IDC FutureScape

IDC FutureScape: Worldwide Supply Chain 2024 Predictions

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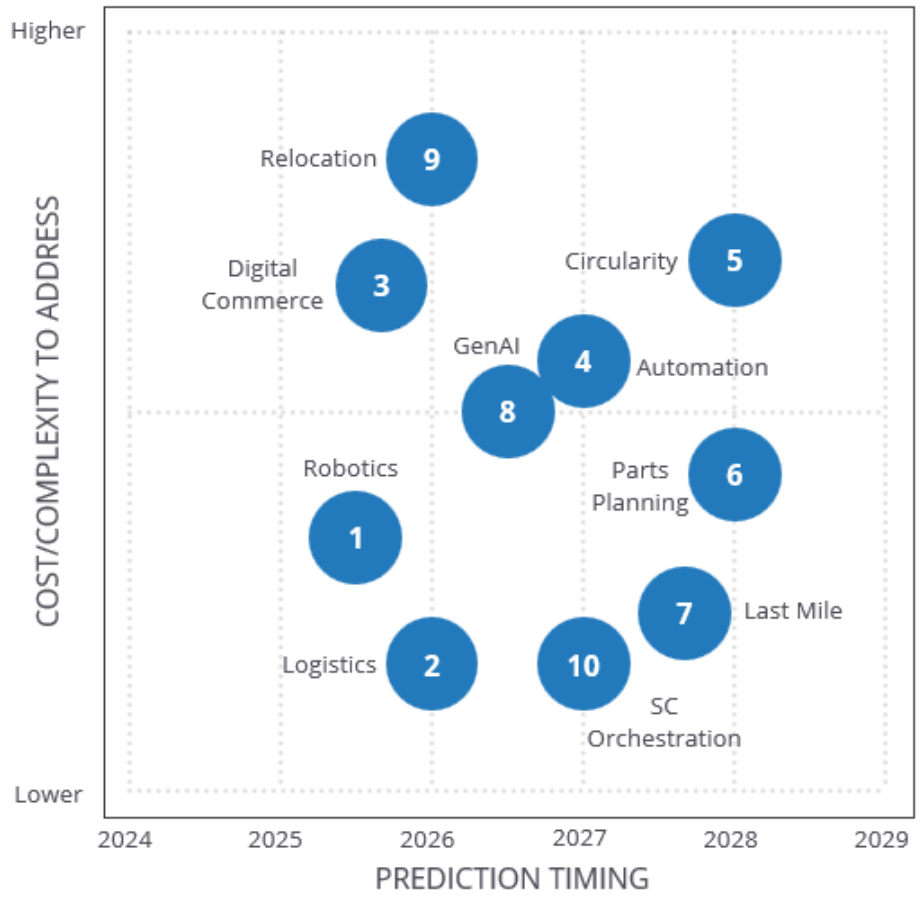
IDC FUTURESCAPE FIGURE

FIGURE 1

IDC FutureScape: Worldwide Supply Chain 2024 Top 10 Predictions



Note: Marker number refers only to the order the prediction appears in the document and does not indicate rank or importance, unless otherwise noted in the Executive Summary.

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EXECUTIVE SUMMARY

Supply chains have had both the blessing and pressure of coming through multiple years of supply disruptions and demand volatility. The perceived strategic value of end-to-end supply chains may never have been higher than it is at this moment in history. This places pressure on supply chains to evolve quickly but carries the benefit of prioritized investment in capabilities, processes, and people.

IDC sees a few consistent topics which, while not new to supply chains, have taken on added weight in recent years. In no order, these are the ever-present search for efficiency (cost, sustainability, performance), resiliency (responsiveness, visibility, agility), and sophistication (automation, artificial intelligence/machine learning [AI/ML], optimization).

These developments and pressures are all stacking on top of a recent history of digital transformation in supply chains. Companies are at varying levels of maturity in their digital journey requiring continued investment in their organizational and technological capabilities.

These themes show up throughout our worldwide supply chain top 10 predictions for 2024. Sustainability, AI/ML, optimization models, leveling up organizational abilities, balancing cost and service, reliability, regulations, and more all seem woven throughout the predictions. These predictions span multiple value chains. This IDC study shares the top 10 predictions and underlying drivers that we expect to impact supply chain IT investments in 2024 and beyond. Technology leaders and their counterparts in the line-of-business (LOB) operations can use this document to guide their IT strategic planning efforts.

In this study, IDC provides its top 10 predictions for supply chains with an analysis that covers a five-year period. The predictions are designed to provide organizational decision makers with a call-to-action investment plan with respect to these technologies and related supply chain processes. Over the next few years, we believe some of the most notable changes in supply chains will be the following:

- **Prediction 1:** By 2025, 40% of G2000 companies will implement broad robotics automation to improve order fulfillment speed and accuracy, resulting in increased pick speed of 10% and reducing pick errors by 1–2%.
- **Prediction 2:** By 2026, 50% of logistics teams will have deployed advanced visibility, enabling AI/ML analytics insight generation that optimizes performance, resulting in a 3% savings to logistics spend.
- **Prediction 3**: By 2026, 75% of G2000 organizations will have a digital commerce platform in place for ecosystem operation, driving a 10% higher data capitalization rate and improving customer retention by 20%.
- **Prediction 4**: By 2027, 90% of G2000 organizations will augment operational roles with automation technology, elevating employee engagement and unlocking a 30% increase in worker efficiency.
- **Prediction 5**: By 2028, 50% of G2000 manufacturers will operationalize circular economy principles to improve availability of strategic/direct materials and improve supply reliability by 15%.
- **Prediction 6**: By 2027, 65% of G2000 companies will look to autonomous service parts planning to ensure mean time to repair can be improved and ensure customer or operator assets are productive.

- **Prediction 7**: By 2027, increased planning and execution integration, nearshoring, improved inventory allocation, AI-based ecommerce, and fulfillment optimization will improve last-mile profitability by 15%.
- **Prediction 8**: By 2026, half of G2000 companies will use GenAI tools to support core supply chain processes, as well as dynamic supply chain design and will leverage AI to reduce operating costs by 5%.
- **Prediction 9**: By the end of 2025, 25% of G2000 companies will have relocated final assembly capabilities closer to demand, resulting in a 10% reduction in overall logistics costs.
- **Prediction 10**: By 2028, 35% of G2000 companies will use supply chain orchestration tools integrating key suppliers/customers that include digital twin capabilities, improving supply chain responsiveness by 15%.

This IDC study provides companies across all industries with the top 10 predictions and underlying drivers that we expect to impact IT investments in supply chains in 2024 and beyond. Technology leaders and their counterparts in the line-of-business (LOB) operations can use this document to guide their IT strategic planning efforts.

According to Eric Thompson, research director, IDC's Worldwide Supply Chain Planning, "Supply chains continue to face the pressures of global macroeconomics, a recent history of disruptions, elevating consumer relationship requirements, and looming regulatory mandates. In this backdrop, technological advancements in AI/ML, integrated operations, supply chain orchestration and visibility, and optimization models are all seeing increased strategic prioritization."

IDC FUTURESCAPE PREDICTIONS

Summary of External Drivers

- **AI everywhere** – Generative AI takes the spotlight
- **The drive to automate** – Maximizing efficiency and new opportunities
- **Global supply chain resiliency** – Push for diversification
- **The digital business imperative** – Competitiveness and outcomes
- **Dynamic work and skills requirements** – New work mode era
- **Operationalization of ESG** – Measuring and implementing sustainability

Predictions: Impact on Technology Buyers

Prediction 1: By 2025, 40% of G2000 Companies Will Implement Broad Robotics Automation to Improve Order Fulfillment Speed and Accuracy, Resulting in Increased Pick Speed of 10% and Reducing Pick Errors by 1-2%

As robotics technology has both improved and become less costly, supply chain organizations are starting to look at robots/cobots and so forth as viable alternatives to human labor, particularly for rote, repetitive tasks. IDC does not view robotics as a people replacement, though in some cases, with certain roles that may be true; rather we think of robotics as enhancing people, giving them space to do the things that people do well.

Along with the factory floor, warehouse operations are a growing use case for robotics, particularly as the percentage of full pallet pick declines in favor of cases, and in some instances, unit pick. Personalization, and growth of ecommerce, means that the "halcyon" days of full pallets on full trucks

are giving way to cases/items shipping via parcel post. Warehouses and warehouse operations must adapt to these changing market dynamics, with new technologies among the most opportunistic of those changes. Coupled with the challenges supply chain organizations have had over the past few years in finding people to work in the warehouse, the emergence of robotics, and increasingly robotics as a service, is not surprising. In addition, as companies have been forced to increase hourly rates for hourly/temporary labor, the economics for robotics become more attractive.

The warehouse is governed broadly by two things: performance and efficiency. They must meet the demand the supply chain places on them, and they must do it cost efficiently. Robotics can help deliver both. If robotics is not viewed as being cost efficient, it will never get the chance to show what it can do. Fortunately, that is not the case and IDC expects that as robotics technology gets more broadly deployed across warehouse operations, supply chains will see the picking process be both faster and more accurate.

Associated Drivers

- **The drive to automate** – Maximizing efficiency and new opportunities
- **Global supply chain resiliency** – Push for diversification
- **The digital business imperative** – Competitiveness and outcomes

IT Impact

- It is a good practice to be mindful of integration of warehouse robotics alongside a warehouse management system or warehouse execution system to see its true value.
- The implementation of robots and software can be challenging. Finding the correct robotics partner along with a systems integrator will yield the best results and fully optimize robotics automation capabilities.
- Data management will become a vital component when utilizing robotics as the deployment of robots generates a vast amount of data. Scalable IT systems are needed to collect, process, and analyze data to optimize operations.

Guidance

- Identify activities that are currently being performed manually that could be automated. This will enable the identification of potential bottlenecks in the existing process and of the areas where improved automation could increase operational performance.
- Improve data collection. Warehouse performance can have a significant impact on overall business performance since many individuals in the organizations rely on the data from the warehouse to execute their tasks.
- Understand the limitations of the current system. IT systems often lack the flexibility and configurability to support dynamic changes in business processes and emerging technologies. It is important to consider these limitations when developing the company's new systems to ensure that they will support the future requirements of the business and will meet growth needs.

Prediction 2: By 2026, 50% of Logistics Teams Will Have Deployed Advanced Visibility, Enabling AI/ML Analytics Insight Generation That Optimizes Performance, Resulting in a 3% Savings to Logistics Spend

Transportation and logistics teams are tasked with delivering more both resilient and efficient services. A series of disruptive events over recent years has teams focused on building more resilient transportation networks that can support increasingly diverse supply chain strategies. Flexible

transportation solutions have become a top priority for logistics teams as they work to become more. At the same time, global economic conditions are forcing teams to reconcile these efforts with the need to create efficiencies to eliminate waste and control costs.

The technology that enables teams to effectively approach and balance resiliency and efficiency is increasingly in demand. The importance of being able to see into and across all logistics activities has become business critical, in terms of both to become more nimble in the face of changing conditions in a live environment and to facilitate better planning that generates efficiencies.

Speed to decision is facilitated once advanced analytics capabilities, artificial intelligence, and machine learning are incorporated. These technologies augment supply chain practitioners' productivity, particularly planners and schedulers, whose scarcity has been identified as the top long-term risk to supply chains. Analytics technology complements their expertise, allowing them to make more informed, consistent, and impactful decisions and do so more quickly in an environment where time to decision can be the difference between securing the transportation services and equipment needed to enable business continuity or losing out to the competition.

Associated Drivers

- **Global supply chain resiliency** – Push for diversification
- **The digital business imperative** – Competitiveness and outcomes
- **AI everywhere** – Generative AI takes the spotlight

IT Impact

- Aggregated across multiple sources, visibility data must be clean, relevant, and timely if it is to support informed decision making across the operational landscape. This must be prioritized up front and requires significant effort to avoid the pitfall of simply becoming capable of making poor decisions more quickly.
- Integrated across relevant business applications such as ERP, TMS, WMS, and YMS, extended visibility facilitates better planning to reduce shocks across supply chain partners and operational teams.
- Wireless networks provide the connectivity to build end-to-end visibility across distributed mobile assets servicing a global supply chain. Aligning your needs with system capabilities helps ensure seamless visibility is established to support business initiatives.

Guidance

- Establish a leadership team to help guide and focus AI/ML efforts toward clear goals and objectives that can drive meaningful impact for the business.
- Build trust across supply chain partners where the costs of pursuing visibility and generating efficiencies are shared alongside the benefits that are achieved. An inclusive approach facilitates buy-in and delivers a pipeline of initiatives toward continuous improvement.
- Understand and communicate trade-offs as decisions are made against the insights that are generated from visibility data. Contextualizing the "next best move" against organizational strategy keeps teams engaged and pulling in the same direction.

Prediction 3: By 2026, 75% of G2000 Organizations Will Have a Digital Commerce Platform in Place for Ecosystem Operation, Driving a 10% Higher Data Capitalization Rate and Improving Customer Retention by 20%

The COVID-19 pandemic has undoubtedly accelerated the adoption of digital commerce in manufacturing. As we have moved beyond the era of lockdowns, manufacturers will continue to invest in digital commerce to access new markets, automate and streamline processes, and enhance the customer experience (CX). B2B buyers increasingly use digital channels to research, compare, and procure products and services. Fueled by their experiences with B2C companies, they demand personalized interactions, seamless buying experiences, intuitive self-service platforms, and on-demand support for their B2B purchases. Consequently, CX can be a significant competitive differentiator, leading to increased loyalty, positive referrals, and repeat purchases. According to IDC's 2023 *Global Manufacturing Survey,* over half of manufacturers globally are already using digital commerce applications, with a further 35% considering investment in the next 18 months. In addition, building B2B digital commerce capabilities to enhance the customer experience is considered a top initiative for 47% of manufacturers worldwide.

Beyond the efficiency gains and access to a wider market, digital commerce can increase data capitalization by leveraging various types of data such as customers' purchase history, feedback, reviews, and product searches to make more informed decisions. This extensive access to data enables manufacturers to deliver a more personalized engagement and tailor their marketing activities toward customers. Manufacturers setting up their own marketplaces can tap into a wider ecosystem of potential buyers and partners, resulting in increased market opportunities. These will allow them to establish a more direct connection with the customer and give them better visibility and control over the experience across the buyer journey. In the same way, customers can have the convenience of buying from a trusted manufacturer's website and have access to complementary products or adjacent/value-added services that can be fulfilled by the partner ecosystem.

Providing a seamless buying experience and proactively engaging customers will be key to retaining them in the long term. This is even more relevant in the B2B space, which is more complex and where building and nurturing long-term relationships are essential elements to succeed. In this context, digital commerce is no longer a nice to have but will be a necessity for manufacturers to thrive.

Associated Drivers

- **AI everywhere** – Generative AI takes the spotlight
- **The digital business imperative** – Competitiveness and outcomes
- **The drive to automate** – Maximizing efficiency and new opportunities

IT Impact

- Digital commerce platforms should be easy to scale to leverage growth opportunities and accommodate increasing requirements. In addition, they should allow customizations and additional functionalities to be added seamlessly to enable new business models and create new ways of engaging customers.
- Relevant business applications such as ERP, CRM, PIM, WMS, CPQ, and SCM need to be integrated with the digital commerce platform. In the context of a marketplace, this includes partners' or dealers' ERP systems to enable real-time updates on product availability, order status, and pricing information.
- Scalable data storage, robust data management practices, and data analytics tools will be key to extracting value and generating insights from the vast amount and types of data available.

Guidance

- Build robust data analytics capabilities, leveraging AI and machine learning, including generative AI, to analyze and leverage customer data to provide highly personalized experiences and targeted recommendations.
- Focus on user experience design to develop user-friendly and intuitive interfaces that interact with your customers to provide a frictionless buying experience.
- Ensure robust privacy and security measures are in place and provide clear transparency on data usage to foster trust with customers.

Prediction 4: By 2027, 90% of G2000 Organizations Will Augment Operational Roles with Automation Technology, Elevating Employee Engagement and Unlocking a 30% Increase in Worker Efficiency

Operational workers have historically relied on paper manuals or peer guidance to drive expertise and experience, which has generally worked well. But, when that peer guidance and expertise is increasingly walking out the door for better opportunities or retirement, that historical approach becomes less viable. Operations are increasingly experiencing the hidden cost of physical labor (turnover rate, training, and employee qualification), and the total cost of that labor and its impact on operational performance often gets undercounted by as much as 30%. This directly impacts key performance indicators, such as operational efficiency and line productivity. With attrition being so high across the industry, especially among newly hired workers (those hired within the previous 90 days), preventing these employees from leaving will be impactful.

The role of technology will be one of the most important questions to answer to solve labor issues. In fact, according to IDC's 2022 *Talent Management Study,* 53% of organizations stated that automating low-value work (manual tasks/data collection) is the top action they are taking over the next 12 months. Eliminating this type of work frees up the workers who have to focus on higher-value activities to further drive improvements. Leading organizations will also turn to knowledge management systems and collaboration tools to further improve employee engagement and training, but for these to be implemented successfully, the digitization of operational information is a necessary first step. The use of technology, to automate rote tasks, offers a way to improve both the productivity of existing workers and the "time to expertise" for new workers.

While operations are more automated today than they were five years ago, significant opportunities to better leverage technology remain. Resilient decision making through automation not only speeds conclusions through decision support but also potentially limits dependency on human involvement in more repetitive decision-making tasks. An advanced level of automation in decision making provides more rapid and effective actions in times of disruption and addresses an overall need to draw insights from the rapidly growing amounts of data being generated and ingested by the organization. Yet resilient decision making is not solely about predicting or responding to larger and potentially longer-term disruptions but is about deftly navigating the multitude of small "divergences" that occur almost continuously within global operations.

Associated Drivers

- **AI everywhere** – Generative AI takes the spotlight
- **The drive to automate** – Maximizing efficiency and new opportunities
- **Dynamic work and skills requirements** – New work mode era

IT Impact

- IT departments will need to work with the line of business to build the road map for operational automation, focusing on eliminating repetitive tasks and low-value activities.
- To increase employee experience, investments in solutions that support talent and skill development will be key, this would include tools that enhance productivity as well as systems to better capture and disseminate knowledge.
- Investments in solutions and tools that support onboarding of geographically distributed skills globally will be needed to ensure the long-term effectiveness of new talent acquisition.

Guidance

- Assess new technologies and approach automation investments as strategic, both within the four walls of operations and out in the field.
- Integrate the different data sources throughout the operation, ensuring the insights and data streams are shared across the organization while maintaining a single source of truth for people to draw from for both operational processes and optimization practices.
- Start experimenting with AI on tangible use cases for your company that are measurable and scalable – operational employees able to utilize AI to improve decision making will be far more productive.

Prediction 5: By 2028, 50% of G2000 Manufacturers Will Operationalize Circular Economy Principles to Improve Availability of Strategic/Direct Materials and Improve Supply Reliability by 15%

Sustainable operations are no longer a novelty, or a nice-to-have concept, they are approaching a tipping point of moving from so-called "virtue signaling" to a fully embedded operating principle. Supply chain executives continue to balance the tension between cost and resource efficiencies, while advancements in materials, technologies, and manufacturing continue to blur the lines between the two. Three simultaneous drivers – regulation, resource constraints, and social sentiment (consumer, stakeholder, etc.) – are all looming as catalysts to move sustainable operations from incremental improvements to a step change mentality that is likely to create a tiered system of leaders and laggards.

IDC predicts, in the course of the next three to five years, these catalysts will increase circular operations to the point that they materially impact reverse supply chains; consumer relationships; materials planning and recapture; logistics networks; inventory optimization; manufacturing planning, sourcing, and procurement; and all other areas of supply chain. In other words, pretty much everywhere in the supply chain, IDC expects that the sustainable part of sustainability will be focused on direct materials, particularly those that have strategic importance.

Companies will have leveraged the power of advanced analytics to design more efficient products, processes, and networks all aimed at efficiency and reliability of having the added bonus of improving supply availability and offsetting supply chain risk.

Associated Drivers

- **The drive to automate** – Maximizing efficiency and new opportunities
- **Global supply chain resiliency** – Push for diversification
- **Operationalization of ESG** – Measuring and implementing sustainability

IT Impact

- Implementation of optimization and learning models for supply chain resiliency and efficiency will be required to plan for and execute sustainable supply chains.
- Reporting, forecasting, and planning tools, data, and processes will all be required to support any regulatory and/or resource capacity planning requirements.
- Collaboration with suppliers, vendors, customers, and providers will be required to implement end-to-end sustainable operations concepts.

Guidance

- Look to invest in network tools to enable better visibility and collaboration, particularly pushing into n-tier supply both for sustainability reporting and end-to-end efficiency.
- It is not just enough to report sustainability, supply chains must live it. If you have not already, begin the process of operationalizing sustainable principles into your operations — not just carbon, but water, conflict minerals, and so forth.
- Look to analytics and AI to help optimize direct materials sourcing and procurement. Balance multisourcing with volume efficiencies and transportation optimization.

Prediction 6: By 2027, 65% of G2000 Companies Will Look to Autonomous Service Parts Planning to Ensure Mean Time to Repair Can Be Improved and Ensure Customer or Operator Assets Are Productive

The ability to predict all potential outcomes or failures within the service supply chain can be an effort in futility. Equipment will fail, assets will perform below standards, and products will break. But in a more connected world where, as noted by IDC's *Product Innovation and Aftermarket Service Survey,* nearly half (49.6%) of all products and equipment are connected providing real-time or near-real-time data on performance, the ability to be smarter regarding service execution is a real possibility. Organizations in this more connected world need to better position service parts to, if not predict the failure, at least better understand what issues are most common on which assets and what part will resolve the issue. Issue resolution demands the right spare parts are in the right locations to solve specific service needs. But spares are a finite resource and thus need to be allocated around the world based on when and where they are needed.

Knowing where the next part will be needed can be a challenge. Full autonomy of service needs is a way off, as only 18.7% of service organizations state the ability to be prescriptive whereby products have autonomic capabilities to report problems or issues and request repair. However, more than half of organizations sampled in IDC's *Product Innovation and Aftermarket Service Survey* are either operating in a proactive service model (19.3%) or a preventative service model (36.9%). This ability to plan for what will fail in the future and coordinate service resources accordingly is transformative with regard to resolution and customer outcomes. Service organizations may never be able to completely avoid equipment failures or downtime all together, but the future is bright regarding planning for the right spare parts to be in the right places to minimize downtime.

Associated Drivers

- **The drive to automate** – Maximizing efficiency and new opportunities
- **Global supply chain resiliency** – Push for diversification
- **The digital business imperative** – Competitiveness and outcomes

IT Impact

- Business process mapping will be required to deliver early gains as well as more sophisticated solutions to automate and optimize processes.
- Developing algorithms, "pretraining" them on supply chains, and supporting businesses to implement and then continuously train will all be tracks of work.
- Either AI will need to be trained to clean data or data accuracy will become even more highly prioritized than it already is. Either way, solutions need to consider the cleanliness and availability of data.

Guidance

- Encourage the service team to rely on data and not gut feeling with regard to planning for service needs.
- Incentivize suppliers, dealers, and third parties to adopt technology that can provide a full view of products and assets across the service supply chain.
- Automate service decision making to allow for a shift away from reactive service to more proactive, predictive, and prescriptive support.

Prediction 7: By 2027, Increased Planning and Execution Integration, Nearshoring, Improved Inventory Allocation, AI-Based eCommerce, and Fulfillment Optimization Will Improve Last-Mile Profitability by 15%

The impacts of omni-channel shopping across the end-to-end retail supply chain are profound. As expectations and options for anywhere-anytime shopping and fulfillment have multiplied, the complexity of achieving the holy grail of retail — right product, right time, and right place — has intensified. Omni-channel retailing opens opportunities for retailers and connected supply chain ecosystems that serve them, but it also creates challenges. One of these challenges is the higher cost of delivery.

Given the cost pressures of the last mile, it's not a surprise to see that 33.1% of retailers plan to invest in last-mile delivery platforms in the next three years. With this technology, retailers can make better use of data to inform such decisions as how to route deliveries and which carriers to use.

In thinking about last-mile delivery platforms and the complexity of omni-channel, it's important to note some broader and significant trends that will impact last-mile profitability, namely the exponential increase in data across the supply chain and the improved intelligence increasingly available from it due to improved integration, analysis, and AI presented with insights to make more intelligent decisions at many stages across the end-to-end supply chain, decisions made well before the last mile will reduce the costs of the last mile. Tighter integration between planning and execution will allow problems to be caught and adjusted for earlier in the cycle. Likewise, better demand and forecasting technology will lead to improved inventory allocation, and the ability to get product closer to where it will be consumed. Nearshoring, too, which IDC's supply chain survey shows is on the rise, will put inventory closer to home from the start while also, by shortening speed to market, enabling production or purchasing of trend-right product closer in time to real-time demand signals. AI-based tools that understand consumer demand and serve up customized product suggestions online combined with fulfillment tools that analyze a plethora of factors to make decisions about where best to fulfill an order from will both contribute to last-mile profitability well before the product sets off on the final leg of its journey. In this way, the combination of these trending factors — improved planning and execution integration, nearshoring, improved inventory allocation, and AI-based ecommerce and fulfillment optimization — will improve last-mile profitability by 15% by the year 2027.

Associated Drivers

- **AI everywhere** – Generative AI takes the spotlight
- **The drive to automate** – Maximizing efficiency and new opportunities
- **The digital business imperative** – Competitiveness and outcomes

IT Impact

- Data visibility and analytics are critical to enable more effective last-mile delivery.
- Either AI will need to be trained to clean data or data accuracy will become even more highly prioritized than it already is. Either way, solutions need to consider the cleanliness and availability of data.
- Existing logistics/transportation applications should be evaluated for applicability.
- Continued movement from manual, siloed spreadsheets and applications to integrated applications and platforms will need to become the norm to facilitate end-to-end automation.

Guidance

- As business requirements make last-mile performance more important, consider the extent to which you can efficiently support growth.
- Note that inventory and working capital policies may need to be adjusted for an emerging reality.
- Consider the impact on economic order quantities (cases, eaches) and the impact that may have back into the supply chain.

Prediction 8: By 2026, Half of G2000 Companies Will Use GenAI Tools to Support Core Supply Chain Processes, as well as Dynamic Supply Chain Design and Will Leverage AI to Reduce Operating Costs by 5%

In recent years, developing technologies, labor/skill requirements, and macroeconomics have been converging to escalate the need for process automation and optimization. In IDC's 2023 (and previous) worldwide supply chain surveys, supply chain executives have reported acute pain points in their abilities to fill enough higher skilled roles. At the same time, supply chains are experiencing global cost pressures, placing further prioritization on gaining efficiencies (also evidenced in survey data).

Emerging capabilities in AI are poised to offer a much-needed pressure release to organizational capacity and overall cost structures. Over the next few years, as algorithms are trained to understand process steps, exception management, and document change management, human intervention steps will be removed and consistencies in processes and data will improve.

This, in turn, will elevate the role of the humans in supply chain management as they move from routine functions (e.g., changing a field on a purchase order) to training algorithms and managing higher-level functions like analytics, strategy, and scenario planning. In this case, AI is more copilot than replacement for humans and serves to allow companies to do more with less, effectively. This delivers efficiency gains by adding horsepower to the staff.

Besides gains in workforce efficiency, data accuracy, and process consistency, AI will be trained to consider scenarios in supply chain design to optimize for multiple variables such as responsiveness, inventory, cost to serve, and growth strategies.

Associated Drivers

- **AI everywhere** – Generative AI takes the spotlight

- **The drive to automate** – Maximizing efficiency and new opportunities
- **Global supply chain resiliency** – Push for diversification

IT Impact

- Business process mapping will be required to deliver early gains as well as more sophisticated solutions to automate and optimize processes.
- Developing algorithms, "pretraining" them on supply chains, and supporting businesses to implement and then continuously train will all be tracks of work.
- Either AI will need to be trained to clean data or data accuracy will become even more highly prioritized than it already is. Either way, solutions need to consider the cleanliness and availability of data.

Guidance

- Prepare to have a workforce with the skills to train their own copilots. Training algorithms will become a valuable skill.
- Develop disciplined processes end to end to enable automation.
- Ensure data is robust and "clean." As with most initiatives, data will continue to matter.

Prediction 9: By the End of 2025, 25% of G2000 Companies Will Have Relocated Final Assembly Capabilities Closer to Demand, Resulting in a 10% Reduction in Overall Logistics Costs

Multiple pressures have caused companies to rethink sourcing strategies in recent years. Considering sourcing footprints don't shift overnight, the implications of recent disruptions will be much more evident in coming years. Indeed, in response to heightened levels of disruption and risk, and as an effort to achieve strategic goals of responsiveness and speed, more supply chains have begun pursuing multi-shoring and evaluating nearshoring opportunities. It is important to remember that when people talk about "*made in America,*" for example, what they really mean is "*assembled in America*." Component parts are still coming from overseas. IDC expects that for the foreseeable future, most nearshoring initiatives will center on final assembly.

This has the added benefit of dovetailing with efforts in global sustainable operations as logistics networks may become closer to the consumers and partners they serve. Efforts to optimize supply chains for resiliency and sustainability, coupled with advancements in automated production, will increase the percentage of final assembly, which is done nearshore/onshore. Owing to a decrease in the distance of shipping fully assembled goods, this will enable efficiencies in logistics networks.

Associated Drivers

- **Operationalization of ESG** – Measuring and implementing sustainability
- **The drive to automate** – Maximizing efficiency and new opportunities
- **Global supply chain resiliency** – Push for diversification

IT Impact

- Continued need for improvements in supply chain and logistics network planning/optimization
- Companies requiring more sophisticated planning and logistics capabilities for multi-sourcing operations
- Collaboration between suppliers and parts manufacturers for visibility and reliability

Guidance

- Assess the balance between changes needed to support manufacturing automation/efficiency versus cost, as well as manufacturing costs versus logistics costs to make supply chain network trade-offs. Sustainability will grow as a weighted factor as will reliability.
- Seek competitive advantage: Industries and companies that unlock automation and/or cost efficiencies in manufacturing will find competitive advantage and partners seeking their capabilities.
- Keep abreast of any developments on possible protectionism as another driver of nearshoring/onshoring.

Prediction 10: By 2028, 35% of G2000 Companies Will Use Supply Chain Orchestration Tools Integrating Key Suppliers/Customers That Include Digital Twin Capabilities, Improving Supply Chain Responsiveness by 15%

Most supply chain organizations have been progressing along a maturity continuum in their digital transformation journey for some years now. One of the hallmarks of this digital transformation has been the concept of the control tower.

Control tower concepts and tools originally carried the promise of fully integrating end-to-end operations. To date, many such tools and capabilities have not gone much further than promoting data visibility and, in a cynical view, perhaps are "reading the news" as opposed to delivering the promise of improved speed, integration, and responsiveness.

The next evolution of end-to-end integration and supply chain responsiveness will be a shift from "reading the news" to acting on it and, in some cases, creating it. This will be accomplished through supply chain orchestration tools that can both read and react to real-time or near-real-time data and incorporate AI/ML capabilities to suggest action or even take action in automated processing (related to this concept, see Predictions 4 and 8). IDC views the role of the digital twin within supply chain orchestration as the "sandbox" in which manufacturers can explore what-if scenarios and model potential outcomes.

By integrating data, layering insights, and proposing action or even taking action, supply chain orchestration tools will increase responsiveness and further optimize supply chains.

Associated Drivers

- **AI everywhere** – Generative AI takes the spotlight
- **The drive to automate** – Maximizing efficiency and new opportunities
- **Global supply chain resiliency** – Push for diversification

IT Impact

- Evolving from control towers to orchestration will require process mapping, developments in AI, decision trees, and front-end UI to enable integration and rapid response.
- Developing algorithms, "pretraining" them on supply chains, and supporting businesses to implement and then continuously train will all be tracks of work.
- Either AI will need to be trained to clean data or data accuracy will become even more highly prioritized than it already is. Either way, solutions need to consider the cleanliness and availability of data.

Guidance

- For supply chains, prepare to have a workforce with the skills to train their own copilots. Training algorithms will become a valuable skill.
- Develop disciplined processes end to end to enable automation.
- Ensure data is robust and "clean." As with most initiatives, data will continue to matter.

ADVICE FOR TECHNOLOGY BUYERS

Throughout this document, we have detailed guidance specific to each of the 10 predictions; in addition, we recommend that manufacturers take the following approaches to ensure they are maximizing the value they derive from both current and future technology investments in their supply chains:

- **Assess your digital maturity**. Evaluate your relative maturity in adopting new technologies and, more importantly, your ability to translate those technologies into digital transformation, not just simple digitization while retaining paper-based thinking. You will probably move more quickly with some technologies, such as IoT and machine learning, but make sure you're experimenting with all the technologies we identify as innovation accelerators.
- **Invest in the short and long terms**. Look for technologies that provide efficiency/effectiveness today yet enable future capabilities that support your company's digital transformation road map for the supply chain. Investing in an IoT platform, for example, can drive immediate process improvements but also set you up to capitalize on new products/services in the future.
- **Not "technology for technology's" sake**. While most of the predictions listed talk about the opportunity for innovation accelerators to take transformation efforts to the next level, make sure that you are applying it to achievable supply chain outcomes. Work with technology partners and focus your efforts on how technology helps solve existing business problems or in anticipation of future ones.
- **Pay attention to GenAI**. Yes, we have gone down the technology rabbit hole before, but GenAI seems different. It is poised to make a massive impact on the supply chain and operational performance. You don't have to be a GenAI expert, but make sure to pay attention and identify technical partners that can help.
- **Create a single source of the truth**. Data within your enterprise and from connected products, supply chains, and assets will increasingly be the starting point for new initiatives, and degree to which those initiatives are productive.
- **Talent, talent, talent**. There is a major skills gap within the supply chain that will not get better anytime soon without action. Make sure you have a process in place to capture the knowledge of your more senior employees and provide your employees with ways to collaborate and learn together. Talent can be your most valuable resource; make sure that you are constantly cultivating it across the organization.
- **Take the mindset that it is technology and people, not technology replacing people**. Be clear organizationally that modern, digital technologies are not about replacing people but replacing tasks and freeing up people to focus on more impactful things. Technology will allow workers to maximize their time on high-value activities.
- **Look to the partner ecosystem to close gaps**. Work with small and large partners to accelerate your IT capabilities and serve the line of business and meet supply chain needs. External resources and expertise can help you move quickly and effectively, which is essential in

today's global marketplace. Expand your horizons to include smaller, app-driven capabilities as extensions to broader systems.

EXTERNAL DRIVERS: DETAIL

AI Everywhere — Generative AI Takes the Spotlight

- **Description:** With intelligence becoming the primary source of value creation, we are on the verge of the "Intelligence Revolution," in which artificial intelligence (AI) and automation-oriented technology will be the main accelerators of business change. In the realm of "AI everywhere," generative AI (GenAI) emerges as a transformative force, potentially revolutionizing the future. This branch of artificial intelligence enables a machine-driven autonomous creation of new content, from images to music to even written text, with remarkable accuracy. Early applications of GenAI have showcased its potential in fields such as creative arts, content and code generation, and personalized recommendations. However, it also raises concerns regarding bias and privacy: AI algorithms can inadvertently perpetuate biases and pose threats to personal data. As a result, regulation becomes crucial to ensure responsible and ethical use of GenAI. Despite these challenges, the possibilities are vast, ranging from improved customer experiences (CXs) to innovative problem solving. Harnessing the power of GenAI and navigating its associated complexities have the potential to shape the future of industries and drive advancements in the AI-driven world.
- **Context:** Businesses are already jumping to get a piece of the AI pie, afraid to miss out on the opportunities it presents. Although we are in the early days, monetization and scale of AI solutions are expected to evolve rapidly. However, this comes during a time of relative economic uncertainty and increasingly constrained IT budgets. Furthermore, AI is not without risks, especially when it comes to ethical AI and data privacy, and companies need to carefully consider the best use cases in order to implement AI effectively.

The Drive to Automate — Maximizing Efficiency and New Opportunities

- **Description:** Broader automation use cases — beyond just generative AI — are now ubiquitous. Now that data is embedded in the core of strategic capability for every organization, automation is critical to scaling a digital business and is evident in three domains — IT automation, process automation, and value stream automation — leading to autonomous operations, digital value engineering, and innovation velocity. Industrial organizations have spent the past few years evolving toward the Fourth Industrial Revolution (Industry 4.0) through the use of industrial automation and intelligence. Thoughtful implementation is more important than ever as data becomes embedded in the strategic core of every organization. Automation technologies such as robots and drones are being used increasingly in the military and healthcare sectors. Given this boost in automation, data is increasingly precious, and privacy must be prioritized and security enhanced. In some cases, automation has also led to concerns over the future of work — whether it will enhance or take away.
- **Context:** Businesses are rethinking how to employ automation to maximize operational efficiency — from automating assembly in manufacturing to identifying opportunities for food waste reduction in hospitality to improving customer experience in digital banking. IT will need to continue to assess new technologies and approach automation investments strategically, both within the walls of the organization and in the field. Among industrial organizations, IT/OT convergence will necessitate shared responsibility across teams for automation priorities and implementations.

Global Supply Chain Resiliency — Push for Diversification

- **Description:** Despite gradual easing of supply, supply chain disruptions overall continue to impact most markets and resiliency remains a top priority. Whether due to geopolitical issues (Russia-Ukraine War–driven energy supply scenario, semiconductor chains shifting due to China-Taiwan dynamics, etc.), broader economic concerns, or the impact of demand volatility on raw material costs (e.g., access to key components for tech products), the global supply chain remains at a critical inflection point. Furthermore, national economic security, inflation and interest rates, data sovereignty, cybersecurity, and climate change are critical factors in determining how to approach the future of supply chains. Many of the old methods have proven ineffective, so companies are looking for new approaches to improve resilience. These include multisource orchestration and multi-scenario adaptation, better visibility and agility, and business process automation. The global supply chain will persist, and it always does, but policymakers and business leaders are looking to better balance global, regional, and local solutions, shortening supply chains where possible and diversifying to reduce risk.
- **Context:** The IT supply chain is especially affected by global supply chain policy and volatility. Given the excitement around generative AI especially, GPUs, semiconductors, and other silicon-based technologies are more crucial than ever. As key components for technology products are limited in supply and subject to volatility, businesses will need to continue to strategize to build resilience and diversification.

The Digital Business Imperative — Competitiveness and Outcomes

- **Description:** A digital business sees value creation based on the use of digital technologies for both internal and external processes, including customer engagement, employee experience, and product and services development. Building and leading a digital business is imperative for organizations to be competitive. While certain operational aspects may always have a nondigital component, digital businesses prioritize a digital-first strategy that aligns all parts of the business and IT landscape with digital workflows to drive value and growth. The development strategies for both digital and nondigital assets now require leveraging multiple channels for the digital business to obtain support or funding. This places a strong emphasis on providing digital experiences for customers and citizens, employees, and partners and necessitates a shift toward fully digital operating models and resilient supply structures enabled by digital technology. The focus of a digital business is increasingly on delivering measurable outcomes. Businesses that have recognized the value of digital anticipate maintaining or even increasing their investment in technology, even in times of economic uncertainty.
- **Context:** As more and more enterprises embrace digital strategies and technology, they prioritize technology investments that drive innovation or allow for competitive differentiation. Technology is no longer viewed as a tool to keep the business running, but it is the foundation for building new revenue-generating experiences and products. Laggards will need to adapt quickly and develop their digital road maps and embrace a digital business platform. Identifying top digital revenue opportunities that deliver value will be crucial for overall business success and implementation of organizational digital-first strategies.

Dynamic Work and Skills Requirements — New Work Mode Era

- **Description:** In the wake of COVID-19 pandemic–driven accelerated work transformation, enterprises continue to face dynamic work conditions. These range from lack of skilled employees to codifying more flexible ways of working that rely on a broad range of technologies and services. In some regions, most notably in Asia/Pacific, organizations are focused on building more secure and technically sophisticated office environments. In North

America, remote and more flexible work models are driving investments in technologies that support collaboration across and within disparate work environments. Across this spectrum of work models, organizations are investing in infrastructure, hardware, software, and services to enable and manage increasingly automated ways of working. These include automated remote onboarding, learning in the flow of work, and use of AI and generative AI to facilitate basic tasks and workflows. While the pandemic drew much needed attention to the employee experience, enterprises have shifted to aligning employee requirements more plainly to strategic business goals. The key challenge around the globe has been to find or upskill/cross-skill employees to scale and meet the demands of complex, automated work processes. Flexible work models continue to change to become even more agile, with digital workspaces highlighting skills, workforce management, automation, changing demographics, and as-a-service talent resourcing.

- **Context:** New modes of working are now intrinsic to leadership and organizational resilience and go well beyond traditional staff planning methods. They are also having an impact on frontline workers who have historically been neglected in favor of higher-paid front- and back-office peers. New work models require agile cross-functional teams — including HR, IT, LOB, finance, facilities management, and operations — to engage top talent and meet client brand expectations. While headlines debate the fate of environmental, social, and corporate governance (ESG) initiatives, it's clear that environmental concerns will be an embedded element of workplace design and implementation of flexible work models. C-suite leaders and their teams must collaborate to recalibrate work culture, augmentation, and space/place planning to enable more secure, dynamic, and refined work models of the future.

Operationalization of ESG — Measuring and Implementing Sustainability

- **Description:** Environmental, social, and governance, a globally adopted framework supporting actions to achieve sustainability and a better future for all, is gaining more traction than ever. ESG laws are increasing: the EU launched the Corporate Sustainability Reporting Directive (CSRD) requiring companies to disclose and assure ESG metrics, the SEC's climate disclosure requirement is forthcoming, and Japan's GX Basic Policy implements an emissions trading scheme and carbon tax. There are also new International Financial Reporting Standards. Given this, many companies are actively operationalizing ESG with AI-informed carbon accounting software, carbon budgets, and sustainability requirements into requests for proposals (RFPs) they send to tech suppliers. Many companies now have positions such as chief sustainability officer or are integrating sustainability into the responsibilities of the C-suite. And many enterprises are replacing redundant faulty and energy-heavy tech with newer, more efficient energy-saving counterparts. Businesses recognize that diversity, equity, and inclusion are positively affecting profits and are therefore implementing DEI initiatives to include more women and minorities. In addition, ESG compliance is a form of long-term strategic business risk reduction. Given climate change and instable energy prices, among other risks, ESG helps curb costs and hedge against risks caused by natural disasters and other shocks.
- **Context:** ESG is more than just a measure; it is foundational to business purpose and value. Businesses are increasingly beholden to ESG. More and more customers care about whether the companies they deal with behave sustainably and deliver sustainable products and services. ESG can also be a cost-saving measure and hedge against risks. Yet, despite much progress, there is still work to be done, especially in complying with carbon footprint measuring and achieving high-quality data. As laws and regulations — as well as investment opportunities — amp up around ESG, the IT industry will increasingly require green talent and skills and better data modeling of ESG metrics to achieve maximum benefit.

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Related Research

- *IDC FutureScape: Worldwide Manufacturing 2024 Predictions* (IDC #US51276023, October 2023)
- *IDC's Worldwide Digital Transformation Use Case Taxonomy, 2023: Brand-Oriented Value Chains in the Manufacturing Industry* (IDC #US51204523, September 2023)
- *Critical External Drivers Shaping Global IT and Business Planning, 2024* (IDC #US51057623, September 2023)
- *IDC's Worldwide Digital Transformation Use Case Taxonomy, 2023: Engineering-Oriented Value Chains in the Manufacturing Industry* (IDC #US51040623, August 2023)
- *IDC's Worldwide Digital Transformation Use Case Taxonomy, 2023: Technology-Oriented Value Chains in the Manufacturing Industry* (IDC #US51058423, August 2023)
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