Still Processing: GenAI Adoption Across Process Industries

After more than a decade of consistent outperformance, the process industry sector is undergoing a period of significant transformation— driven by energy market shifts, supply chain disruptions, inflationary pressure, sustainability demands, regulatory changes, and rising geopolitical uncertainty. While some of these factors may be temporary, together they signal a more dynamic and demanding operating environment. As the pace of change accelerates, leadership must evolve in parallel.

While core strategies such as cost control, portfolio realignment, and supply chain optimization remain important, process industry executives must go further. Success in this environment depends on leaders who can adapt to shifting contexts, foster cross-functional collaboration, and champion innovation across the enterprise. Artificial Intelligence (AI), in particular, is rapidly emerging as a key enabler of more predictive operations, impactful innovation, intelligent supply chain management, and highly customer-centric sales & marketing.

Despite AI's notable benefits, insights from Russell Reynolds Associates' H1 2025 Global Leadership Monitor highlight that **the process industry is falling behind other industries on adopting AI into its workstreams.**

Process industries involve the continuous conversion and refinement of raw materials into products that often serve as essential components for other industries. Examples of process industries include chemicals, mining, metals, materials, agribusiness, food production, and paper and packaging.

Read on to learn more about how process industry leaders view generative AI's potential, why the current pace of adoption is unsustainable, and what must change to capture the specific top- and bottom-line business benefits of generative AI across the sector.

How GenAI is transforming business

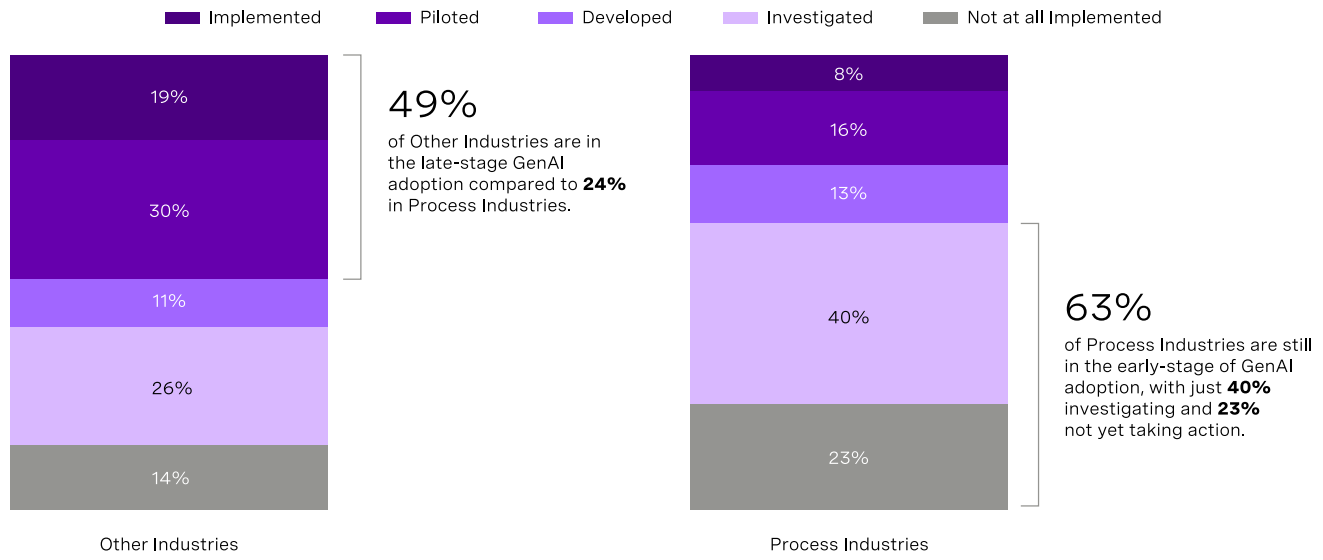
Generative AI (GenAI) is poised to drive a major wave of transformation across industries, with the potential to deliver $2.6 to $4.4 trillion in annual economic value, according to recent McKinsey research.[1] Roughly 75% of this value is expected to come from four core areas: customer operations, marketing and sales, software engineering, and R&D. GenAI enhances customer service through intelligent automation, boosts marketing effectiveness with personalized content at scale, accelerates software development through AI-assisted coding, and speeds up innovation in R&D.1

For business leaders, this signals a strategic imperative to harness GenAI within high-impact areas—unlocking efficiencies, spurring growth, and building a lasting competitive edge.

To gain a deeper understanding of how the process industry is adopting GenAI, we analyzed data from RRA's H1 2025 Global Leadership Monitor (GLM), which captures senior executives' perspectives on a range of business issues, including GenAI implementation progress, impact, and how organizations are responding. These insights offer valuable context on the current state of adoption, revealing where momentum is accelerating and which use cases have yielded impact.

Ready, set, wait! GenAI implementation lags in process industries

Figure 1: The "wait-and-see" window is closing: Implementation progress between process industries and other industries



Source: RRA's H1 2025 Global Leadership Monitor (GLM), Other Industries n = 1891; Process Industries n = 106

While GenAI is making rapid strides across various industries, its adoption in the process industry remains cautious and limited. Only 24% of organizations in this space have either piloted or fully implemented GenAI—about half the rate seen in other industries (Figure 1). A notable 40% are still in the "investigated" phase, pointing to significant hesitation and potential uncertainty on how to proceed. Even more concerning is the fact that 23% of process industry leaders report taking no action at all, indicating possible challenges in organizational readiness or leadership prioritization.

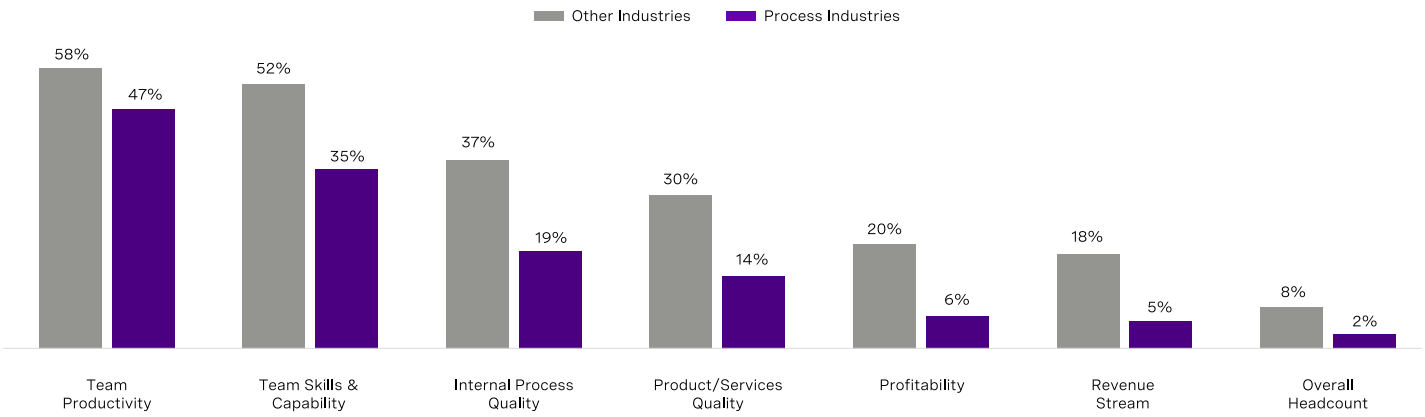
However, to fully understand the slower pace of adoption in the process industry, it's important to consider both structural and organizational realities. These sectors are inherently complex—asset-heavy, capital-intensive, highly regulated, and built on long investment and product development cycles. Unlike digital-native or consumer-facing industries that can experiment and scale quickly, process industry leaders must carefully evaluate the implications of GenAI on safety, compliance, and mission-critical operations—meaning slower uptake is likely a feature, not a flaw.

Regardless, as other sectors move from investigation to implementation, the time for a 'wait and see' approach is dwindling. To avoid falling behind, process industry leaders must act now. While they may not be first movers, there is ample opportunity to be fast followers—learning from early adopters, sidestepping common mistakes, and advancing at a pace that fits their operational needs. Immediate action also provides a competitive edge in key areas like attracting AI talent, launching differentiated offerings, and gaining early advantages. In contrast, delaying action could result in rushed decisions, limited talent access, and fewer strategic options.

Simple wins: Process leaders are unlocking AI-driven benefits in low-risk process opportunities

As shown in Figure 1, only about a quarter of companies in the process industries have piloted or implemented GenAI solutions, with the majority still in the investigation or early development stages. Figure 2 further reveals that, among the organizations further along in their AI journey, the most notable gains have emerged in lower-risk, enabling areas—such as team productivity (47%) and workforce skills and capabilities (35%). This suggests that current use cases are largely concentrated in support functions and collaboration tools, rather than in core operational processes.

Figure 2: AI - Driven Organizational impacts - Process vs Other Industries



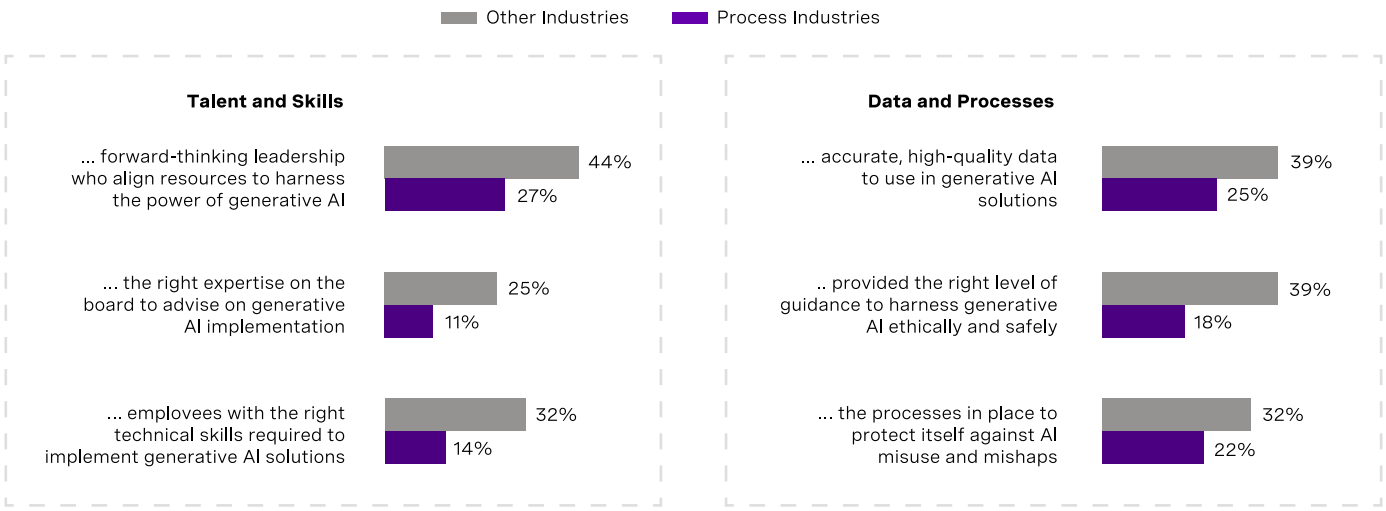
Source: RRA's H1 2025 Global Leadership Monitor (GLM), Other Industries n = 1555; Process Industries n = 76

This trend is consistent across sectors. However, process industries continue to trail others by at least 10 percentage points in nearly all business areas—except for team productivity and headcount. More critically, value-driving metrics like new revenue streams (5%), profitability (6%), and product or service quality (14%) have shown limited impact, indicating that AI's transformational potential in core operations has yet to be fully realized in this sector.

Capability deficits: Process leaders have concerns about their organization's AI foundations

The process industry's structural complexity tells only part of the story. Our findings suggests that deeper capability gaps may also be holding the industry back.

Figure 2: AI - Driven Organizational impacts - Process vs Other Industries



Source: RRA's H1 2025 Global Leadership Monitor (GLM), Other Industries n = 1555; Process Industries n = 76

Compared to other sectors, process industries lag in several foundational enablers of GenAI adoption—most notably in leadership alignment, technical talent, board-level expertise, and data readiness. As shown in Figure 3, only 27% of process industry leaders report having forward-looking leadership that can align resources to drive GenAI efforts, and just 11% say they have GenAI expertise at the board level. These are not simply technical deficits—they reflect a broader lack of organizational readiness and strategic conviction.

Particularly concerning is the 21-point gap between process leaders and their global counterparts around ethical and safety guidance capabilities. This reinforces how vital these considerations are in process industries, and suggests that the bar may be higher due to the high-stakes environment, in which even small lapses can lead to catastrophic consequences.

If process industry leaders want to unlock transformative value from GenAI, they must first invest in the structures, expertise, and governance needed to support scaled, responsible deployment. Attempting to advance into higher-impact applications without these foundations risks missteps—wasted investment, resources, time, regulatory setbacks, safety incidents, and potential reputational harm. Building the right capabilities and expertise now is essential—not only to avoid these risks, but to give leaders the clarity and confidence to move forward. A strong leadership vision, grounded in a clear strategy and backed by the right technical expertise and skills, can significantly de-risk the adoption journey and empower organizations to become fast followers.

What's next for process industry leaders looking to embrace GenAI?

The findings in our analysis point to a layered challenge for process industry leaders. While many organizations are starting with low-risk GenAI applications—such as productivity enhancements and internal collaboration tools—this limited scope won't be enough to sustain competitiveness or resilience in a fast-evolving market. To unlock GenAI's full potential, leaders must look beyond the back office and explore higher-impact opportunities across the business, including product and service innovation, sales and marketing enablement, process optimization, predictive maintenance, and accelerated R&D.

However, as explored throughout this report, advancing into these areas is not simply a matter of identifying use cases—it requires overcoming significant internal barriers such as capability gaps, structural inertia, and a lack of leadership alignment. These challenges are amplified by the nature of the process industry itself, where innovation is often capital-intensive, tightly regulated, and inherently high-stakes.

To move forward, process industry leaders must adopt a disciplined, long-term approach grounded in clear strategic priorities, strong GenAI capabilities, and enterprise-wide alignment. Success begins with building the right foundation. As highlighted in Russell Reynolds Associates' *Systems View on Leading Through AI Transformation*, the most effective transformations are not siloed—they empower leaders across the organization to drive coordinated, business-wide change. For those looking to take the next step, the full article offers a practical blueprint for leading AI transformation with discipline and intent.

RRA Systems View on leading through AI transformation

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Sources

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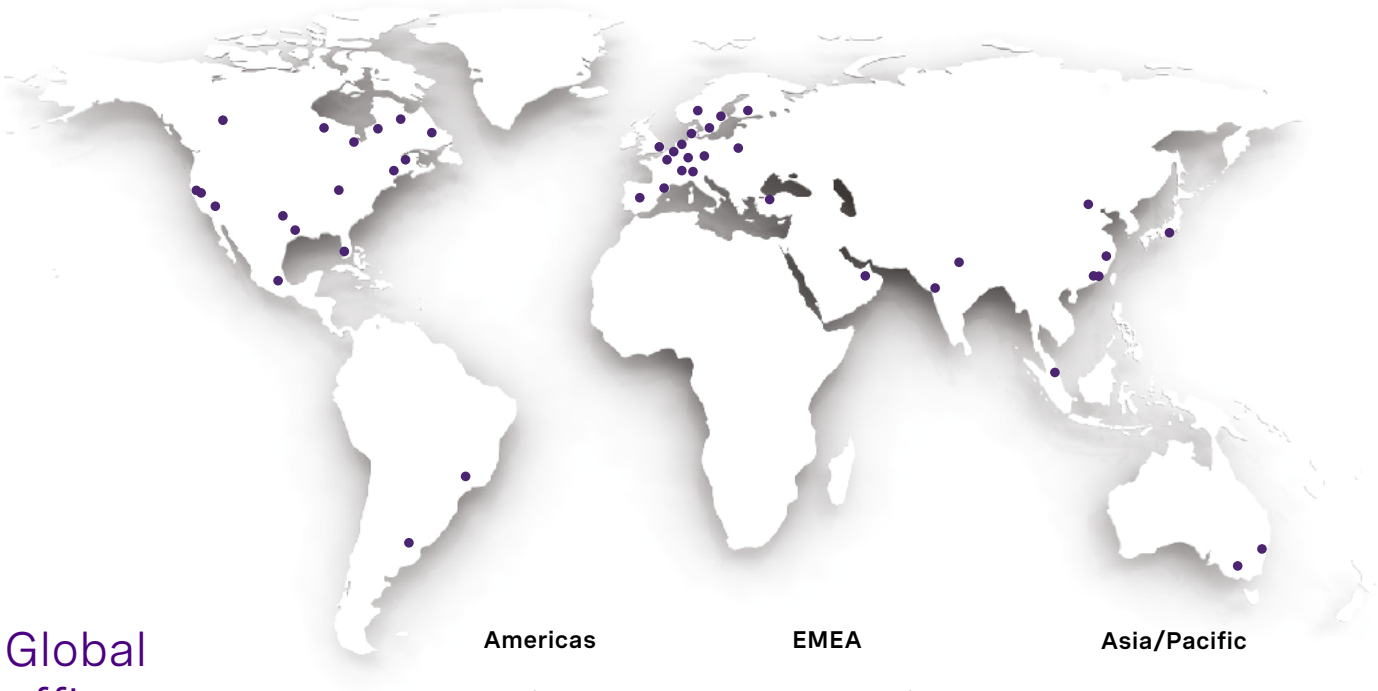

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