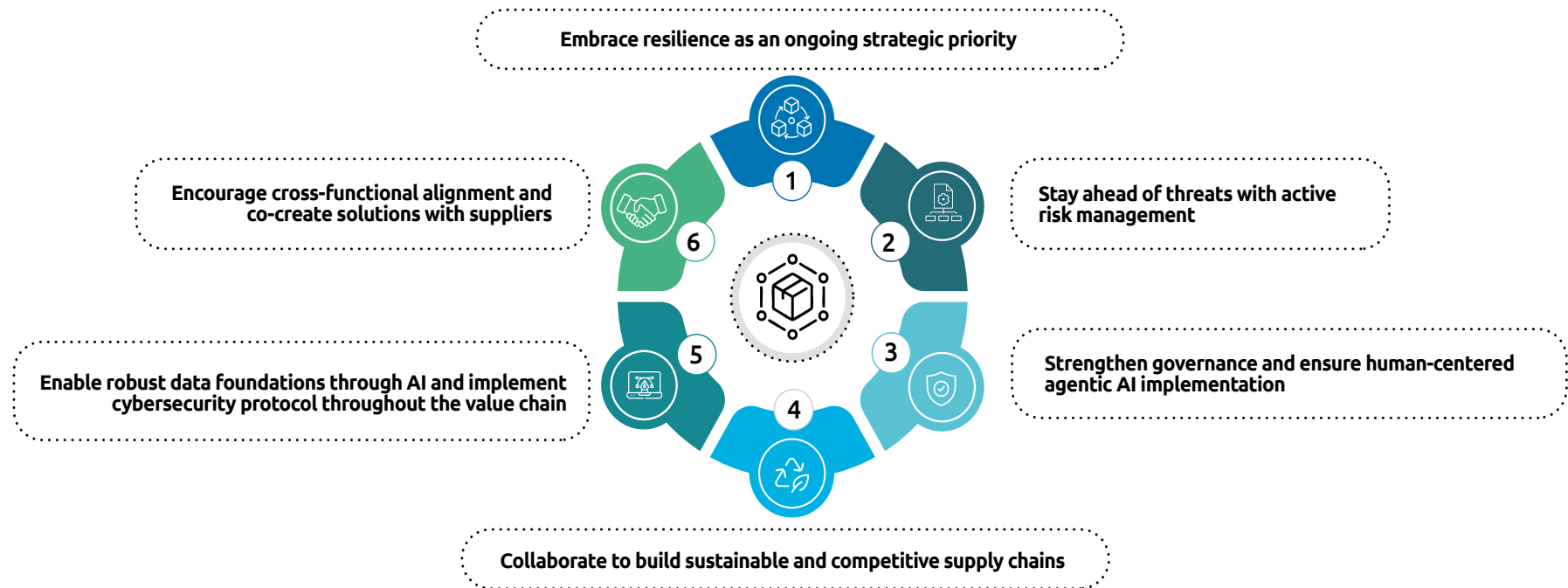
Vincent Charpiot

Head of Group Sustainability Accelerator,
Capgemini

05 | Recommendations for building a new-gen supply chain

Figure 27.

Building a new-generation supply chain



Source: Capgemini Research Institute analysis.

Embrace resilience as an ongoing strategic priority

Here are a few strategies organizations can adopt toward building a resilient supply chain:

- **Strengthen and diversify access to markets:** Seven in 10 executives (73%) agree that securing market access that may involve facing more frequent or severe disruptions has a significant business impact. But only 57% agree that their organization is prepared to handle this (see figure 28).

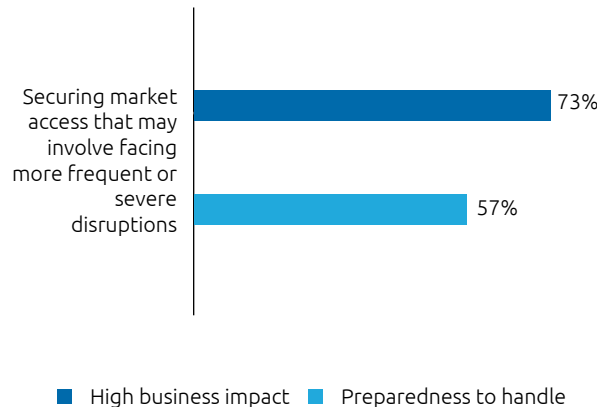
73%

of executives agree that securing market access that may involve facing more frequent or severe disruptions has a significant business impact.

Figure 28.

Nearly three in four executives agree that agile planning and securing market access will have high business impact

Percentage of executives who mentioned "high business impact" and their organization's "preparedness to handle" supply chain trends



Source: Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

Organizations can undertake any of several initiatives to secure and diversify market access effectively, which include:

- **Conduct comprehensive market research:** It is important to understand the players in the market, consumer behavior, preference drivers, cultural nuances, and to identify unmet needs. Develop a clear understanding of the regulatory and legal requirements, trade agreements, and identify entry barriers.
- **Outline a clear market access strategy:** Outline target group, pricing strategies, value propositions, investments (with expected returns), anticipated demand, manufacturing and logistic plans, possible local partners, etc.
- **Monitor, innovate, and adapt:** Market dynamics are ever evolving; hence, continuously monitor the economic, geopolitical, and trade scenarios, entry/exit of market players, and shifts in consumer behavior, and innovate/adapt to deal with them. Use scenario simulation and planning to prepare for various contingencies.

• Prioritize flexibility in logistics operations

- Partner with **third-party logistics (3PL)** transportation providers for flexibility, scalability, visibility, expertise, and cost-efficiency.
- Adopt **multimodal transportation** (a combination of road, rail, air, and sea) to enhance logistical flexibility and adaptability, enhancing supply chain resilience. Multimodal transportation also offers time savings, cost optimization, better communication along the

chain, and clear accountability.^{62 63} A well-coordinated multimodal transportation system underpins Amazon's huge, seamless logistics network.⁶⁴

• Advance product capabilities through continuous R&D efforts

- **Explore material substitution options:** Use material risk indices and supply chain intelligence tools to evaluate raw material risks. Collaborate with suppliers

to develop regional, sustainable alternatives. Prioritize recyclable, bio-based, and commonly available materials, and reduce material variety to streamline sourcing and recycling.

- **Reconsider product design:** Design modular products with interchangeable, standardized parts to support material flexibility. Enable disassembly for recycling and adapt designs based on material risk insights.



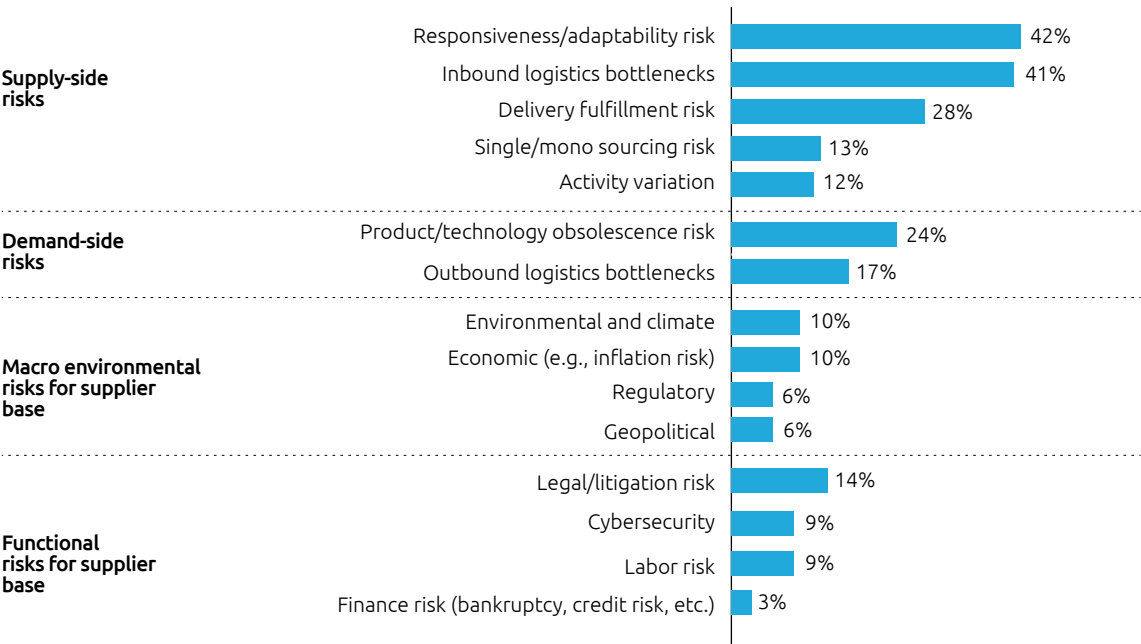
Stay ahead of threats with active risk management

Supply chains are exposed to a myriad macro-level environmental and financial risks on both supply and demand sides. But organizations are only monitoring the risks associated with responsiveness/adaptability (42%) and inbound logistics bottlenecks (41%) – both supply-side (see figure 29) – with sufficient care. All other risks are being proactively monitored by only 28% or fewer.

Figure 29.

Organizations are not monitoring supply chain risks with sufficient care

Percentage of executives who mentioned their organization monitors the following risks in the supply chain



Capgemini Research Institute, New-generation supply chain survey, March–April 2025, N = 1,000 executives.

To manage future shocks, organizations must monitor risks using a three-step process involving:

- **Risk identification:** identify supply chain risks based on business model and sector, including internal (e.g., operations, planning, workforce) and external (e.g., resources, conflicts, tariffs, environment, logistics) factors
- **Risk assessment:** evaluate and prioritize risks by their potential impact and likelihood
- **Risk mitigation:** create contingency plans for high-priority risks

Effective risk monitoring requires real-time end-to-end visibility of the entire supply chain. Technological solutions play a significant role. Capgemini has partnered with Prewave, an AI-powered risk and compliance platform, to enhance supply chain transparency, compliance, and resilience through combined digital and AI expertise.⁶⁵

As part of risk management, organizations need to undertake diversification and drive cost efficiencies:

- **Pursue supply chain diversification strategies**
 - Diversification is an important strategy for resilience and risk management, and should be implemented across suppliers, materials, and components bases. There are several approaches that organizations can take:

- Implement **multi-sourcing strategies** to diversify the supplier base, based on criticality of materials/ components required and risk assessment of suppliers.
- **Undertake geographical diversification**, i.e., source from suppliers based in different regions or geographies to help mitigate disruptions caused by political conflicts or natural disasters.
- **Gain visibility of Tier 2 and Tier 3 suppliers** to facilitate understanding of the extent of diversification and anticipation of resource disruptions.
- Explore and **build supplier base for alternative materials/components** as substitutes for rare critical materials as preparedness toward contingencies.
- Form **strategic partnerships with suppliers** to ensure better communication, information exchange, and collaboration to control risks.

- **Improve cost-effectiveness while mitigating tariff impacts:**
 - Conduct end-to-end cost analysis of supply chain to identify the biggest cost drivers and areas for streamlining:
 - **Optimize transportation costs** through route optimization to reduce transit time, building central distribution centers for efficient order fulfillment, and shipment consolidation to maximize freight capacity.

- **Implement regular audits and monitoring of supply chain performance metrics (KPIs)** to identify strengths and weaknesses within the supply chain and implement a continuous improvement program.
- **Work toward circular supply chain**, with focus on reduce, reuse, recycle, repair, recover, refurbish, and redesign.
- **Enhance capabilities for demand forecasting and predictive maintenance** to streamline and optimize production capacity (lean manufacturing), minimize downtime in production, and optimize inventory management.
- **Use technology and data analytics** to bring efficiencies through enhanced demand forecasting, inventory management, scenario planning, predictive maintenance, route optimization, etc.

- During a tariff war, procurement of every component must be monitored, even at Tier 2 and Tier 3 levels. In today's global economy, a long-term strategy to manage tariff disruptions is key to strengthening supply chain resilience:
 - Make **short-term investments in current suppliers** located near manufacturing facilities to capitalize on existing relationships and enhance logistical efficiency.
 - Increase focus **on local sourcing and nearshoring**.
 - Review **manufacturing diversification (reindustrialization)** with a focus on proximity to market and adherence to COO norms.
 - Explore **product redesign** with an emphasis on integrating alternative components or materials with lower tariffs.
 - **Explore and adopt legal and regulatory strategies** to ensure correct product categorization for accurate tariff classification to avoid paying higher custom duties than required. Use FTAs and FTZs to offer deferred, reduced, or eliminated tariffs.
 - Develop a **clear understanding of tariff liabilities** of the various stakeholders within the entire value chain. **Negotiate with suppliers and manufacturers** to share or reduce tariff costs wherever possible.

Enable robust data foundations through AI and implement cybersecurity protocol throughout the value chain

Prioritize end-to-end digitalization and integration of advanced technologies

Digital transformation of supply chain goes a long way toward affording end-to-end visibility of the entire value chain. This in turn offers enhanced data-driven decision-making, and better collaboration among stakeholders. While evaluating technological solutions, it is important to consider their compatibility with the existing digital ecosystem.

- **Accelerate digital transformation:** Acceleration of technological solutions, such as automation, robotics, digital twins, AI, and ML, brings process efficiencies, greater transparency, fewer manual errors, and heightened responsiveness to supply chain disruptions.
- **Implement advanced data analytics tools:** When organizations have captured data at different points throughout the value chain, they can feed it into predictive analysis and scenario planning to identify risks, possible

disruptions, and forecast demands. They can then use these insights to design contingency strategies and optimize production and inventory management.

- **Use real-time tracking platforms for deeper end-to-end visibility:**
 - Real-time visibility platforms enable close monitoring of supply chain operations, highlighting potential disruptions and supporting proactive measures.
 - Further down the value chain, visibility can be poor, increasing the challenge of building a resilient supply chain. Partner with Tier 1 suppliers to ensure their complete transparency, leveraging joint risk-assessment exercises, multi-tier mapping, and regular audits to get deeper insights into the value chain. Use technologies such as blockchain, IoT, and RFID to track movement of materials and components.

Build an integrated data ecosystem to consolidate and streamline information

Consolidate all supplier data into a unified, secure data platform. This centralized system will facilitate real-time tracking, validation, and aggregation of ESG metrics across the entire supply chain. Automate data collection by replacing manual data requests with user-friendly, web-based tools that allow suppliers at every tier to seamlessly enter ESG data. This automation will significantly increase participation and accuracy, while reducing the administrative burden on all parties involved.

A centralized data platform, combined with an accurate assessment of current data maturity, robust data governance policies, and cross-functional collaboration, lays the foundation for unified data and AI capabilities.

Organizations must integrate AI-driven analytics to automatically generate detailed sustainability reports, identify compliance gaps, and recommend targeted improvements.

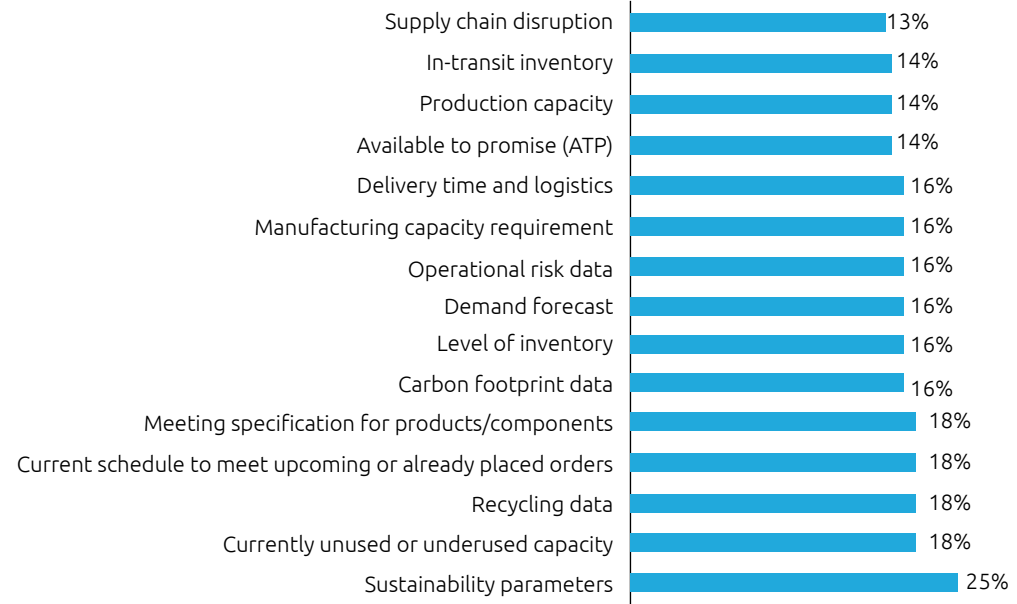
Build resilient data foundations powered by AI

As many as 74% of organizations say it is difficult to ensure accuracy of data at the point of decision for AI agents. While Tier 1 suppliers may have good data availability, this availability goes down with Tier 2 and below. Appropriately formatted data is also crucial for future scenario planning. Organizations must enable internal and external data sources and platforms across the supply chain life cycle.

Figure 30.

Organizations are failing to monitor supply chain risk adequately

Which of the below information types do you collect from



Integrate robust cybersecurity protocols at every stage

Eight out of 10 (79%) executives who participated in the survey are very concerned about cybersecurity visibility of the supply chain. When it comes to monitoring cybersecurity risk in the supplier base, only 9% of organizations are proactively doing so, with the extent of visibility primarily limited to Tier 1 suppliers. There has never been so much data available, and it has never been so complex to access and activate it with the required level of trust, agility, efficiency, and cost-effectiveness. With the rising incidence of cyberattacks, it is imperative that organizations future-proof the supply chain as follows:

- **Use real-time monitoring systems** to detect and respond promptly to cyber incidents, mitigating disruption.
- **Partner with leading cybersecurity solution providers** to customize security measures.
- **Implement stringent and consistent cybersecurity guidelines** throughout the supply chain, outlining clear protocols on exchange of information, documents, or data through secure, encrypted channels, with clear accountability.

- **Create awareness among internal and external stakeholders** for adoption of best practices, and identification of threats.
- Regulate **control access** and implement multi-factor authentication across the value chain.
- **Conduct regular audits** to ensure cybersecurity compliance by all partners in the value chain.
- **Use advanced technological solutions** such as Gen AI or AI agents to reinforce the cybersecurity measures.

79%

of executives are very concerned about cybersecurity visibility of the supply chain.



Strengthen governance and ensure human-centered agentic AI implementation

Pressure from consumers and investors has heightened the need for sustainable supply chains. Organizations must redesign their supply chains to reduce environmental impact and build circularity.

Ensure human-centered agentic AI implementation

Agents act with autonomy and specialist capabilities to achieve objectives. Successful implementation requires quality data, tool APIs, and clear guardrails to ensure trust in autonomous decisions. Most (85%) believe humans must validate decisions made by AI agents/agentic AI, intervening when necessary, and 81% state they cannot trust a fully autonomous AI agent/agentic AI for use within their supply chain. Moreover:

- 72% mention an inability to explain the results from AI agents/agentic AI algorithms
- 68% cite apprehension of unforeseen consequences and unexpected decision-making resulting from untraceable actions

- 72% cite risk of discriminatory outcomes due to biased training data

- 68% mention inability to set effective parameters for AI

Most (83%) organizations cite the need to establish rigorous control mechanisms prior to implementing AI agent/agentic

AI in supply chain. AI agents bring pattern recognition, automation, and high-volume data analysis skills, which humans can blend with their creativity, leadership, ethical judgement, emotional intelligence, and long-term strategic thinking to create a “knowledge force multiplier” for AI agents with human AI collaboration.

85%

of organizations believe humans must validate decisions made by AI agents/agentic AI, intervening when necessary

83%

of organizations cite the need to establish rigorous control mechanisms prior to implementing AI agent/agentic AI in supply chain.

Embed sustainability criteria into all sourcing contracts

More than three in five organizations (64%) find sustainability and environmental regulations in their supply chain challenging. Organizations' visibility of Tier 1 suppliers around net zero mandates currently stands at just 25%. Incorporating sustainability requirements into sourcing contracts can offer greater transparency and accountability. Contracts should include specific clauses that mandate adherence to sustainability standards, ensuring supplier accountability, with regular audits.

Integrate supplier tools to optimize sourcing and relationship management

Deploying tools such as supplier scorecards (e.g., EcoVadis) can help organizations align their ambitions with their suppliers' goals, as well as flagging any deviation from those goals, while using specialized AI agents for vendor identification, supplier risk, and sustainability compliance. Leaders should hold regular meetings with suppliers to discuss sustainability goals and provide support in moving toward them.

Focus on developing AI competencies through targeted training programs

Developers design agentic AI systems to assist with human tasks, leading to the concept of an "agentic workforce." As

AI agents collaborate more extensively with humans, organizations may need to reconsider their roles, responsibilities, processes, and how they integrate into team structures. Most AI agents fall into one of four categories:

- **Co-workers** that help with cognitive tasks (co-planner, co-manager)
- **Process enhancers** that automate processes (quote configurators, supplier onboarding)
- **Orchestrators** that manage functions with multiple agents
- **Edge orchestrators** that manage IoT devices

A rigorous, inclusive approach to upskilling will attract new talent and retain existing employees. Over three-quarters (78%) of organizations believe that the integration of AI agents/agentic AI into the workforce will require significant up- and cross-skilling. A similar proportion (75%) cite limited internal expertise or a small talent pool.

Empower teams with the skills needed for future readiness

Investing in training and upskilling existing teams will be vital. For instance, when it comes to sustainability, only one in three organizations (34%) agrees that their

employees understand the environmental impact along the value chain and have been trained in sustainable practices. Similarly, only 41% of organizations agree that they have sustainability-driven practices and culture.

It is imperative that workforce skillsets can accommodate AI and digital transformation initiatives, a principle that should guide data-driven decision-making and upskilling programs.

34%

of organizations agree that their employees understand the environmental impact along the value chain and have been trained in sustainable practices.

Collaborate to build sustainable and competitive supply chains

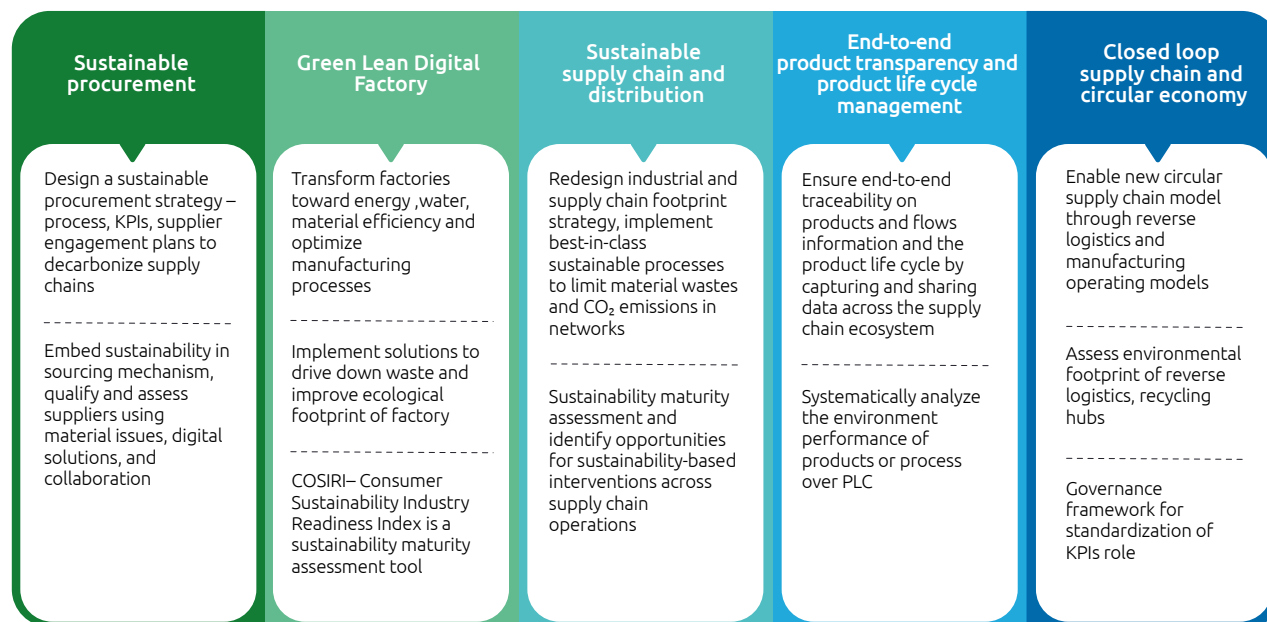
Organizations must align their strategies with long-term resilience and build trust with customers and shareholders.

Embed sustainability across the value chain

Organizations must integrate sustainability as a core operational value, promoting collaboration and ensuring transparency of sustainability efforts (see figure 31).

Figure 31.

Sustainable supply chains and operations



Source: Capgemini analysis.

Invest in climate tech to enhance traceability and transparency

Organizations must invest in solutions such as carbon capture and storage (CCS), hydrogen, and advanced battery technologies to accelerate supply chain decarbonization. According to estimates, global CCS investment is projected to reach \$80 billion by 2030 (capturing 270 million tons of CO₂) indicating the key role these solutions play in tackling emissions.⁶⁶ Such solutions, when coupled with advanced tech, can enable secure, decentralized ledgers that can verify the sourcing of raw materials, as well as assisting in understanding the carbon hotspots.

Our survey found that nearly three-quarters of organizations (73%) find sourcing sustainable, traceable raw materials increasingly challenging. AI can bridge this gap by increasing the traceability and ensuring authenticity of the sourced materials. Eszter Haberl adds: *“AI can automate a lot of communication and data collection, as well as data analytics with suppliers. It can then put a flashlight on those product carbon hotspots and then work on reducing these emissions.”*

For example, Everledger, a digital transparency organization, has collaborated with Ford to initiate a pilot project for a battery passport designed to track the life cycle of EV batteries. This initiative, which is part of the Global Battery Alliance, uses blockchain, AI, and auto-identification technologies to offer stakeholders essential data on a battery's origins and composition, promoting responsible sourcing and ethical recycling practices.⁶⁷

Set the stage for long-term sustainability

Proactively complying with all ESG regulations and guidelines not only reduces financial risks but also builds resilience in today's VUCA world. Supply chain and operations leaders face significant margin pressures and planetary risks across the value chain. Complex value chains present challenges to delivering Scope 3 decarbonization. Organizations must de-risk their ESG control tower, and operationalize supplier collaboration, sustainable planning, resource optimization, and traceability.

73%

find sourcing sustainable, traceable raw materials increasingly challenging.

“AI can automate a lot of communication and data collection, as well as data analytics with suppliers. It can then put a flashlight on those product carbon hotspots and then work on reducing these emissions.”

Eszter Haberl

Sustainability Director at Tenneco

Encourage cross-functional alignment and co-create solutions with suppliers

The supply chain must integrate functions, including procurement, manufacturing, R&D, logistics, and sales, in a cohesive system.

Maggie Cai, Associate Director of Supply Chain Strategy at Walmart, says: *"We have the goal of cutting one billion tons of GHG emissions by 2030. So, I believe there are a lot of forums being held and a lot of push from top down to all levels of the organization, by collaborating organization can achieve these goals."*

"We have the goal of cutting one billion tons of GHG emissions by 2030. So, I believe there are a lot of forums being held and a lot of push from top down to all levels of the organization, by collaborating organization can achieve these goals."

Maggie Cai

Associate Director of Supply Chain Strategy
at Walmart

Create cross-functional alignment and collaboration

Around 79% of organizations state close collaboration between various business functions to be necessary for effective implementation of AI agents/agentic AI within supply chain.

- 81% mention lack of awareness around potential use cases
- 70% cite lack of a clear governance model
- 72% cite lack of a clear business case/return on investment (RoI)

One of the primary challenges is the resistance both to new technology and transforming supply chains. To overcome this requires a significant shift in mindset and process transformation. We found 79% of organizations highlight reluctance from the workforce and risk of job displacement as key challenges for agentic AI. Organizations must overcome this resistance with strong leadership and sponsorship at the C-suite level, including CEOs and CFOs.

To accelerate the implementation of AI agents in the supply chain, organizations should consider taking the following steps:

- Engage with the wider areas of the business to create awareness of best practice playbooks, governance models,

and organizational structures that distinct business units can replicate. Identify governance models and mechanisms of AI adoption.

- Develop AI-ops infrastructure, AI architecture, integration tools, security, and the policies to deploy solutions in production processes.
- Create an AI-first approach infusing AI in all business processes and technology enablement.
- Test and then rapidly scale the AI transformational program across the organization through cross-functional, cross-business-unit collaboration.

Co-create solutions with suppliers and promote best practices

Tap into the ecosystem of technology providers and collaborate with suppliers and external partners to implement innovative industry solutions. Organizations and suppliers can work in tandem to develop and implement sustainable practices. In our survey, we found that only half of organizations are working with their Tier 1 suppliers to identify measures for reducing GHG emissions and ESG impact, leaving organizations with very low sustainability oversight of their Tier 1 suppliers (29%).

Organizations must partner with vendors to set clear goals. Such a collaborative approach ensures alignment and can develop mutually beneficial strategies. Joint innovation hubs and supplier development programs can facilitate

this. Through strategic partnerships such as that with Manufacture 2030, Ford is helping suppliers measure and reduce carbon emissions.⁶⁸ Ford is also a founding member of the First Movers Coalition, which is committed to near-zero carbon emissions for at least 10% of its aluminum and steel purchases by 2030. Similarly, in 2024 retailer H&M partnered with textile recyclers and consumers to repurpose 29.5% of its recycled materials (almost reaching its 30% target for 2025 one year early). This resulted in a 41% reduction in Scope 1 and Scope 2 GHG emissions and a 24% reduction in Scope 3 emissions.⁶⁹ Organizations can co-develop decarbonization roadmaps with their vendors to achieve common sustainability goals (CSGs).



“Building sustainable and competitive supply chains demands resilience, proactive risk management, and AI-powered data foundations—underpinned by cybersecurity, strong governance, and human-centered agentic AI. True transformation begins with cross-functional alignment and deep supplier collaboration.”

Volker Roelofsen

EVP, Group offer Leader Supply Chain Management and Procurement Europe, Capgemini

Conclusion

Organizations must embrace a cultural shift toward continuous innovation. The future of supply chains lies in using AI agents and Gen AI to drive automation, navigate uncertainty, and continuously innovate to meet the evolving demands of the market – all while carefully considering the sustainability aspect. The most successful organizations will be those that combine cost efficiency, risk management, advanced AI capabilities, and a holistic, agile approach.

But organizations must manage the inflated expectations surrounding AI and ensure that they are able to deliver tangible value. This requires striking a delicate balance between innovation and practicality, as well as a commitment to continuous improvement

and learning. Organizations must also foster a culture of sustainability throughout the value chain for long-term resilience.

This transformation is powered by a composable IT architecture, seamlessly integrating legacy systems, best-of-breed solutions, and collaborative data platforms for scalability and adaptability.

Organizations that effectively integrate these elements into their supply chain strategies will be better positioned to navigate the challenges of the future and deliver value to their consumers. The journey toward new-gen supply chain continues, and it will require continuous innovation, collaboration, and a commitment to sustainability.

Research methodology

To understand the maturity of new-generation supply chains across sectors, we carried out extensive research using both qualitative and quantitative methods. The study findings reflect the views of the respondents to our online questionnaire and are intended to provide directional guidance. Please refer to the methodology for details of respondents and get in touch with a Capgemini expert to understand specific implications.

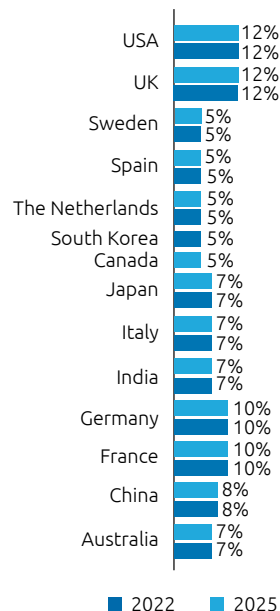
In-depth interviews

We conducted 15 in-depth interviews with experts from large organizations who are involved in the supply chain domain.

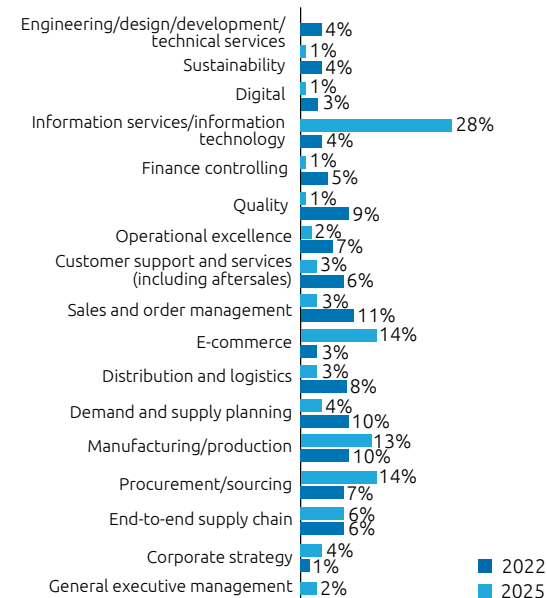
Executive survey

We surveyed 1,000 supply chain executives from large organizations across sectors. The global survey took place in March and April 2025. The distribution of selected respondents and their organizations is provided below.

Percentage of executives by location of headquarters of current organization

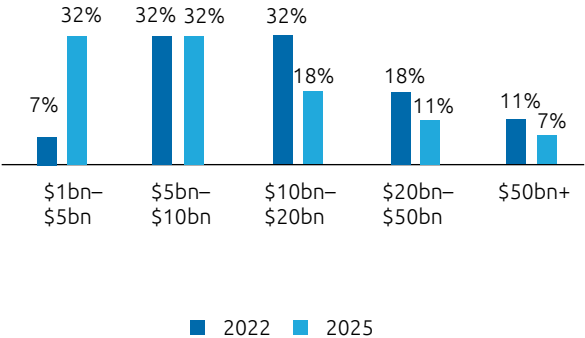


Percentage of executives by business function

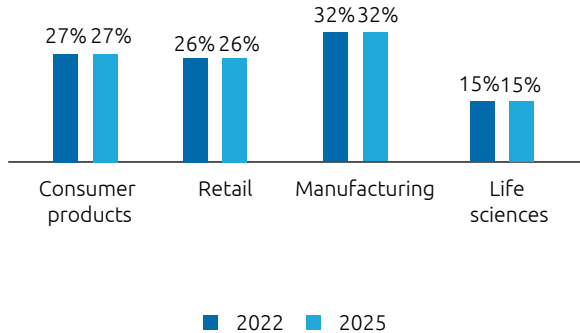


Source: Capgemini Research Institute, Intelligent supply chain research, August–September 2022, N = 1,000 executives, New-generation supply chain, March–April 2025, N = 1,000 executives.

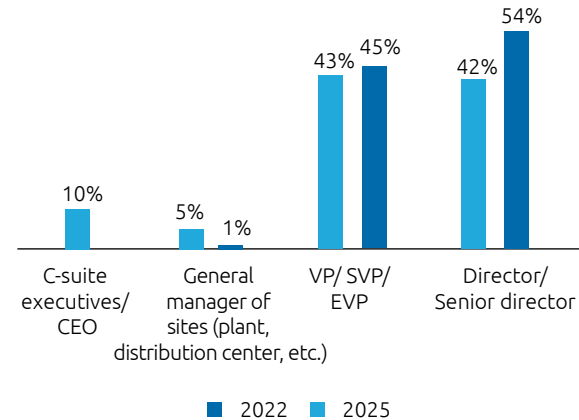
Percentage of executives by annual revenue of organization



Percentage of executives by sector



Percentage of executives by job title



Source: Capgemini Research Institute, Intelligent supply chain research, August–September 2022, N = 1,000 executives, New-generation supply chain, March–April 2025, N = 1,000 executives.



Appendix

Agentic AI use cases in supply chain analyzed in the executive survey

Engineering R&D
Help gather and analyze data for data-driven decisions
Identify the links to manage information flow across product lifecycle stages
Ensure products meet quality standards
Ensure products meet regulatory requirements
Planning
Monitor potential supply chain disruptions
Scenario creation and planning
Track KPIs and provide real-time insights
Simulate different scenarios and present appropriate information
Present various risk scenarios and suggest proactive mitigation strategies

Manufacture to deliver
Guide installers with the correct information
Oversee production processes for smooth operations
Help employees adapt to new technologies
Deliver
Analyze market demand, competitor pricing, and inventory levels in real time to identify patterns and trends that inform optimal pricing decisions
Real-time tracking of goods from suppliers to customers
Optimize routes by analyzing real-time data from traffic patterns and delivery schedule
Streamline the delivery process

Agentic AI use cases in supply chain analyzed in the executive survey

Sourcing and procurement

Help find the most suitable vendors

Perform due diligence of vendors

Streamline RFQs

Compress timelines

Supplier risk assessment

Evaluate adherence to sustainability standards

Evaluate multiple manufacturing locations across geographies

Customer service and order management

Generating customized quotes

Personalized selling journey

Help customers find suitable products or services

Address and resolve order-related issues

Sustainability

Prepare sustainability reports to track Scope 1, 2, and 3

Measurement and tracking of carbon footprint of supply chain activities

Minimize energy consumption

Optimize resource use and waste reduction

Implement circularity initiatives

Analytics

Analyze historical data, market trends, financial planning, and other relevant factors to predict future demand

Predictive maintenance of fleet and manufacturing equipment

Analyze transaction data and identify patterns that indicate potentially fraudulent activities

Agentic AI use cases in supply chain analyzed in the executive survey

Generic
Automate communication and data exchange with vendors and stakeholders
Enhanced cybersecurity
Training of workforce on new skills
Summarizing documents/data
Generate comprehensive reports
Documentation, contract renewal
Logistics/operations
Inventory optimization and demand forecasting using real-time data
Predictive analytics for supply chain planning
Automated inventory tracking in warehouses
Predictive maintenance
Reduce transportation costs through route optimization
Optimize delivery
Enhance real-time tracking and visibility of shipments

Risk management and reporting
Supplier financial health monitoring
Geographic risk assessment
Supply disruption prediction, including early warning system for supplier issues
Compliance monitoring
Performance trend analysis
Real-time risk mitigation
Enhanced cybersecurity
Invoice processing
Automate reporting for regulatory disclosures
ESG/sustainability
Automate tracking of carbon emissions data
Scope 3 emissions reporting
Customer service
Price optimization by analyzing customer demand, competitor pricing, and market conditions to generate optimal pricing strategies
Augmented operators

Gen AI use cases in supply chain analyzed in the executive survey

Logistics/operations

Inventory optimization and demand forecasting using real-time data

Predictive analytics for supply chain planning

Automated inventory tracking in warehouses

Predictive maintenance

Reduce transportation costs through route optimization

Optimize delivery

Enhance real-time tracking and visibility of shipments

Risk management and reporting

Supplier financial health monitoring

Geographic risk assessment

Supply disruption prediction, including early warning system for supplier issues

Compliance monitoring

Performance trend analysis

Real-time risk mitigation

Enhanced cybersecurity

Invoice processing

Automate reporting for regulatory disclosures

ESG/sustainability

Automate tracking of carbon emissions data

Scope 3 emissions reporting

Customer service

Price optimization by analyzing customer demand, competitor pricing, and market conditions to generate optimal pricing strategies

Augmented operators

Sustainable supply chain use cases analyzed in the executive survey

Product design and development
Product is designed with circular/cradle-to-cradle approach (e.g., maximum material recycling, right-to-repair)
Developing products with reduced environmental impact (GHG emissions, water, biodegradable formulations)
Sustainable design of technology hardware and software products
Bring product information on origins, composition, and manufacturing processes
Responsible sourcing
Sourcing from certified and sustainable sources (fair trade labeling, Rainforest Alliance, Deforestation-free supply)
Traceability tools enhance visibility across the supply chain from origin to final production
Prioritization on local sourcing of raw materials versus international suppliers
Ethical sourcing practices (labor practices, fair and living wages, supplier diversity)
Data-driven supplier selection, evaluation and regular audits based on sustainability – criteria (environmental impact, energy efficiency, and social responsibility)

Sustainable supply chain use cases analyzed in the executive survey

Manufacturing and operations
Powering manufacturing plants with renewable energy (ex: wind, solar, etc.)
Using recycled and/or easily recyclable material in manufacturing
Manufacturing and operations use forecast analysis to minimize overproduction, waste, and inventory
Warehousing operations implement energy-efficient systems to maximize resource waste and reduce environmental impact through responsible disposal of waste/by products produced
Water stewardship (e.g., recycling and reusing water, installing water treatment plants)
Providing safe working conditions for employees
Conform to Ecodesign for Sustainable Products Regulation
Digital product passport
Logistics and transportation
Route optimization (FTL, full truck load) for reducing miles traveled/emissions produced
Using EVs for freight transportation to stores/distribution centers
Development of end-to-end transparency and traceability of products and shipments
The company monitors and maintains transportation assets using predictive analytics to enhance efficiency
Reverse logistics operations consider circular economy principles, focusing on product recovery and recycling
Supporting/using green corridors

Sustainable supply chain use cases analyzed in the executive survey

Packaging
Packaging materials are designed to be reusable and recycled at end-of-life
Focus on minimal packaging and light-weighting
Using bio-degradable/compostable packaging
Carbon footprint
Map the carbon footprint in raw materials, energy, logistics, and delivery
Measure carbon footprint from purchased goods/services, as well as end customer usage/disposal
Internal carbon pricing to aid decision-making for new projects
Transparency and compliance
Bring product information on origins, composition, and manufacturing processes
Measure sustainability credentials of products/services (such as by communicating global GHG footprint, water use, responsible sourcing, etc.)
Ethical and responsible compliance requirements are integrated into upstream and downstream contracts
Preferred partners program in place to encourage supplier collaboration, and penalization is included in the contract, for noncompliance with sustainability-related clauses
Making sustainability-related information available to customers (e.g., source of ingredients/raw material, production location, local sourcing, labor conditions at the suppliers, etc.)
Traceability

Sustainable supply chain use cases analyzed in the executive survey

Technology
Use blockchain/smart contracts to make our supply chain more sustainable
We use tools such as a supply chain control tower for monitoring and measuring our ESG metrics
We use emissions data to continuously improve our operations and infrastructure
Technology serves to automate sustainability reporting, enabling real-time tracking and communication of ESG metrics across sourcing and supply chain activities
Others
Consumer education on sustainable practices such as recycling
Upcycling unsold inventory/used products/old packaging back into the value chain
Zero-landfill policy
End-of-life product management
Relying on compensation schemes such as carbon credits, etc.

The following questions may be used to identify the level of preparedness to be a new-gen supply chain leader. Please rate the following statements on a scale of 1–5 where 5 – Strongly agree, 4 – Agree, 3 – Neutral, 2 – Disagree, 1 – Strongly disagree

Agility
We can implement quick and cost-effective means to adjust to short-term disruptions/fluctuations in our supply chain
We focus on managing risks in the entire supply chain
We have made great progress in reducing our supply chain operations cost
We are considering deep changes to the new uncertainties/changing world order (e.g., changing supplier locations, bases, etc.)
We are actively working to ensure vertical integration and control of our suppliers from Tier 1 to Tier N
We are well equipped to balance just-in-case resilience as well as just-in-time efficiency
We have automated order to delivery create solutions and automation for efficient customer experiences and operations
We have optimized planning, stock levels, and enterprise performance
We have implemented smart order management, agile warehousing, through transportation and last mile

Sustainability
Prepare sustainability reports to track Scope 1, 2, and 3
We have a comprehensive sustainability strategy in place for our supply chain
Budgets are allocated to sustainability projects, and a multidisciplinary team is accountable for the execution of the sustainability strategy
KPIs are defined and monitored for tracking sustainability performance across the supply chain, including specific targets for reducing carbon emissions in Scope 1, 2, and 3, promoting ethical labor practices, and responsible sourcing across the value chain
Potential ESG risks have been identified throughout the supply chain, including climate change impacts, human rights violations, and regulatory noncompliance, and mitigation strategies are anticipated
Our supply chain sustainability efforts are audited by third parties periodically and disclosed publicly

AI

Gen AI is helping us predict demand fluctuations and optimize inventory levels

Gen AI is enhancing the assessment and management of supplier risks

Our supply chain is already realizing benefits from generative AI

Agentic AI systems significantly boost productivity in our organization

AI agents help our workforce focus on more value-added activities within supply chain management

AI agents drive autonomy in our supply chain process with limited human intervention

Score level of preparedness to be a new-gen supply chain leader

- **Greater than 100:**
Very high level of preparation
- **75–100:**
High level of preparation
- **50–75:**
Medium level of preparation
- **25–50:**
Low level of preparation

References

1. Capgemini Research Institute, Top tech trends of 2025: AI-powered everything, January 2025.
2. Ibid.
3. Ibid.
4. Ibid.
5. Ibid.
6. FreightFox, "Supply chain disruptions in 2025: Causes, impact, and solutions," accessed in June 2025.
7. SAP, "10 supply chain risks and how to mitigate them," April 3, 2023.
8. GEP, "Panama Canal drought: The impact on global shipping worsens," March 4, 2024.
9. GEP, "How Los Angeles wildfire can affect supply chains," January 24, 2025.
10. TechTarget, "7 generative AI use cases in supply chain," February 28, 2024.
11. Capgemini Research Institute, Generative AI in organizations, July 2024.
12. SAP, 10 supply chain risks.
13. Capgemini Research Institute, A world in balance 2024, 2024.
14. Accountancy Europe, "Omnibus explained: key changes to CSRD," March 2025.
15. Freightos, "The impact of the Red Sea Crisis on global shipping and trade," October 30, 2024.
16. Capgemini Research Institute, Top Tech Trends.
17. TimesPro, "11 common supply chain management issues and their solutions," November 4, 2024.
18. UNCTAD, "High freight rates strengthen global supply chains, threaten vulnerable economies," October 22, 2024.
19. Association for Supply Chain Management, "The supply chain profession in 2024: Salaries and careers across the globe," 2024.
20. IADB, "The price of passage: Red Sea tensions and the ripple effect," January 30, 2025.
21. Fractory, Top supply chain challenges.
22. S&P Global, "Labor: A critical component of supply chains under growing pressure," February 21, 2024.
23. Enterprise Management 360, "Top 10 supply chain attacks: what you need to know," December 3, 2024.
24. Keepnet, "Why are supply chain attacks increasing?" December 16, 2024.
25. Extensiv, Supply chain challenges.
26. Conexiom, "Supply chain automation: What it is and how to implement it," October 23, 2024.
27. FarEye, "What is logistics optimization: Key components, techniques and benefits," January 3, 2025.
28. Young Urban Project, "What is product mix? Strategies and examples for growth," November 8, 2024.
29. Supply Chain Digital, "Blue Yonder takes Heineken's demand planning to next level," May 20, 2024.
30. Supply Chain Dive, "AI, automation enrich Kraft Heinz's supply chain," March 17, 2025.
31. SupplyChain247, "How DHL achieved 50% higher order accuracy with Locus Robotics AMRs," accessed in May 2025.
32. DHL, "DHL supply chain continues to innovate with orchestration, robotics, and AI in 2024," February 6, 2024.
33. Indian Transports & Logistics News, "How Mercedes-Benz is using AI to manage supply-chain disruptions," December 4, 2024.
34. The Register, "Software fees to make up 10% of John Deere's revenues by 2030," September 12, 2022.
35. C. H. Robinson, "Smarter supply chains start with Navisphere," accessed in June 2025.
36. AstaZenca, "Health systems resilience," accessed in June 2025.
37. US Department of Commerce, "Pillar II – Supply Chains," accessed May 2025.

38. Fractory, "Top supply chain challenges in 2025," January 14, 2025.
39. IMF Blog, "Red Sea attacks disrupt global trade," March 7, 2024.
40. IADB, "The price of passage: Red Sea tensions and the ripple effect," January 31, 2025.
41. Supply Chain World, "6 key challenges in global supply chain management," September 30, 2024.
42. International Renewable Energy Agency, "Geopolitics of the energy transition: Critical materials," accessed May 2025.
43. UNICARGO, "The impact of geopolitical events on global supply chains," October 28, 2024.
44. DiploFoundation, "The geopolitics of critical raw materials: Who controls the future?" February 13, 2025.
45. Blue Yonder, "Create an agile supply chain despite tariffs," April 8, 2025.
46. Darden School of Business, "Supply chains explained: How they work and why tariffs can strain them," March 11, 2025.
47. Orderful, "Tariff impact on supply chain: how will 2025 tariffs affect the economy and logistics?" April 16, 2025.
48. WEF, "Why AI agents will be a global trade game changer for SMEs," February 21, 2025.
49. PR Newswire, "Alibaba's Accio AI search engine hits 500,000 SME user milestone," January 6, 2025.
50. CNBC, "Amazon is using generative AI to drive more same-day shipping using smarter robots and better routes," September 17, 2024.
51. TechBullion, "Amazon enhances same-day shipping with AI," September 17, 2024.
52. AIMultiple, "10 Generative AI supply chain use cases in 2025," May 15, 2025.
53. Capgemini Research Institute 2025, Driving business value through sustainability, April 2025.
54. Sustainable Packaging News, "SGD Pharma advances sustainable manufacturing and supply chain innovation at DCAT Week 2025 in New York," March 2025.
55. Jones Elite Logistics, "Maersk's sustainable supply chain initiatives," April 2025.
56. EarthScan, "Infographic: How climate change is impacting your supply chain," July 2024.
57. AuthentifyIT, "How Pangaia uses Digital Product Passport for sustainable innovation," September 2024.
58. Bosch, "Measure on," accessed May 2025.
59. Vorecol, "Sustainable supply chains: Best practices and case studies," August 2024.
60. Renascence, "How Patagonia enhances customer experience (CX) with a commitment to sustainability," September 2024.
61. Hawk Ridge Systems, "Driving sustainability in 3D printing: HP's commitment to a greener future," December 2024.
62. PLSLogisticsServices, "Multimodal transport: What is multimodal shipping?" accessed May 2025.
63. Track-pod, "Multimodal transportation: Definition, challenges, and solutions," June 20, 2024.
64. Shiprocket, "Exploring multimodal transportation: A comprehensive guide," May 21, 2024.
65. Capgemini, "Revolutionizing supply chain risk management with Capgemini and Prewave," accessed June 2025.
66. Carbon Credits, "Global Investment in CCS Surges Toward \$80 Billion as Climate Goals Drive Demand," June 2025.
67. Bluestone PIM, "10 examples of Digital Product Passport-like Initiatives," November 2024.
68. Emobility, "Ford accelerates carbon neutrality goals with renewable energy and supply chain initiatives," September 2024.
69. H&M, "H & M Hennes & Mauritz AB publishes its annual and sustainability report 2024," March 2025.

Authors

Meet the experts



Volker Roelofsen

EVP, Group offer Leader Supply Chain Management and Procurement Europe, Capgemini
volker.roelofsen@capgemini.com

Volker Roelofsen is a senior expert with over 28 years of experience in automotive supply chain management and procurement. He has worked with clients like Mercedes Benz / Daimler, Continental, BMW and Bosch, focusing on strategy, network optimization, and inventory management. Volker helps clients shape successful strategies, achieve transformation, and meet sustainability goals.



Vincent Charpiot

Head of Group Sustainability Accelerator, Capgemini
vincent.charpiot@capgemini.com

Based in New York, Vincent has over 25 years of experience supporting global organizations across industries on their digital transformations and more recently, on their sustainability journeys as Capgemini Group Sustainability Business Accelerator head since 2023. Vincent graduated from EM Lyon in France and started his career in the technology industry in the UK and France, before joining Capgemini in 2008. His passion is to help companies leverage innovative digital and engineering solutions to deliver sustainable and business outcomes.



Idriss Elasri

Chief Core Engineering Officer, Capgemini Engineering
idriss.elasri@capgemini.com

Idriss Elasri is an experienced executive and board member with 25 years of leadership in industry and services, driving transformative growth and innovation across sectors in Europe and Africa. He currently serves as Chief Core Engineering Officer at Capgemini, a global role encompassing 22,500 engineers and scientists across 20 countries, spanning Product & Systems Engineering, Supply Chain, Manufacturing, and Operations. Passionate about innovative engineering, clean technologies, and inclusive futures, he drives strong, sustainable growth and 360° performance by leveraging industrialization, artificial intelligence, and sustainability.



Phil Davies

Global Head of Supply Chain, Capgemini Invent
phil.davies@capgemini.com

Phil has over 25 years supply chain experience in both industry and consulting. He has worked with many global industry leaders to help them transform their supply chains, bringing together business and technology to unlock value and deliver results.

Authors

Meet the experts



Nitin Dsouza

VP, Supply Chain and Engineering, Capgemini Invent Intelligent Industry - Supply Chain
nitin.dsouza@capgemini.com

Nitin Salvio Dsouza, is an avid student of AI in complex system dynamic domains such as supply chains and engineering. As a Vice President of Supply Chain and Engineering at Capgemini Invent UK, he helps clients to leverage the potential of both Agentic AI and traditional AI. His expertise spans various sectors, including energy, aerospace, and consumer products and retail.



Emmanuel Bischoffe-Cluzel

Vice President and Sustainability Lead, Global Automotive Industry, Capgemini
emmanuelle.bischoffe-cluzel@capgemini.com

Emmanuelle spent 30 years with a global automaker and a supplier of green steel automotive products. Senior roles including design, manufacturing, sourcing, procurement, finance and business development. She gained four patents for inventions to improve engine assembly, including the use of aluminum components. She holds engineering diplomas from the Ecole Nationale Supérieure de Mécanique et d'Aérotechnique and from RWTH Aachen University.



Haresh Panjavani

Senior Director, Head of Supply Chain Consulting, Capgemini Invent India
hareshkumar.panjavani@capgemini.com

Haresh helps global clients reimagine supply chain and manufacturing operations by integrating digital AI technologies, enhancing agility, and driving sustainable value. His strength lies in connecting strategy with execution—delivering innovation at scale through a blend of domain depth, technology acumen, and collaborative leadership.



Roshan Batheri

Senior Director – Client Partner and Automotive Supply Chain and Manufacturing Offer Leader, Capgemini
Roshan.batheri@capgemini.com

Roshan is a seasoned senior executive with over 23 years of global leadership experience in automotive strategy, supply chain transformation, and industry innovation. As a Senior Director, he has consistently driven strategic growth and operational excellence across complex, multinational environments. Roshan's expertise spans P&L management, client partnerships, IT transformation, and turnaround program leadership. His visionary approach to co-development and accelerator-driven innovation has positioned him as a trusted advisor and change agent in the automotive and manufacturing sectors.

Authors

Meet the Capgemini Research Institute



Jerome Buvat

Head of the Capgemini Research Institute
jerome.buvat@capgemini.com

Jerome is the head of the Capgemini Research Institute. He works closely with industry leaders and academics to help organizations understand the business impact of emerging technologies.



Subrahmanyam KVJ

Senior Director,
Capgemini Research Institute
subrahmanyam.kvj@capgemini.com

Subrahmanyam is a Senior Director at the Capgemini Research Institute. He loves exploring the impact of technology on business and consumer behavior across industries in a world being eaten by software.



Sumit Cherian

Program Manager, Capgemini
Research Institute
sumit.cherian@capgemini.com

Sumit is a Program Manager at the Capgemini Research Institute. He is an avid follower of how technological innovations disrupt the business landscape and works with industry leaders to help organizations understand the impact of technology innovations.



Amrita

Senior Manager, Capgemini
Research Institute
amrita.a.amrita@capgemini.com

Amrita has extensive experience in market research and consumer insights across industries and geographies. Her doctoral work was an amalgamation of key interests, exploring consumer behavior and digital payments, with focus on mobile wallets.



Navya Atmakuri

Senior Consultant, Capgemini
Research Institute

Navya.atmakuri@capgemini.com

Navya is a research consultant at the Capgemini Research Institute. She is passionate about sustainability and works closely with industry leaders and academics to drive impactful research and innovative solutions.

We'd like to thank the many industry executives who shared their valuable insights with us.

Greg Arnold

Director - Technical Functions
Bosch in North America

Atul Jagtap

Manager – Digitalization & AI Innovation
Bosch in North America

Arthur Edge

Senior Director, Global Supply and
Strategy at AstraZeneca

Maggie Cai

Associate Director of Supply Chain
Strategy at Walmart

Alfredo Vidal

Director Risk Management – Commercial
Supply Chain at a multinational and industry
leading biopharmaceutical organization

Eszter Haberl

Sustainability Director at Tenneco

Joachim Wessels

Until recently of Deutsche Post DHL

The key contributors would like to thank

Serygey Patsko, Frank Arnold, Sonali Nimkar, Arne Roßmann, Ralph Schneider-Maul, Frank Arnold, Janicke Hægh Asakskogen, Gry Helene Pettersen, Pritish Mahajan, Jan Kazen, Tobias Weisel, Prashant Sawant, Henriette de Proost, Marek Sowa, Brian Eden, Jennifer Carson, Gilles Bacquet, Mayank Sharma, Kees Jacobs, Sven Dahlmeier, Jörg Junghanns, Johanna Gallus, Mariam BELASFAR, Remi SOULIGNAC, Milind Dumbre, Achim Himmelreich, Brian Eden, Daphnee Bouillard, John Bakker, Carlos Garcia Santos, Gry Helene Pettersen, Baljeet Yadav, Santosh Soni, Philippe THUILLIER, Christine Svitila, Lindsey Mazza, Anagha Kalvakaalva, Sanjeev Singh, Laurent Perea, Pakkiaraj Arumugam, Christophe VIDAL, Carlos Beviá Alemany, David Luengo Ruiz, Laurence Noël, Gert-Jan Schoppert, James Mephram, Bastian Thoele, Laurent Perea, Silvia Burgio, Kris Boros, Anuraag Bharadwaj, Anthony DeMarco, Bridget N Pietsch, Audrey BESSAC-LAMAT, Elisabetta Spontoni, Raveena Sharma, Dominique Banon, Punam Chavan, Suparna Banerjee, Jaydeep Neogi, and Manish Saha for their contributions to this research.

About the Capgemini Research Institute

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. The Institute was ranked #1 in the world for the quality of its research by independent analysts for six consecutive times - an industry first.

Visit us at
www.capgemini.com/researchinstitute/

For more information, please contact:

Global

Jeff Langenfeld

North America Group Offer Leader for Intelligent Supply Chain
jeff.langenfeld@capgemini.com

Kris Boros

North America Group Offer Leader for Intelligent Supply Chain
kris.boros@capgemini.com

Volker Roelofsen

EU Group Offer Leader for Intelligent Supply Chain
volker.roelofsen@capgemini.com

Phil Davies

Global Head of Supply Chain, Capgemini Invent
phil.davies@capgemini.com

Intelligent Supply Chain

Build a resilient, responsive, end-to-end transparent Supply Chain, propelled by Artificial Intelligence, optimization, graph analytics and interactive persona-based UI

In today's rapidly evolving world, supply chains must move beyond traditional efficiency models to become resilient, sustainable, and agile. Global leaders are transforming their supply chains to address geopolitical disruptions, inflation, supply shortages, and growing ESG mandates. Capgemini's Intelligent Supply Chain enables organizations to anticipate disruptions, optimize costs, and enhance customer experiences by leveraging cutting-edge technology and data-driven insights. Key capabilities include:

1. AI-Powered Forecasting & Demand Planning – Enhancing accuracy through predictive analytics.
2. Real-Time Supply Chain Control Towers – Providing end-to-end visibility and data-driven decision-making.
3. Automated Order Fulfillment & Logistics – Streamlining supply chain execution for efficiency.
4. 360° Supplier Collaboration – Strengthening relationships, reducing risks, and improving responsiveness.
5. Data-Driven Operations – Ensuring transparency and actionable insights across the supply chain.
6. Sustainability & ESG Compliance – Reducing CO₂ emissions, promoting circular economy principles, and embedding responsible sourcing.
7. Future-Ready Workforce Enablement – Equipping talent with digital and AI-powered supply chain expertise.

This transformation is powered by a composable IT architecture, seamlessly integrating legacy systems, best-of-breed solutions, and collaborative data platforms for scalability and adaptability. With 14,500+ global experts, Capgemini delivers the technology, expertise, and strategic foresight to help organizations build future-proof supply chains that are resilient, intelligent, and sustainable. The future of supply chains is no longer just about efficiency—it's about thriving in an unpredictable world with a competitive edge.

More Capgemini Research Institute publications



Embracing a brighter future:
Investment priorities for 2024



Driving business value through
sustainability



Supply chain in consumer products
and retail



Top Tech Trends of 2025



Investment priorities for 2025



Reindustrialization of Europe and
the US



The battery revolution



Automotive supply chain: Pursuing
long-term resilience



Intelligent supply chain

Subscribe to latest research from the Capgemini Research Institute



Receive copies of our reports by scanning the QR code or visiting

<https://www.capgemini.com/capgemini-research-institute-subscription/>

Capgemini Research Institute

* Fields marked with an * are required

First Name *

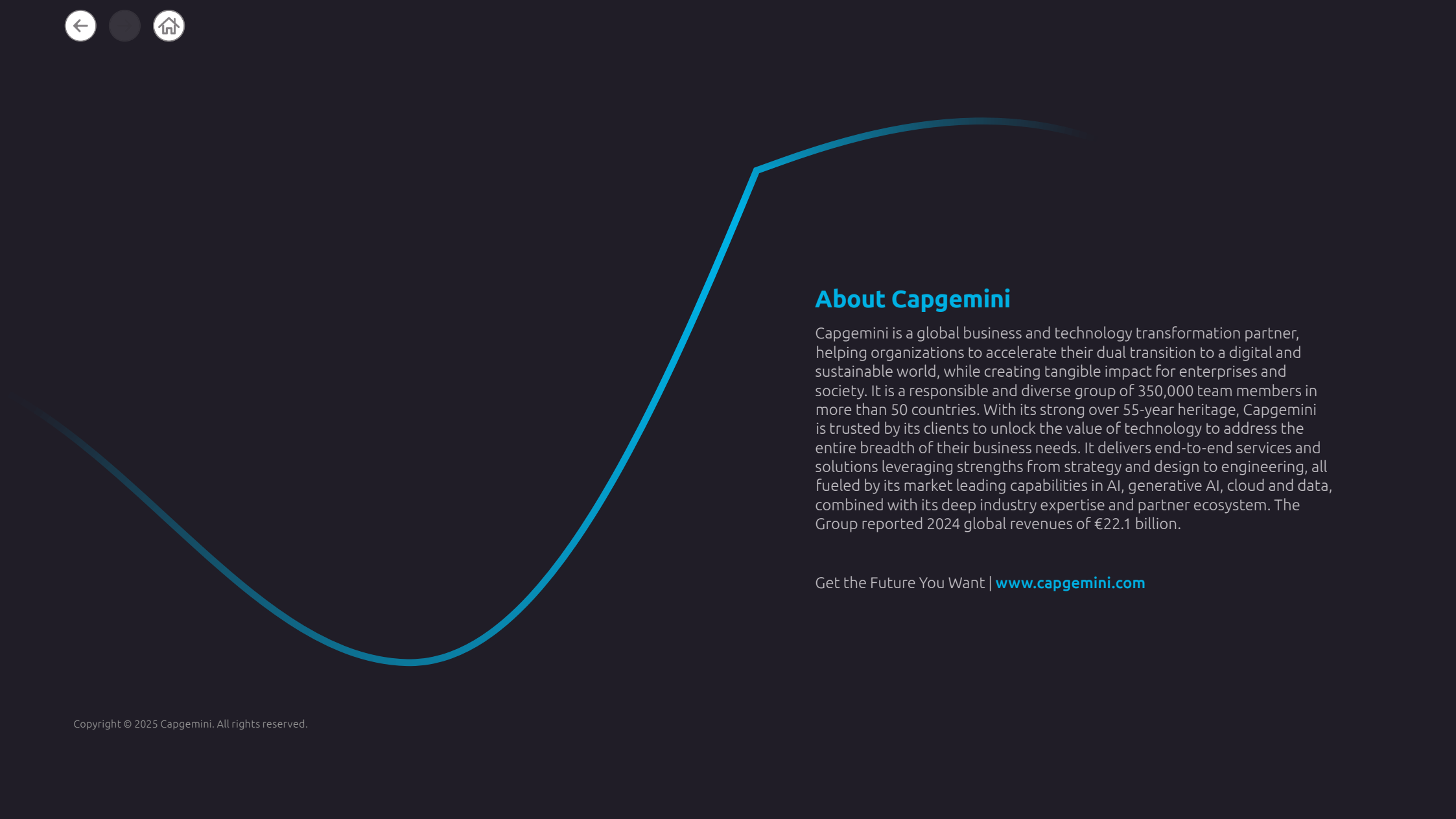
Last Name *

Email *

☐ By submitting this form, I understand that my data will be processed by Capgemini as indicated above and described in the [Terms of use](#).

Submit





About Capgemini

Capgemini is a global business and technology transformation partner, helping organizations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 350,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, generative AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2024 global revenues of €22.1 billion.

Get the Future You Want | www.capgemini.com