Making self-funding supply chains real

Where to start and scale for autonomous, end-to-end growth

Authors

Patty Riedl

Supply Chain & Operations Lead, Americas

Mads Lauritzen

Supply Chain & Operations Lead, APAC

Gaurav Nath

Supply Chain & Operations Strategy Lead, EMEA

Introduction

Companies are striving to build supply chains that are both efficient and resilient. In a world of persistent inflation, geopolitical tension and volatile demand, they can no longer afford to be one or the other. As our previous research on autonomous supply chains has shown, the convergence of AI and autonomous technologies can make this combination possible. This convergence is also expected to deliver tangible results like a 5% increase in operating profit, 7% gains in return on capital employed, 27% shorter order lead times and 25% higher labor productivity.

Still, few companies have made meaningful progress toward real autonomy. Most remain stuck in low supply chain digital capability and autonomous maturity, averaging just 36% and 21% respectively, leaving vast value untapped.[1,2] Their supply chains continue to rely on fragmented, manual processes that are costlier, slow to respond and hinder competitiveness.

Leading companies take a more pragmatic approach. Rather than pursuing sweeping transformation all at once, they start gradually, focusing on cost levers that drive the majority of supply chain spending, using technologies that deliver maximum impact in terms of cost reduction, efficiency and scalability. These initiatives generate immediate savings that fund the next phase of investment, creating a self-reinforcing cycle of performance improvement that enhances resilience, advances sustainability and fuels growth.

This pragmatic pathway turns AI adoption into a self-funding engine for reinvention.

This report introduces the AI- and autonomous technologies-led journey that leading companies are pursuing to cut costs, fund reinvestment and achieve new levels of end-to-end performance across their supply chains. This is where the game-changing impact lies.

It also outlines how leading companies are putting this model into practice in links to deeper, companion analyses of four operational domains—planning, procurement, manufacturing and fulfillment—where making the best decisions around AI and autonomous systems are unlocking rapid savings and measurable productivity gains.

Together, our analysis shows these targeted, self-funding initiatives can reduce operational expenditure up to 24%, cut manual interventions by as much as 50% and lower overall supply chain costs by up to 20%.[3] This sets the foundation for a new era of continuously improving supply chains that power growth instead of merely supporting it.

From pressure to possibility

Companies face mounting pressure to cut costs and complexity. Nearly twenty-seven percent of executives now rank accelerating cost optimization among their top strategic priorities.[4] At the same time, technology has reached critical readiness.

Autonomous systems, from intelligent agents to self-guided robots, are rapidly maturing and are ready for scale. Generative AI (gen AI), agentic architectures and digital twins now deliver real-time visibility, predictive intelligence and self-optimizing operations. In manufacturing, for instance, applying AI to power autonomous operations can boost production volume by 10%.[5]

By applying AI in cost-intensive areas, leading companies are realizing trapped value and redeploying resources to fund sustained profitability. Intelligent transportation management using autonomous technologies, for example, has the potential to reduce transportation spend by up to 12% and improve OTIF performance by up to 30%.[6]

As AI-enabled autonomy balances networks end to end, supply chains are evolving from data-driven to self-optimizing systems that continuously improve efficiency and performance. The following table illustrates how this plays out across industries.

Because the cost and value drivers that shape performance can vary by industry, concentrating on the domain-specific levers that matter most produces outsized returns.

Industry	Sourcing & procurement	Manufacturing	Logistics & fulfillment	Planning
Consumer goods & services	Large raw material spend, fragmented supplier base	Mix of in-house and outsourced production	Distribution, warehousing, last-mile heavy	Forecasting complexity but lower absolute cost
Retail	Vendor negotiations, private label sourcing	Minimal (mostly outsourced)	DC operations, omnichannel fulfillment	Demand planning & replenishment critical
Life Sciences	API sourcing, regulated suppliers	GMP plants, batch controls, quality costs	Cold chain, compliance, serialization	Stable demand, long planning cycles
Automotive	BOM-heavy, tier-12 dependency	Capital-intensive assembly & machining	Inbound JIT + outbound vehicle logistics	Mature planning processes
Energy	Equipment, spares, fuel contracts	Asset-heavy extraction refining	Pipelines, shipping, storage	Long-term capacity planning dominates
Aerospace & defense	Specialized, low-volume, high cost parts	Engineering-intensive, low automation	Limited volumes, controlled delivery	Program & lifecycle planning
Industrials	Metals, components, global suppliers	Discrete / process manufacturing	Heavy equipment, B2B delivery	Forecast tied to capex cycles
Utilities	Fuel, spares, services	Generation & infrastructure O&M	Limited physical distribution	Load forecasting & network planning
High-tech (semi)	Silicon wafers, specialty chemical, equipment, foundry, dependencies	Fab operations, depreciation, yield loss, energy & cleanroom costs	High-value, low-volume shipments; limited distribution complexity	Capacity planning, demand-supply balancing, node transitions.
High-tech (non-semi)	Electronics components, contract manufacturing, multi-tier suppliers	Outsourced assembly, test, and configuration	Global distribution, postponement, regional DCs	NPI cadence, demand sensing, inventory risk management
Comms & media networks	Network equipment & content	Minimal physical production	Digital / service delivery	Network capacity & demand planning

% of total supply chain cost (typical range): Below 15% | 30% - 15% | Above 30%

Finding the high cost share and high technology impact opportunities

We have identified a pragmatic path forward—one that helps companies harness AI to turn efficiency gains into this self-reinforcing cycle.

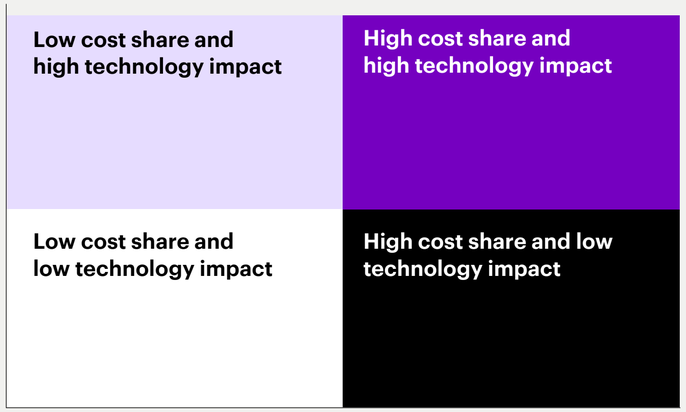
Early focus on high cost, high impact areas delivers rapid, material gains, providing the savings that finance the next wave of reinvention.

The starting point is our 2x2 supply chain cost categorization framework (Figure 1) that maps cost components along two dimensions: their share of total cost in their respective domain and the potential of AI and autonomous technologies to reduce those costs, enhance efficiency and improve scalability. This framework helps leaders pinpoint where early investment will deliver the greatest returns. Each cost component falls into one of four quadrants: high cost share and high technology impact, low cost share and high technology impact, high cost share and low technology impact and low cost share and low technology impact.

The high cost share and high technology impact quadrant represents the largest share of supply chain costs and the greatest opportunity for transformation. Here, AI and autonomous technologies can deliver substantial savings and measurable productivity gains. In manufacturing, for example, cost components like predictive maintenance sit in this quadrant, representing the biggest opportunity in that function. In this example, AI can extend asset life, prevent breakdowns and reduce maintenance costs.

After capturing gains from these high cost, high impact levers, companies can shift to low cost, high impact opportunities like spend analytics and forecasting, where AI continues to generate strong returns and incremental savings that reinforce the case for reinvention. Low impact levers, by contrast, may not yet warrant investment. However, cost optimization for high cost share and low technology impact levers requires other, non-technology based methods.

Figure 1: The 2x2 supply chain cost categorization framework
Categorizing cost components reveals where technology delivers strategic value.



Once executives identify all relevant cost levers, they can map them to their current capability and autonomous maturity. This clarifies the reinvention path—from targeted cost-out moves to scaled autonomous capabilities that reshape end-to-end performance.

By prioritizing AI-led actions with near-term savings potential, companies create a self-funding cycle where early efficiencies finance the next wave of progress. Even before reaching full end-to-end autonomy, companies can unlock significant value through AI-driven cost optimization.

This approach helps companies move from fragmented operations to intelligent, self-funding supply chains that build lasting momentum.

The impact comes to life when viewed through the lens of planning, procurement, manufacturing and fulfillment—four domains where AI and autonomous technologies are already driving measurable cost and productivity gains.

In these areas, autonomous technologies supercharge the ability to take cost out through better tools. And each function connects to and is integral to the broader, end-to-end cost optimization effort (Figure 2).

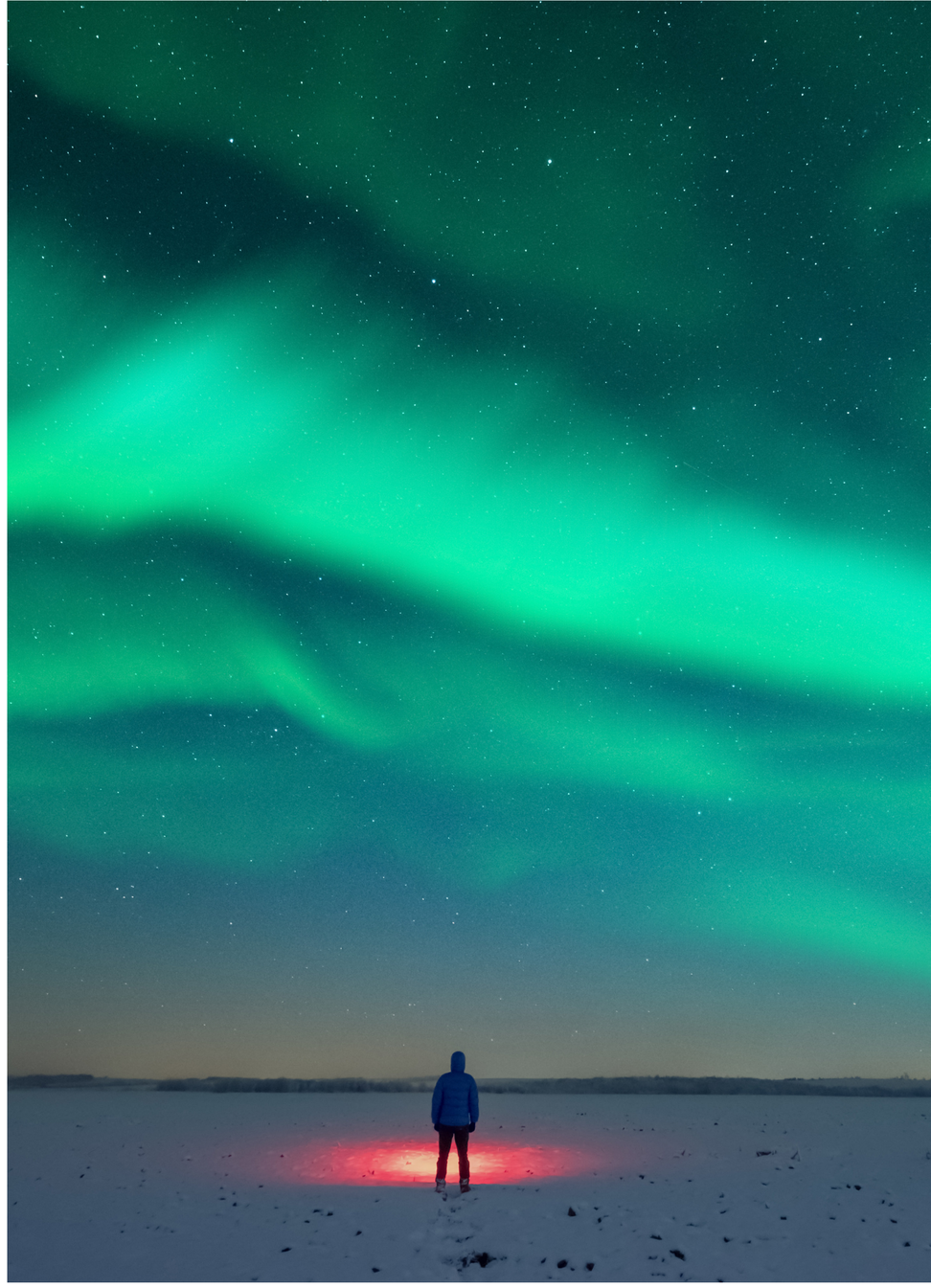
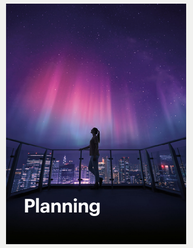


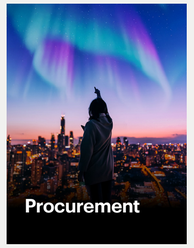
Figure 2: End-to-end supply chain cost optimization
Mapping initiatives by cost share and impact helps leaders prioritize where to focus first.

Low cost share and high technology impact	High cost share and high technology impact
Autonomous supply-demand balancing agents across the network **Tech:** Agentic AI that continuously reconciles demand signals, supply options, capacity, logistics, constraints and service policies—updating plans and executing micro-adjustments autonomously. **Impact:** Cuts bullwhip costs across materials, production and transport; lowers both inventory carrying costs and expedite/premium freight; drives coordinated cost reduction across planning, sourcing and logistics rather than in silos	**Predictive disruption prevention across suppliers, plants and distribution nodes** **Tech:** Integrated IoT and AI models that forecast bottlenecks (supplier risk, line failures, capacity saturation, transport delays) and automatically trigger multi-node mitigations **Impact:** Prevents expensive disruption cascades: supplier failure—>plant idle time—>reallocation—>expedited freight—>service penalties; Protects major cost pools simultaneously—materials, production labor, logistics and returns. High impact because disruptions are a top driver of total cost variability
Low cost share and low technology impact	**High cost share and low technology impact**
Vendor master data and product master data hygiene automation **Tech:** Rule-based and ML-supported cleansing of supplier, SKU and routing master data **Impact:** Improves process stability but does not materially affect supply, production or logistics cost pools; Gains are mostly in workflow consistency rather than true cost-out.	**Ultra-custom service-level or channel-specific requirements** **Tech:** Automation to support highly differentiated service tiers or channel behaviors **Impact:** Touches high service and logistics cost pools but yields limited cost reductions because the customization itself structurally drives cost (e.g. specialized SLAs, fragmented deliveries); Autonomy can streamline execution but cannot fundamentally compress cost tied to commercial policy

Even as organizations work toward end-to-end cost optimization, autonomous technologies already offer functional-level opportunities. The following links provide deeper insight into each domain.

Deep-dive articles by domain





Realizing end-to-end value

Building an autonomous supply chain is a progressive journey—one that begins with targeted actions that create savings across key domains like planning, procurement, manufacturing and fulfillment, and accelerates toward end-to-end autonomy.

Each phase of this self-funding journey culminates in a connected ecosystem of intelligent capabilities. The breakthrough comes when autonomy extends across functions—transforming discrete cost-saving initiatives into end-to-end, self-optimizing networks that continuously reinvest in their own reinvention.

Here, we explore how agentic AI, supply chain platform orchestration, digital twins and control towers make it real.

Agentic AI

Agentic architecture has advanced beyond predictive analytics to become a self-learning, adaptive system that orchestrates the end-to-end supply chain.

Agentic AI enables autonomous sensing, reasoning and execution across supply chain nodes, using continuous feedback loops to improve planning, execution and performance in real time. With routine tasks automated, human expertise shifts to strategic and exception based decisions.

These systems also embed environmental and efficiency parameters directly into autonomous decision models, supporting more sustainable operations. In research conducted by Turkish-German University's Department of Industrial Engineering, the SustAI-SCM's AI powered framework achieved a 28.4% cost reduction due to lower manual intervention and operational waste, a 21.8% gain in warehouse efficiency and a 30.3% reduction in emissions by integrating agentic intelligence to automate supply chain tasks with a focus on sustainability.[7] Maersk's AI powered routing platforms reduced fuel use and emissions by optimizing speed and route selection.[8] Energy management platforms are also showing strong results, helping organizations cut energy costs by up to 4% while reducing Scope 1 and 2 greenhouse gas emissions. They use machine learning to analyze energy consumption data, identify patterns and forecast future energy needs.[9]

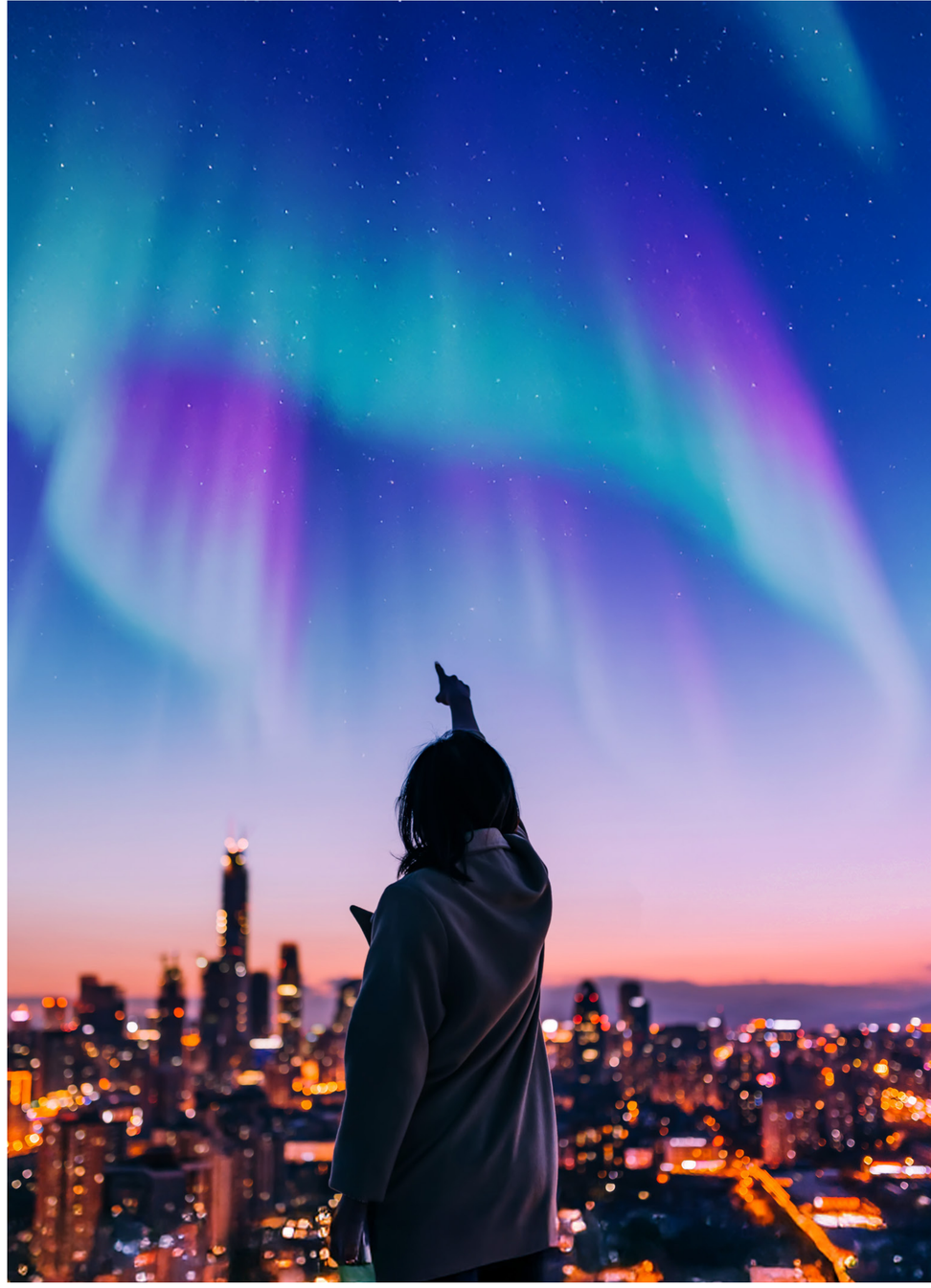
Supply chain platform orchestrator

With this foundation, enterprises can move beyond simply managing supply chains to orchestrating intelligent, adaptive and resilient value networks. The impact is significant: Industrial equipment manufacturers can cut recovery time from disruptions by 58%.

The supply chain platform orchestrator acts as the digital backbone that connects and coordinates data, systems and partners end to end across the value chain. By turning fragmented supply networks into collaborative, real-time ecosystems, it uses unified data models, APIs and interoperable workflows to drive seamless integration.

With this foundation, enterprises can move beyond simply managing supply chains to orchestrating intelligent, adaptive and resilient value networks. The impact is significant: Industrial equipment manufacturers can cut recovery time from disruptions by 58%. Greater autonomy can reduce automotive order lead times by 26% and boost aerospace and defense productivity by 25%.[10]

Our analysis suggests that 43% of supply chain work hours will be affected—29% automated and 14% augmented—as the orchestrator platform standardizes data and embeds gen AI and agentic capabilities. These productivity gains translate directly into recurring reductions in operating costs.[11]



Digital twins and control towers

Together, digital twins and control towers underpin cross-node coordination. Digital twins generate simulations that guide supply chain decisions, making operations faster, more resilient and easier to manage end to end.

AI-enabled digital twins operate as responsive models across production, logistics and energy networks. They sense, simulate and act autonomously, facilitating faster decisions and smarter operations at every node. Control towers complement these capabilities by unifying planning and execution through real-time visibility, predictive insights and autonomous decision-making.

Together, digital twins and control towers underpin cross-node coordination. Digital twins generate simulations that guide supply chain decisions, making operations faster, more resilient and easier to manage end to end. As a result, human roles shift toward strategic and exception-based decision-making, supported by adaptive learning loops that strengthen resilience and responsiveness over time. Control towers helped companies across healthcare, consumer goods, retail and auto-industrial sectors reduce inventory levels by up to 30%, while other industries report up to 10% higher equipment utilization. Companies have shown delivery performance and customer service level improvements by up to 8%, strengthening resilience and profitability.[12]

Companies deploying these technologies are seeing measurable gains. At Electrolux, modular digital twins delivered 15 to 20% cost reductions and quality improvements.[13] Ferrero achieved 30% faster commissioning time and 88% quicker time to achieve target availability during logistics ramp up.[14] Siemens used smart factory digital twins to reduce material circulation by 40% and energy usage by 70%.[15]

The autonomous supply chain advantage

The scale of the opportunity is unmistakable. Companies that target the most consequential domains and cost levers are already capturing rapid, measurable savings—up to 40% in procurement, 40% reductions in production downtime and 20% gains in fulfillment performance. These result in reductions of operational expenditure and manual interventions by up to 24% and 50%, respectively, driving a decrease in total supply chain costs of up to 20%.

When realized together, these improvements do far more than relieve budget pressures. They generate the liquidity, capacity and momentum that allow supply chains to fund their own reinvention—unlocking a step-change in productivity, resilience and growth.

Yet achieving these benefits at scale requires a fundamental shift in how supply chains operate.

The future of supply chains depends on the seamless integration of autonomy and intelligence, transforming traditional operations into adaptive, self optimizing ecosystems.

By embedding AI-driven insight and orchestration across planning, procurement, manufacturing and fulfillment, organizations can overcome inefficiencies and build resilient, agile and sustainable networks.

This transformation begins with a pragmatic focus on high cost and high impact cost levers, where early actions deliver measurable savings and efficiency gains. These savings create a virtuous loop of reinvestment, funding the next wave of transformation.

As these initiatives compound, supply chains shift from reactive cost centers into strategic platforms for growth and competitiveness, positioning businesses to thrive in an increasingly dynamic global landscape.

How Accenture can help

Accenture helps companies design, build and operate a modern digital core: the data and knowledge foundation required to scale AI capabilities including digital twins, agentic multi-agent systems and gen AI.

As cost pressures rise and operations grow more complex, companies must make decisions faster than humans alone can manage. This is where autonomy becomes essential. Many companies experiment with AI and automation, but few manage to scale these efforts across the enterprise.

Accenture helps companies design, build and operate a modern digital core: the data and knowledge foundation required to scale AI capabilities including digital twins, agentic multi-agent systems and gen AI.

With this foundation, companies can break down silos and enable coordinated, autonomous decisions that turn efficiency into drivers of growth. Our reinvention approach delivers sustainable cost savings across the end-to-end supply chain, creating the capacity to self-fund transformation and reinvest for long-term growth and resilience:

- **Deliver end-to-end autonomy at scale:** Our modular "AI and Data-as-a-service" accelerators and proven delivery capabilities help companies move from pilots to enterprise-wide autonomy that drives measurable resilience, agility and growth.
- **Simulate cost-to-serve and margin strategies:** Using scenario modeling and intelligent platforms, we simulate cost-to-serve, margin and sourcing strategies to optimize spend, streamline operations and maximize ROI.
- **Enable real-time, multi-tier orchestration and visibility:** We connect partners, platforms and data with agentic AI, digital twins and control towers providing multi-tier visibility and automated decision-making across the supply chain.
- **Drive measurable savings and reinvestment:** Our Cost & Productivity Reinvention solutions deliver measurable savings and reinvestment pathways. With $1 Trillion of spend analyzed, we can identify opportunities and apply our supplier and market insights to maximize savings at project level.
- **Scale AI solutions:** Our AI Refinery platform helps companies scale AI solutions across the enterprise by integrating agents, data, knowledge, models and governance.
- **Accelerate transformation:** Our Intelligent Supply Chain Platform helps companies focus on realizing value.
- **Reshape the workforce:** We help upskill teams and close digital skills gaps for a future-ready workforce.

Our approach simplifies complexity, drives agility and supports intelligent, automated action across the ecosystem.

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About Accenture

Accenture is a leading solutions and services company that helps the world's leading enterprises reinvent by building their digital core and unleashing the power of AI to create value at speed across the enterprise, bringing together the talent of our approximately 784,000 people, our proprietary assets and platforms, and deep ecosystem relationships. Our strategy is to be the reinvention partner of choice for our clients and to be the most client-focused, AI-enabled, great place to work in the world. Through our Reinvention Services we bring together our capabilities across strategy, consulting, technology, operations, Song and Industry X with our deep industry expertise to create and deliver solutions and services for our clients. Our purpose is to deliver on the promise of technology and human ingenuity, and we measure our success by the 360° value we create for all our stakeholders.

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About the research

This research explores the AI- and autonomous technologies-led journey that organizations can take to cut costs, fund reinvestment and achieve new levels of end-to-end performance across their supply chains. To address this, the study adopts a mixed-methods approach, integrating quantitative with qualitative insights. As a strategic extension of prior studies like Making Autonomous Supply Chains Real, it draws on survey data to assess autonomous maturity levels alongside cost priorities across industries. These findings are complemented by secondary research and analysis of Accenture's proprietary solution assets and client experiences, helping identify proven interventions and emerging best practices.

The methodology applies the Cost-to-Serve model, mapping cost components across supply chain functions and evaluating them through a 2×2 cost-versus-technology-impact framework. By focusing on high cost, high impact areas, the research helps leaders unlock near-term savings while laying the foundation for scalable, self-funded transformation.