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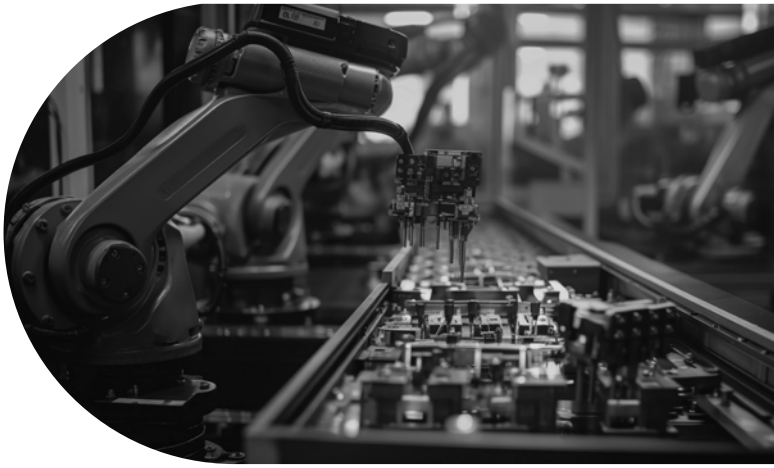
India's Manufacturing Pivot

Digital Priorities, Real Outcomes



Executive Summary

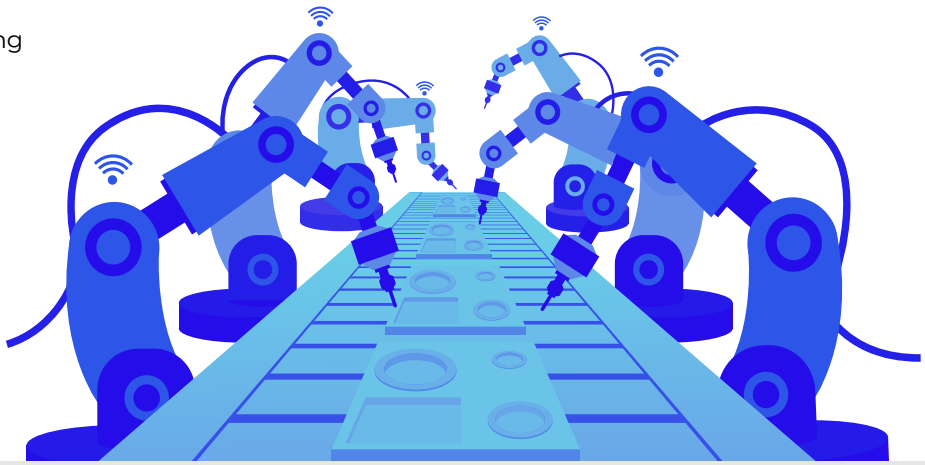
Global Disruptions Expose Vulnerabilities:
Geopolitical shocks – from the Russia-Ukraine war to surging trade tariffs – have sent shockwaves through Indian manufacturing, revealing that cost advantages alone can't guarantee stability. Resilience and adaptability are now just as critical as efficiency for survival and growth.

C-Suites Refocus On Resilience And Tech:
Boardroom conversations have shifted from pure growth to balancing efficiency with risk management. In 2024, Indian manufacturers invested **$11 billion** in Industry 4.0 technologies (cloud, AI, IoT, cybersecurity, analytics) aimed at building more **agile, future-proof operations** that can weather disruptions and drive productivity.

Kyndryl® Enables The Digital Pivot:
Kyndryl is working with manufacturers to accelerate this transformation – migrating core systems to cloud for scale, integrating AI and analytics for predictive insights, deploying IoT sensors and edge computing for real-time visibility, and securing IT-OT environments. These initiatives deliver tangible results (e.g. **15% higher machine availability** and **10% lower maintenance** costs in one engagement) while reducing risk. Kyndryl's partnerships with leading tech providers ensure CIOs have a robust ecosystem to draw on for innovation.

Digital Tools Deliver Real Results:
Early adopters of smart technologies are already seeing **measurable gains** on the factory floor. For example, Schneider Electric's IIoT-enabled Hyderabad plant cut energy usage by **59%** in one year (dramatically shrinking its carbon footprint), and Jubilant Ingrevia's digitized Gujarat facility achieved over **20%** of global market share in acetic anhydride after boosting efficiency and reducing downtime through data and automation.

Six Levers For Digital Success:
Across these transformations, six success factors stand out. Manufacturers must **tie digital initiatives to clear business goals**; start with high-impact pilots and scale fast; **build a strong digital core** (cloud, IIoT and data architecture); empower people through upskilling and change management; secure IT-OT convergence from day one; and **foster a culture of continuous innovation.** Companies that execute on these levers are positioning themselves to lead in the coming decade.



Overview

When Russia invaded Ukraine in 2022, Indian factories, typically insulated from global geopolitics, suddenly felt the shockwaves—driving up energy bills, stalling shipments, and delaying critical inputs. As the global supply chain rattled, Indian manufacturers, many reliant on cost-based advantages and economies of scale, quickly realized that the old ways of working were no longer sustainable. The world's shifting trade landscape, including the second-term tariffs imposed by the Trump administration, has further heightened these challenges. Tariffs on steel and aluminum doubled to 50% in June 2025, adding pressure to margins, especially for Indian exporters.

Meanwhile, China continues to move further ahead in manufacturing innovation, using automation and smart production systems to retool its factories for resilience. India, on the other hand, has reached a crossroads. Moving forward, **manufacturing must pivot from being cost-driven to data-driven, resilient, and adaptive**. Connectivity, modernization, and adaptability must become integral to factory floors—not just buzzwords but the very pillars of future-proof manufacturing. It is the companies that adopt this mindset today that will shape the future of India's manufacturing growth story.

Boardroom Reflections: From Growth-First To Resilience-First

These disruptions are no longer just supply chain news – they're now boardroom agenda items. Manufacturing CEOs have moved beyond growth-at-all-costs discussions to deeper questions about how to make their businesses more resilient, efficient, and competitive in a shifting global landscape.

In executive meetings, five fundamental questions have risen to the top of the priority list:

1. **End-to-End Visibility**
   How can we enhance end-to-end process visibility?
2. **Top Tier Performance**
   How do we achieve top tier manufacturing performance?
3. **Skilled Labor Gap**
   How do we address the skilled labor gap?
4. **IoT & AI for Efficiency**
   How can IoT and AI boost efficiency?
5. **Adapting to Trade Shifts**
   How do we adapt to global trade shifts?

From Reflections To Action: $11b Tech Investments In 2024

Crucially, these boardroom reflections are now translating into budget shifts. The pressing questions on visibility, performance, and **agility have shaped tech spending priorities** for manufacturers. In 2024 alone, Indian manufacturing firms directed roughly **$11 billion** into Industry 4.0 technologies that promise greater resilience, efficiency, and competitive advantage.

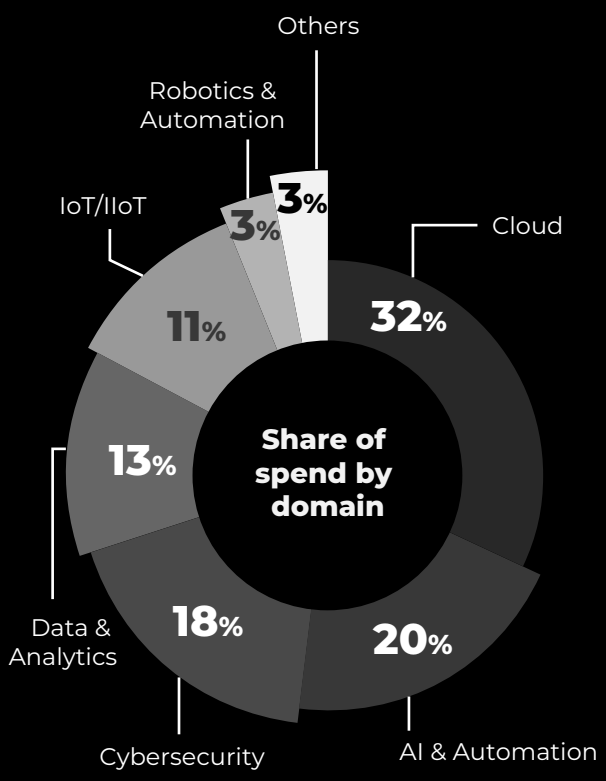
However, the topline number only tells part of the story. It's important to look at how that $11B is allocated to understand the strategic priorities. The lion's share has gone into five key domains.

$11B
Industry 4.0 tech investments by Indian manufacturers in 2024

59%
Energy use cut at a leading IIoT-driven plant (Schneider Electric Hyderabad, 2024)

20%+
Global market share in Acetic Anhydride achieved by Jubilant Ingrevia via digitalization

Indian Manufacturing Tech Spend Allocation (2024)



100% = $11B

CIO Takeaway

Align Tech Spend with Strategic Impact

For CIOs, the message is clear: technology investments must stay closely tied to business priorities. Budgets should consistently support cloud, AI, IoT, data analytics, and security. Overlooking any one of these areas risks creating costly gaps in capability.

It is just as important to demonstrate the value of these investments. Boards expect to see how every dollar directed toward cloud agility, AI-driven automation, or stronger cyber defenses translates into outcomes that matter most: greater visibility, improved efficiency, and reduced risk.

Decoding the Priorities Driving Manufacturing's Tech Bets

But numbers only tell part of the story. To understand where manufacturing is headed, it is important to decode the priorities behind these investments.

- **Cloud for Scale and Speed**
  Manufacturers are rapidly adopting cloud for scalability and agility, using it to streamline operations, cut costs, and respond faster to market shifts.

- **AI & Automation at Work**
  Over **80%** of Indian firms see AI as critical to long-term business impact, and 41% are investing in AI-driven automation to address labor shortages and skill gaps while improving efficiency and quality.

- **Cybersecurity as a Mandate**
  Nearly **76%** of Indian manufacturers faced ransomware attacks after the pandemic, with breaches severe enough to halt production, making cybersecurity one of the top boardroom priorities.

- **Data & Analytics for Insightful Decisions**
  Indian manufacturers already utilize about **53%** of the data they collect (versus a **44%** global average), putting them ahead in using analytics to forecast demand, optimize costs, and improve decision-making.

- **IoT/IIoT Driving Connected Factories**
  IoT adoption is accelerating, powered by Make in India, cheaper sensors, and 5G rollout. Factories are using IIoT to enable real-time monitoring and predictive maintenance, turning shop floors into connected ecosystems.

Kyndryl's Point of View: Accelerating Digital Manufacturing

Integrated Cloud & Infrastructure:
Kyndryl helps manufacturers migrate and manage core applications on hybrid cloud platforms, providing the scalability and agility needed for modern manufacturing. By offloading legacy systems to cloud and optimizing IT architectures, Kyndryl ensures that plants can **scale on demand**, deploy new solutions faster, and cut infrastructure costs – all without disrupting ongoing operations.

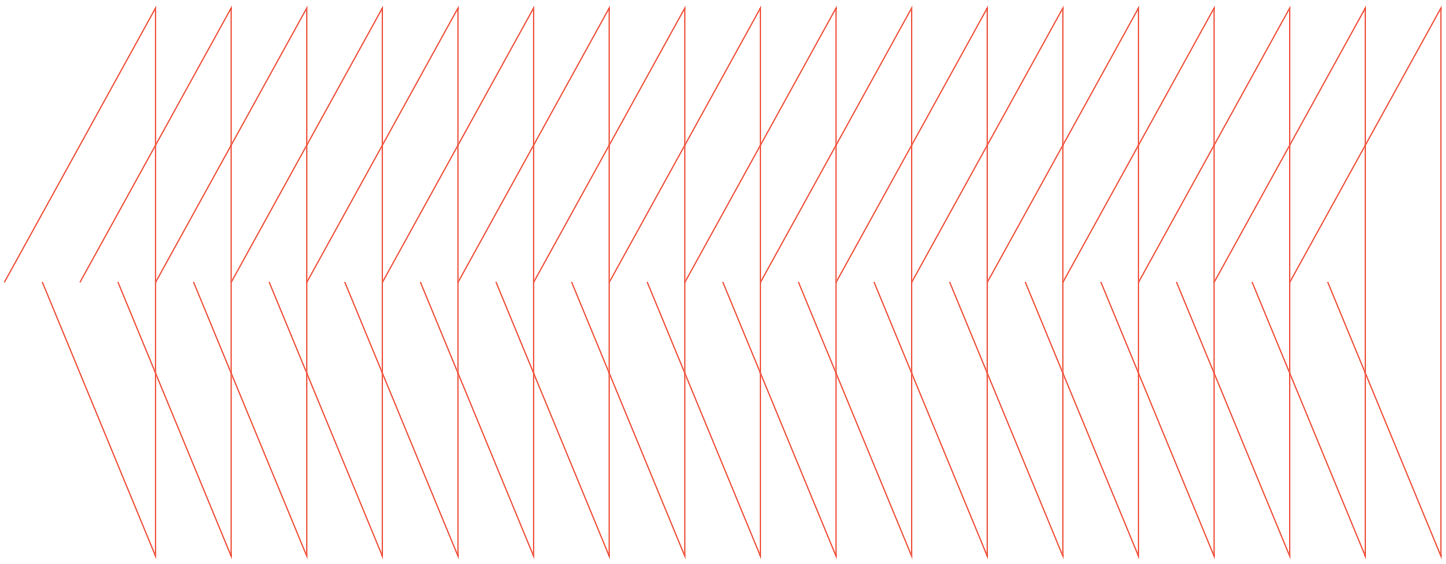
Data-Driven Insights with AI & Digital Twins:
Kyndryl integrates advanced analytics, AI, and digital twin technology into production processes. By implementing data lakes and AI models (often in partnership with hyperscalers), Kyndryl enables predictive maintenance and real-time quality control. In one engagement, this approach increased machine availability by **15%** and reduced maintenance expenses by **10%**, as the manufacturer could predict failures and optimize operations before issues occurred.

IoT and Edge for Connected Operations:
To achieve true shop-floor transparency, Kyndryl deploys Industrial IoT sensors and edge computing solutions that connect machines, devices, and control systems.

These IIoT frameworks feed live data into unified dashboards, giving CIOs and plant managers a **360° view of operations**. The result is smarter scheduling, lower downtime, and improved overall equipment effectiveness (OEE) across multiple facilities.

Cybersecurity and Resilience:
Recognizing that IT-OT convergence expands the threat surface, Kyndryl embeds cybersecurity at the heart of all solutions. From implementing **zero-trust security architectures** to round-the-clock monitoring and incident response, Kyndryl fortifies production environments. This helps manufacturers avoid costly breaches and ensures that digital initiatives (like remote machine access or cloud connectivity) don't compromise safety or uptime.

Ecosystem Partnerships and Innovation:
Kyndryl brings an ecosystem of technology partners – from cloud providers to industrial OEMs and software innovators – to co-create solutions tailored for manufacturing. This collaborative approach gives CIOs access to the latest innovations (AI, AR/VR, blockchain, etc.) under one roof. By leveraging these partnerships, Kyndryl helps clients stay ahead of the curve, whether it's implementing a cutting-edge predictive analytics platform or exploring quantum computing for complex optimization.



From Strategy to Shop Floor: How Manufacturers Are Applying Digital Tools

But numbers alone don't reveal the full picture, to truly understand the future of manufacturing, we need to uncover the priorities shaping these technology investments.

Industrial Automation

In today's factories, industrial robots are deployed for repetitive and high-precision tasks such as welding, assembly, and packaging. Collaborative robots (Cobots) increasingly share shop floors with human workers, enhancing both productivity and workplace safety.

Maruti Suzuki's Sonipat facility in Haryana relies entirely on advanced robotic systems for welding, with every weld spot executed through precision robotics. AI-driven quality checks further validate weld strength, ensuring consistency and reliability.

[Manufacturing from ET, 2024]

GenAI Transforming Chemical R&D

Generative AI is reshaping manufacturing by revolutionizing product design, production processes, and operational optimization.

Aditya Birla Chemicals is using generative AI and quantum computing to speed up chemical R&D. AI models now suggest new formulations and process improvements much faster than traditional labs, compressing years of innovation into months.

[Express Computer, 2024]

Industrial IoT Driving Efficiency

Industrial IoT (IIoT) integrates machines and sensors to provide real-time insights, enabling manufacturers to cut downtime, boost efficiency, and optimize output.

Schneider Electric's Hyderabad plant, in 2024, started using IIoT, real-time data, and AI-based monitoring to advance its carbon target by 2030. Its closed-loop system with CO_2 tracking has already cut energy use by 59%, emissions by 61%, water consumption by 57%, and waste by 64%.

Digital Twins Reshaping Production

Digital twins replicate physical assets or processes to simulate scenarios, optimize performance, and improve yield. In manufacturing, their value is rapidly growing and as per reports, 13% of IoT projects already use them and 62% are in progress or planned.

BMW has implemented digital twins across all 31 production sites, allowing teams to virtually inspect factories and collaborate in real time. At its Regensburg EV plant, the initiative has cut production planning time by nearly a third.

[SAP, 2025]

Holcim, Switzerland's building materials giant, launched the world's first 3D digital twin of a cement plant, leveraging sensors, AI, and predictive analytics to save USD 79M annually and cut 400,000+ tonnes of CO_2 *[Holcim, 2023]*

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Driving Enterprise Agility: Kyndryl's Cloud-Based SAP S/4HANA Transforms Dilip Buildcon's Operations

Dilip Buildcon partnered with **Kyndryl** to **modernize and centralize its enterprise resource planning (ERP) and analytics**, deploying SAP S/4HANA in the cloud across 65 sites. This fully managed, cloud-based ERP integrates core functions – finance and controlling, human resources, materials management, and business intelligence – enabling **consistent end-to-end workflows and real-time insights** company-wide.

By adopting Kyndryl's managed solution, Dilip Buildcon avoided large up-front IT infrastructure investments and the need for a big in-house IT team, **while gaining a comprehensive view of assets and inventory**. With improved data visibility and more accurate forecasting of spare parts and raw materials, the company optimized inventory levels, **reduced working capital requirements by 5%**, and is now well-positioned to take on additional projects.

> At Kyndryl, we combine AI-driven predictive maintenance and quality solutions with deep manufacturing domain expertise to unlock transformative outcomes. This powerful blend delivers measurable value to our customers while fostering long-term, trusted partnerships that fuel innovation and growth for both our customers and partners.

Kaustubh R. Purohit,
Customer Technology Advisor,
Kyndryl India

Case Spotlight: Digitalization Delivers Real Business Outcomes

Digital initiatives often stay confined to pilots, but some show real impact on the ground. **Jubilant Ingrevia**'s Gujarat plant demonstrates how going digital can lower costs, improve efficiency, and strengthen market position.

The Challenge

At its Acetic Anhydride facility in Gujarat, **Jubilant Ingrevia** struggled with **high energy costs consuming nearly 70% of total plant output**, frequent process variability, and the constant risk of unplanned downtime. As a brownfield facility, deploying modern technologies at scale posed additional hurdles.

The Action

To address these challenges, the company rolled out a suite of digital-first interventions:

- **Advanced analytics (XGBoost, MILP):** Forecasting raw material prices with over 95% accuracy.
- **Golden Batch modelling & digital twins:** Stabilizing production and reducing downtime with smart sensors.
- **IoT-driven monitoring:** Tracking 120+ parameters to cut steam consumption and predict equipment failures.
- **Workforce reskilling & safety platforms:** Embedding a digital-first culture across the plant.

The Outcome

30%
Reduction in production losses and 20% boost in productivity

20%
Cut in steam use and Scope-1 emissions; zero liquid waste achieved

20%
of the global market share in Acetic Anhydride secured.
[World Economic Forum, 2024]

CIO Takeaway

Reviving Legacy:
Tech + People = Step-Change:
Even legacy facilities can achieve breakthrough improvements with the right digital strategy. Jubilant's success underlines the importance of a holistic approach – combining advanced tech (analytics, IoT, digital twins) with operational changes and people empowerment. CIOs can use such case studies to build the business case for transformation: they demonstrate that **investing in digital tech yields not just incremental benefits, but step-change improvements** in output, cost, quality, and even market positioning.

Manufacturing Leaders Priorities: Common Ground & Diverging Paths

Real-Time Visibility
Instant data from shop floors and supply chains to anticipate bottlenecks and enable fact based decisions

Quality & Defect Detection
Camera analytics, machine vision, and predictive models to reduce rework and improve trust

Cybersecurity with IT-OT
IT-OT integration expands the attack surface, secure every endpoint, network, and control layer

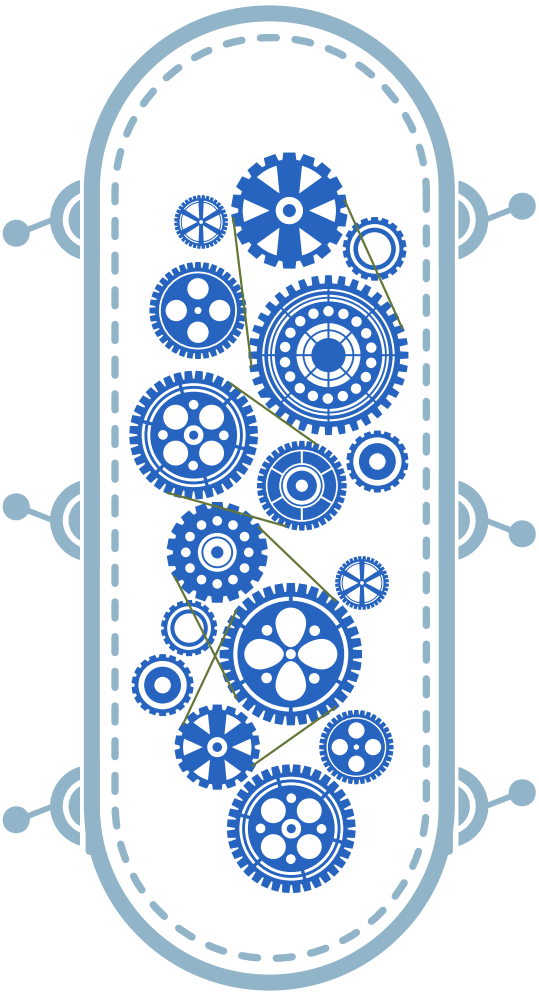
Modernization Strategy
Split pathways: fast-track app modernization vs longer-term infrastructure overhaul

People & Change
Reskilling, capability-building, and early stakeholder alignment determine success

Six Levers of Digital Manufacturing Success

The path to digital transformation in Indian manufacturing is no longer theoretical—it's a race to stay relevant in an increasingly competitive and disruptive global landscape. Leaders must move beyond piecemeal pilots and start aligning digital initiatives to overarching business goals. While manufacturers have made strides in adopting Industry 4.0 technologies, the real challenge lies in translating these technologies into tangible, bottom-line outcomes.

As manufacturing leaders continue to navigate the landscape of digital transformation, six core levers are emerging as crucial to success. These levers go beyond just implementing new technology—they focus on how companies can drive alignment, scalability, and resilience throughout their digital journeys.



Anchor Digital to Business Goals

Tie digital to clear business outcomes - cost, safety, efficiency, or customer experience. **Jubilant Ingrevia** linked analytics and IoT directly to productivity gains and emission cuts

Build a Strong Digital Core

Invest in cloud, IoT platforms, and standardized data systems for scalability. **Schneider Electric**'s Hyderabad plant shows how a unified IIoT backbone drives energy and emission cuts

Secure IT-OT Convergence

As IT and OT merge, security must be built in from day one. Manufacturers are now prioritizing governance frameworks to protect connected operations

Start Small, Scale Fast

Begin with high-impact pilots before scaling. **Maruti Suzuki**'s robotic welding started as a targeted automation use case before becoming a plant-wide standard

Empower People, Not Just Tech

Transformation sticks when people adopt it. **Jubilant** reskilled its workforce and built a digital-first culture alongside deploying new technologies

Foster a Culture of Continuous Innovation

Keep experimenting and collaborating with partners. **Aditya Birla Chemicals** is using GenAI in R&D to compress years of lab work into months, proving innovation drives competitiveness

[TechCircle Analysis]

Conclusion:
Priorities for the Decade Ahead

India's manufacturing sector stands at an inflection point. Global disruptions have exposed the limits of competing purely on cost, while peers like China are leaping ahead through automation and smart manufacturing. The evidence in this report is clear: when Indian companies embrace digital transformation – whether through AI, IoT, digital twins, or advanced analytics – the results are measurable and transformative. Lower energy consumption, higher productivity, better quality, and new revenue opportunities are all on the table.

The path forward for the next decade lies in combining technology with people and process modernization, under strong leadership vision. **CIOs have a pivotal role** in this journey. They must ensure that tech investments align with business goals and foster resilience, while also driving cultural change within their organizations.

As a CIO, it's worth asking: **How can you balance the mandate for resilience with the continual push for efficiency? And what concrete steps will you prioritize to securely integrate IT and OT in your environment as they converge?** The answers to these questions will shape your company's trajectory. The coming years will belong to those manufacturing leaders who can turn these hard questions into action – blending innovation with pragmatism to build factories that are not only efficient and productive, but also agile and future-proof.

This thought article is the first in a series we will be publishing over the coming months, exploring the evolving priorities, technologies, and leadership strategies shaping Indian manufacturing.

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About TechCircle

TechCircle is a trusted Go-to-Market consulting and intelligence platform for technology providers. We enable global and Indian tech suppliers to accelerate growth by combining account-level research, market insights, and exclusive executive engagement platforms.

Through in-depth industry intelligence, account profiling, and tailored engagement formats, we connect technology providers with the right decision-makers across BFSI, manufacturing, healthcare, and other industries.

By bridging enterprise intent with supplier opportunity, TechCircle acts as a growth partner, helping tech providers build meaningful client relationships and convert them into measurable business outcomes.

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