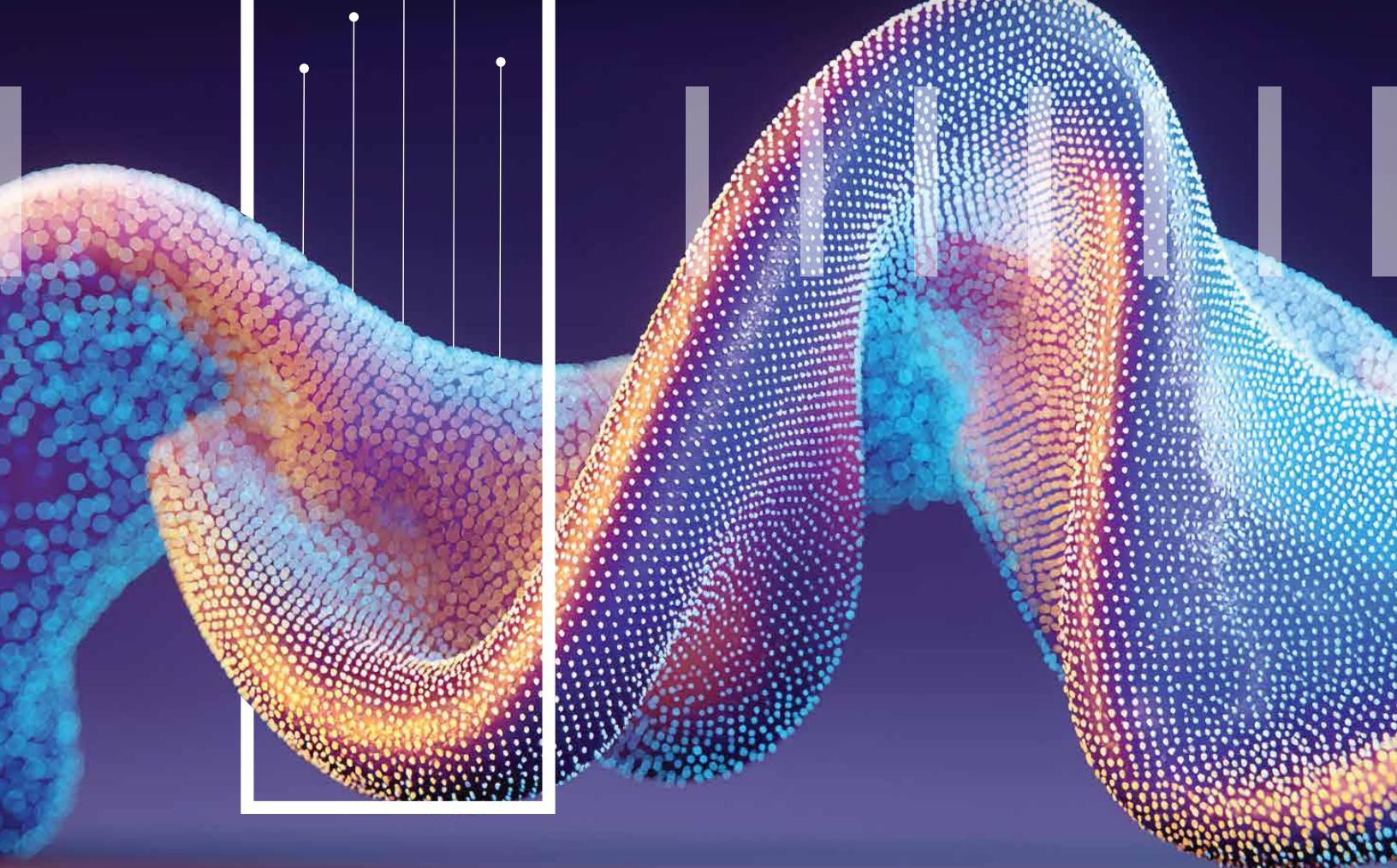


AI in Manufacturing: Turning Strategic Intent into Scalable Operating Advantage



Artificial Intelligence (AI) has moved beyond the margins of manufacturing strategy. Data from the first volume of [Infosys Manufacturing Tech Index: AI Pulse](#) uncovers that 75% of global manufacturers now embed AI into their core strategies. Yet, as we discovered during our research, a striking gap persists between strategic intent and enterprise wide value realization. AI has achieved mainstream acknowledgement, but not mainstream success. As leaders, our challenge is no longer to advocate for AI, it is to operationalize it with discipline, speed, and trust. Strategy alone is insufficient; execution capability now determines competitive advantage. And as manufacturers face unprecedented cost pressures, labor constraints, and operational complexity, AI is essential not just to improve the business, but to *run* it.



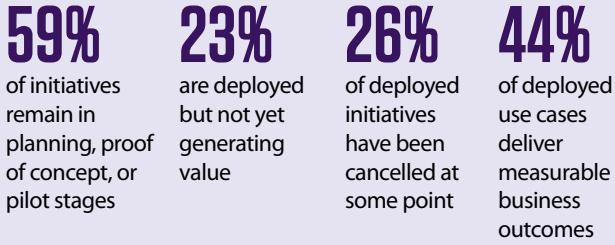
What the Data Reveals: Key Insights

The report shows that companies that embed AI strategically launch significantly more initiatives, on average 80 vs. far fewer for peers who treat AI as experimental. These organizations invest more aggressively and move faster. Yet their success rates do not rise proportionally. Many find themselves deploying more pilots, but not achieving more bottom-line impact.

This divergence reveals an important truth: AI strategy unlocks ambition, but execution unlocks value.

Manufacturers are allocating real capital, \$2–\$2.5 million median investment per initiative, with 54% of them spending over \$2 million per initiative. But AI initiatives resemble a venture portfolio: a few big wins drive disproportionate value, while many stall or get cancelled.

In our survey:



This is not due to lack of belief. Nearly **70%** of executives believe AI has value, whether proven or not. But the sentiment remains polarized between “transformational” and “heavily overstated.” That polarization is not a weakness; it’s a signal that adoption frameworks, not enthusiasm, must evolve.



Cybersecurity: The Most Urgent Use Case, and the Largest Barrier

One of the most compelling insights from the [Index](#) is the dual role of cybersecurity:

- It is the top AI implementation area, with nearly 60% of manufacturers deploying AI in cyber and OT systems
- It is also the largest barrier preventing scale

The [cyberattack on Jaguar Land Rover](#) last year, which disrupted their global manufacturing operations highlighted a painful truth: as IT and OT converge, risk multiplies exponentially. AI helps triage vulnerabilities, analyze threats, and support operators with intervention recommendations. But unless cybersecurity maturity rises in parallel, AI scale will always be constrained.

For leaders, this mandates a secure by design architecture, not a post-deployment add on. To maximize value responsibly and securely AI needs:

- Unified visibility across IT and OT
- Governance frameworks that track lineage, model behavior, and risk thresholds
- Stage gates tied to security audits
- Human oversight where safety and compliance demand it

Manufacturers should start AI adoption where operational need is high, precisely why cybersecurity, OT monitoring, production, and quality show the highest adoption.



Data Readiness: The Prerequisite for AI Success

The second major barrier, data quality and readiness, is even more foundational. AI success rides on the structure, context, and freshness of operational data.

Manufacturers must treat data not as a technical asset, but as a production asset, similar to equipment reliability or process design. This involves building:

- A robust data foundation
- Digital context models for machines, production flows, and events
- Standard telemetry schemas
- Composable data pipelines
- A resilient MLOps environment mapped to plant behaviors

Manufacturers that treat data engineering as a long-term investment, not a project linked to a single AI initiative, are the ones who gain reuse, repeatability, and scale.



More Initiatives Do Not Guarantee More Value

The Index shows a direct correlation between strategic commitment and initiative volume, but not with initiative success. The missing link is execution infrastructure.

High performing manufacturers:

- Apply stage gates to every initiative
- Maintain disciplined capital allocation
- Kill low value initiatives early
- Invest in reusable platforms, not one-off solutions
- Track adoption metrics, not just model performance
- Reinvest early wins into broader portfolios

This requires leadership courage. AI portfolios must embrace **constructive attrition**. A cancelled initiative is not a failure; it is a sign of governance maturity.



External Partners Accelerate Learning

Nearly 75% of manufacturers rely on external partners or vendors for AI delivery, while only 26% pursue in-house development. This is rational: deep expertise, accelerators, and industry specific templates shorten time to value.

However, long term competitive advantage requires a partner to learn strategy. External support must be structured around:

- Co designed playbooks
- Joint governance
- Internal upskilling

A hybrid sourcing model, where internal teams collaborate with specialists, balances speed and self-reliance, giving manufacturers a durable execution muscle.



From Operational Focus to Customer Value Chains

While cybersecurity, OT, production, and quality lead today's AI landscape, the next wave of opportunity lies in:

- Sales
- Service
- Aftermarket
- R&D

These functions remain underpenetrated, but the potential is transformative. Customer experience - uptime, productivity, equipment life - depends on lifecycle intelligence. AI can create integrated insight loops across design, manufacturing, and service.

Manufacturers that align AI to customer value flows will differentiate not only operationally, but strategically.



What Leaders Must Do Next

To maximize ROI and build competitive differentiation, manufacturing leaders must:

1. Set guardrails, not constraints

Define clarity: what success looks like for each initiative, where AI can operate autonomously, and where humans remain essential.

2. Scale through platforms, not isolated deployments

Invest in shared data, security, and MLOps foundations that support dozens of initiatives.

3. Track adoption and behavior change

Operator usage, acceptance of AI recommendations, and workflow integration matter as much as technical accuracy.

4. Institutionalize learning velocity

Measure how many ideas convert to pilots, how many pilots convert to scale, and how fast feedback cycles run.

5. Build cross-functional governance

Ensure cybersecurity, production, engineering, data, and business stakeholders collaborate continuously, not sequentially.



AI Will Define the Next Era of Manufacturing Competitiveness

Manufacturers today stand at an inflection point. The strategic case for AI is overwhelmingly clear. What differentiates leaders now is their ability to turn AI into a scalable, secure, and value creating operating system for the enterprise.

Future competitiveness will be shaped by how well manufacturers:

- Embed AI into daily decisions
- Operate with resilience across IT/OT
- Link operational insights to customer outcomes
- Build talent, governance, and trust into every deployment

At Infosys, our role is to help manufacturers build this execution capability, securely, responsibly, and at scale.



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Rajiv Puri is a Vice President at Infosys' Manufacturing unit. He leads industry strategy, solutions and AI offerings. Rajiv has worked in the manufacturing industry throughout his career, and held roles such as production manager, supply chain manager, business consultant, industry solution leader and client partner. He has authored several thought papers in areas like warranty management, quality management, cobotics and AI in manufacturing. Rajiv has participated in Sweden's Luleå university's initiative - Digital Innovation of Business Models. He is also an active participant in the World Economic Forum's Advanced Manufacturing and Value Chains initiative as well as the Aerospace Industries Association's AI initiative.

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