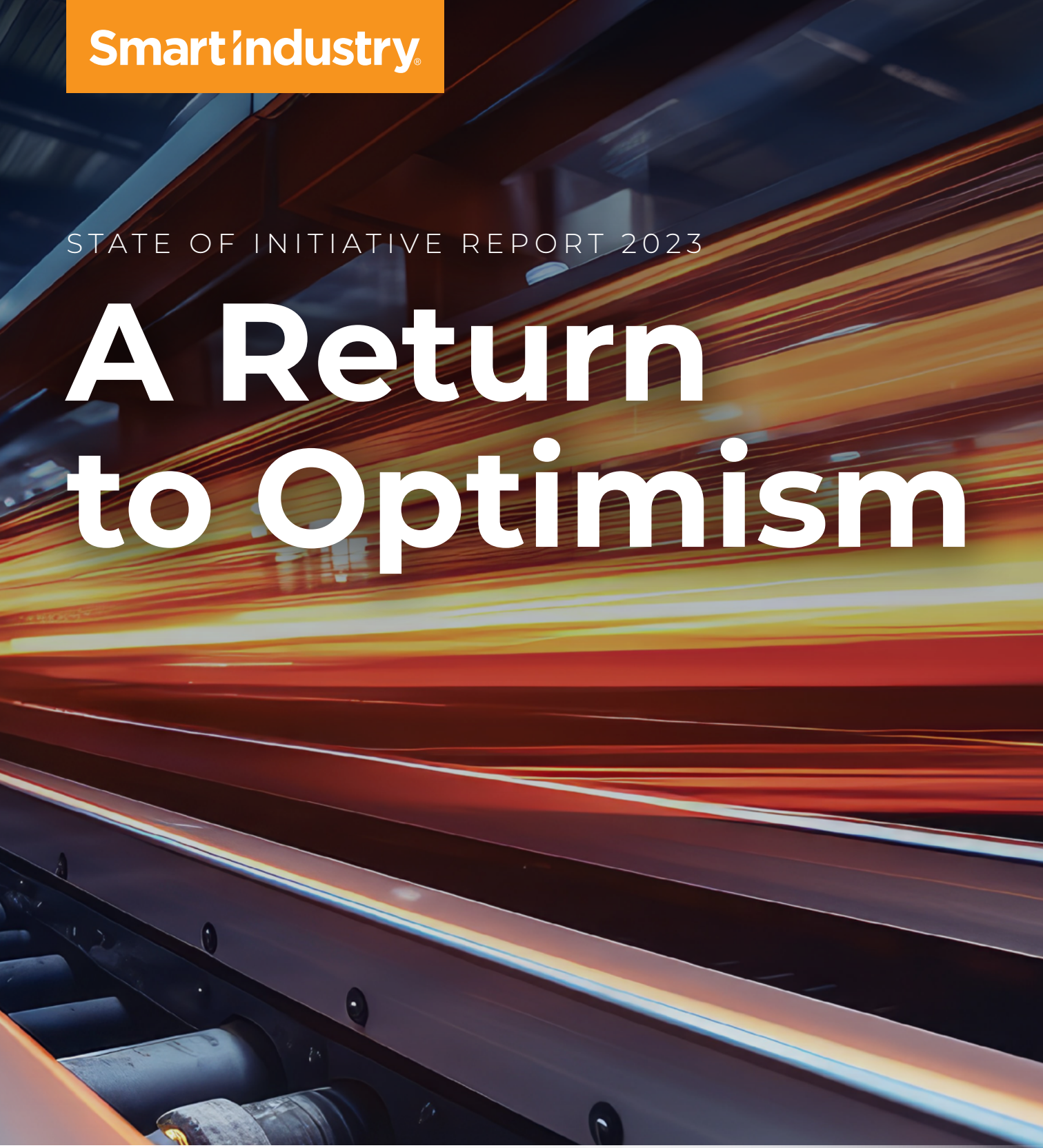
Smart industry

STATE OF INITIATIVE REPORT 2023

A Return to Optimism



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A Return to Optimism

The past year presented manufacturers with a unique opportunity to build resilience and agility, akin to training in a well-equipped gymnasium. COVID-stressed supply chains fostered a shift towards just-in-time and just-in-case mindsets, while political and economic uncertainties prioritized reshoring and re-sourcing efforts. Robust demand for industrial and manufactured goods fueled financial performance and industry growth. Additionally, the introduction of new practices like Industrial DataOps and the emergence of next-gen ERP systems empowered data-driven decision-making like never before. This confluence of factors has ignited a renewed enthusiasm for and accelerated the advancement of digital transformation.

Since 2015, our State of the Initiative survey has captured diverse perspectives from over 3,500 respondents across various manufacturing roles. This rich data reveals a consistent interest in "working smarter, not harder" through digital transformation. However, it also highlights the inherent ebb and flow of enthusiasm, often tied to the challenges of translating potential into reality. As some technologies, like augmented reality, fall short of initial hype, others, like artificial intelligence, emerge with equally ambitious promises yet remain largely unproven. Despite this dynamic landscape, we find ourselves at a pivotal moment where core technologies have matured, offering a clearer path and enhanced promise for digital transformation.

However, successful implementation remains contingent on two crucial elements: committed leadership willing to prioritize digital transformation success and skilled talent capable of maximizing the investments made. Where these elements are present, success is nearly guaranteed. This year's data vividly reveals that their absence, conversely, limits potential advancement.

DIGITAL TRANSFORMATION: ENTHUSIASM RETURNS

The 2023 State of the Initiative survey paints a markedly different picture from the previous two years regarding the perceived impact of digital transformation. After a dip in enthusiasm in 2021 and 2022, optimism has made a significant comeback.

In 2021, pessimism reached its peak, with 5% of respondents believing digital transformation would not have an impact on their organizations. 2022 offered a slight improvement, with only 1% expecting no impact, but 23% still expecting only little effect. This stood in stark contrast to 2015-2020, where around 70% consistently anticipated a high or significant impact.

However, 2023 marks a pivotal shift. Close to three-quarters (72%) now view digital transformation as having a significant impact on their organizations within the next five years. This dramatic increase, with only 6% expecting a low impact, suggests that the pessimism of 2021 and 2022 was not a harbinger of a declining trend.

ANTICIPATED IMPACT

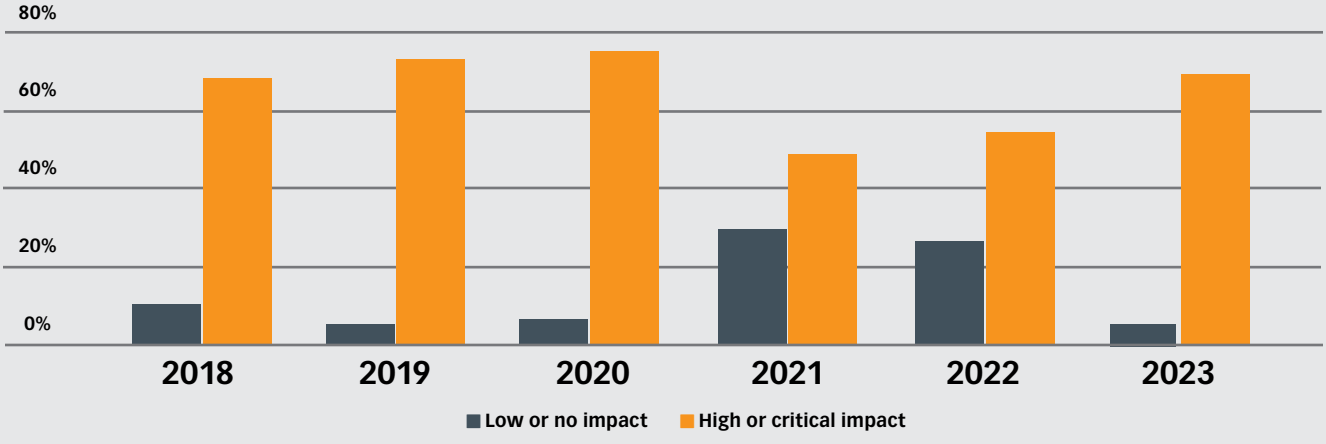

Figure 1. When you consider the drivers of and the opportunities presented by digital transformation, what is your best assessment of its likely impact on your organization in the next 5 years?

This renewed optimism can be attributed to several factors. Emerging from the pandemic's shadow, manufacturers are likely feeling more confident about the future and more open to embracing technological advancements. Additionally, the maturation of core digital transformation technologies may have made the path forward clearer and the potential benefits more tangible.

Of the many reasons, the 2023 survey results offer a hopeful outlook for the future of digital transformation in manufacturing. As enthusiasm converts to more adoption, we can expect to see tangible advancements and even more case studies about how digital transformation played a part in efficiency, productivity, and overall competitiveness in the years to come.

DIGITAL STRATEGIES MATURING

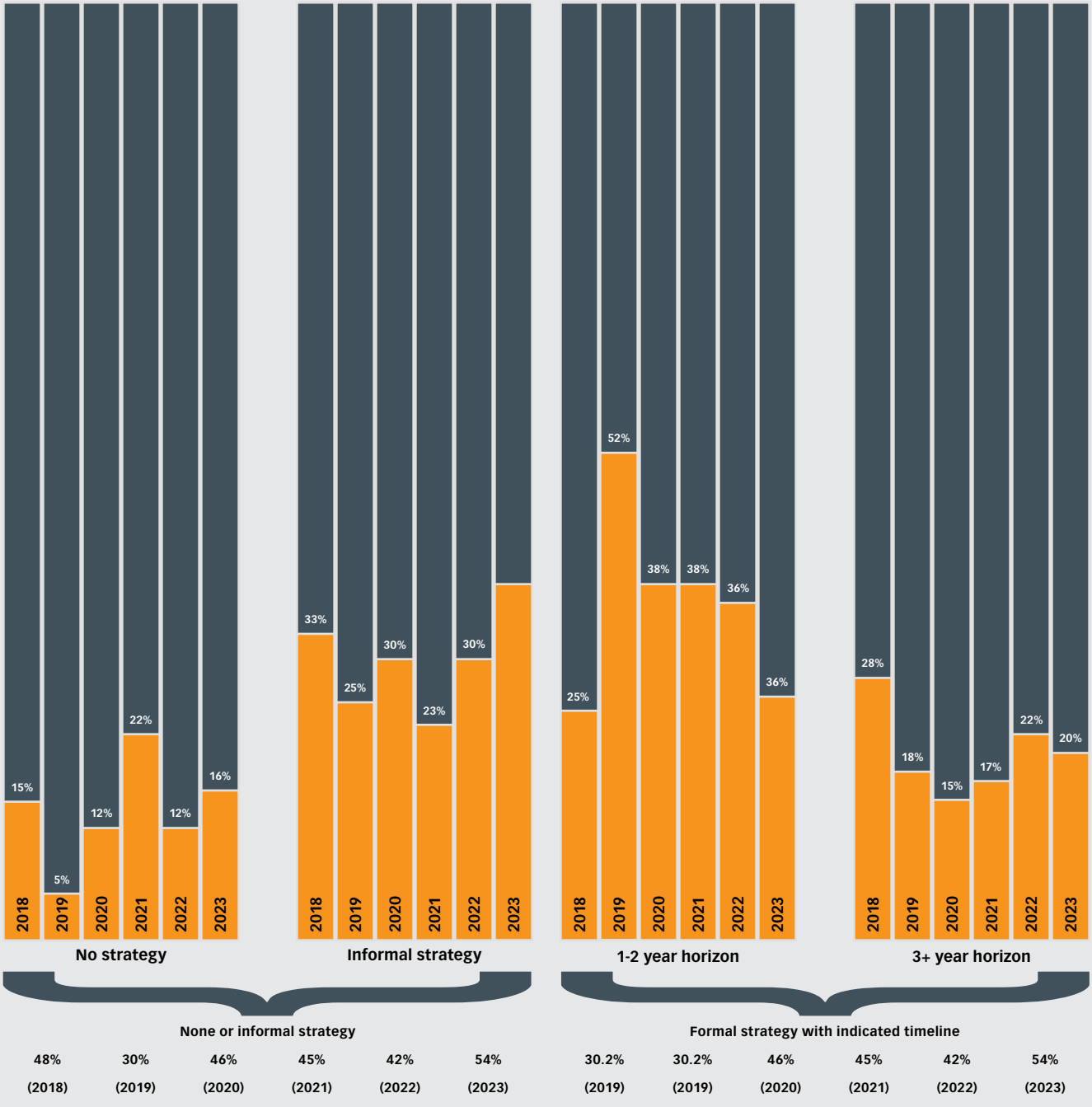

Figure 2. Which of the following statements best describe your organization's digital-transformation strategy?

MOVEMENT TOWARD TRANSFORMATION: STATE OF DIGITAL INITIATIVES

The 2023 survey reveals a continued upward trajectory for digital transformation efforts in manufacturing. Since 2015, the number of companies steadily moving from the "not started" stage to investment and scaling has increased. While 2023 saw a slight uptick in those just starting (22% versus 19% in 2022), the real story lies in the 56% actively identifying applications, making investments, or scaling up based on initial results. Notably, only 2% chose to abandon their initiatives after evaluation, showcasing growing confidence in the tangible benefits achievable.

This confidence further translates into increased strategic planning. Compared to 2015, where nearly half had no strategy at all, a significant 46% in 2023 now have a formal digital transformation strategy in place.

Overall, the 2023 data paints a picture of consistent progress and growing commitment to digital initiatives in manufacturing. The active movement beyond the initial stages, coupled with increasing strategic planning, signals a maturing industry embracing the transformative potential of technology.

PROGRESS, CHALLENGES, AND SHIFTING PRIORITIES: A DEEPER LOOK AT DIGITAL TRANSFORMATION EFFORTS

There's a great deal of nuance in the progress and challenges faced by manufacturers in their digital transformation journeys. Highly successful efforts are beating out failed attempts, but most projects are still between those poles — somewhere between problematic and somewhat successful.

THE AI CONUNDRUM: HOPEFUL POTENTIAL, HESITANT ADOPTION

While the potential of artificial intelligence (AI) in manufacturing is undeniable, its current adoption paints a picture of cautious optimism. Despite a near-unanimous belief in automation, operations, and cybersecurity as key beneficiaries of AI, only 6% of respondents consider themselves "power users," and nearly half haven't embraced AI in critical systems. This echoes the findings of **Sikich's Industry Pulse survey**, where over 60% of manufacturers remain unsure about AI integration.

This hesitancy stems from a combination of factors. A "show me" mentality has leaders demanding concrete proof of AI's tangible benefits before committing resources. Additionally, concerns about data security, talent gaps, and the complexity of integrating AI into existing systems create a significant hurdle.

Amidst the skepticism, hope shines through for AI. Over 50% see automation as a top-tier benefit, highlighting the potential for AI to streamline processes and boost efficiency. The enthusiasm for AI's impact on operations and cybersecurity also suggests a growing awareness of its potential to optimize workflows and secure critical infrastructure, especially as the convergence of IT and OT exposes new security risks relating to the connection of so many systems.

Ultimately, the future of AI in manufacturing hinges on bridging the gap between potential and reality. Addressing concerns through successful case studies, readily available training programs, and user-friendly AI platforms is crucial. By demonstrating the tangible value of AI and making it readily accessible, manufacturers can unlock its transformative potential and usher in a new era of intelligence-driven manufacturing.

DIGITAL TRANSFORMATION STRATEGY

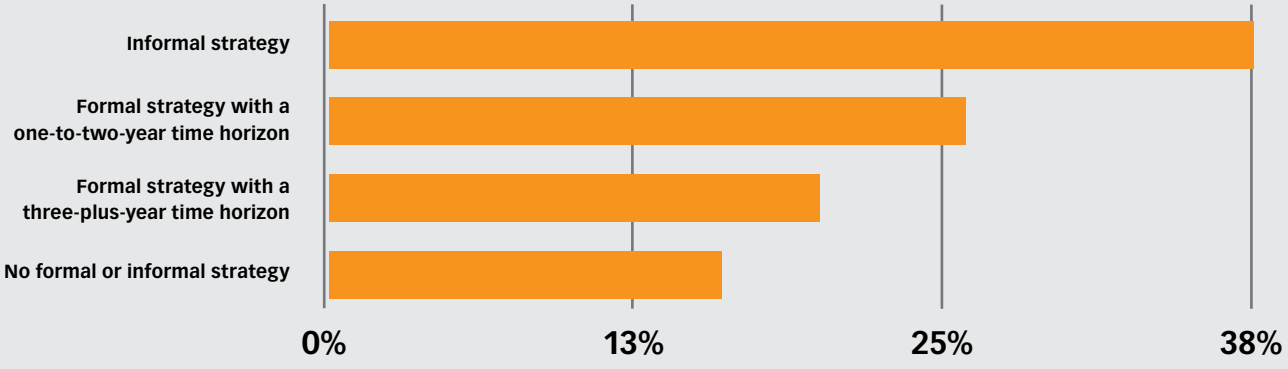

Figure 3. Which of the following statements best describes your organization's digital transformation strategy?

DIGITAL TRANSFORMATION PROGRESS

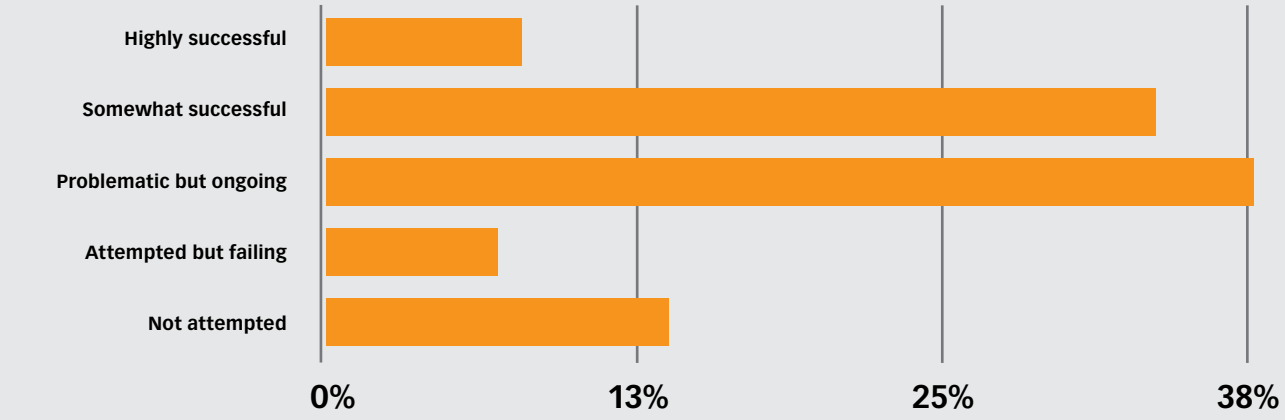

Figure 4. How would you characterize your company's digital transformation efforts thus far?

Shifting Priorities and Drivers:

- Productivity remains king: Increasing productivity continues to be the top driver for digital transformation, with 91% of respondents citing its importance.
- Optimizing utilization holds steady: Coming in second is optimizing utilization, with 85% acknowledging its significance.
- Cost reduction climbs the ladder: Reducing costs, previously lower on the list, jumps to third place, reflecting a renewed focus on financial efficiency.
- New business models emerge: Creating new business models makes its debut as a key driver, with 71% recognizing its potential. This shift aligns with the maturing application of digital technologies and their ability to unlock new avenues for growth.

DIGITAL TRANSFORMATION PROGRESS BUSINESS DRIVERS

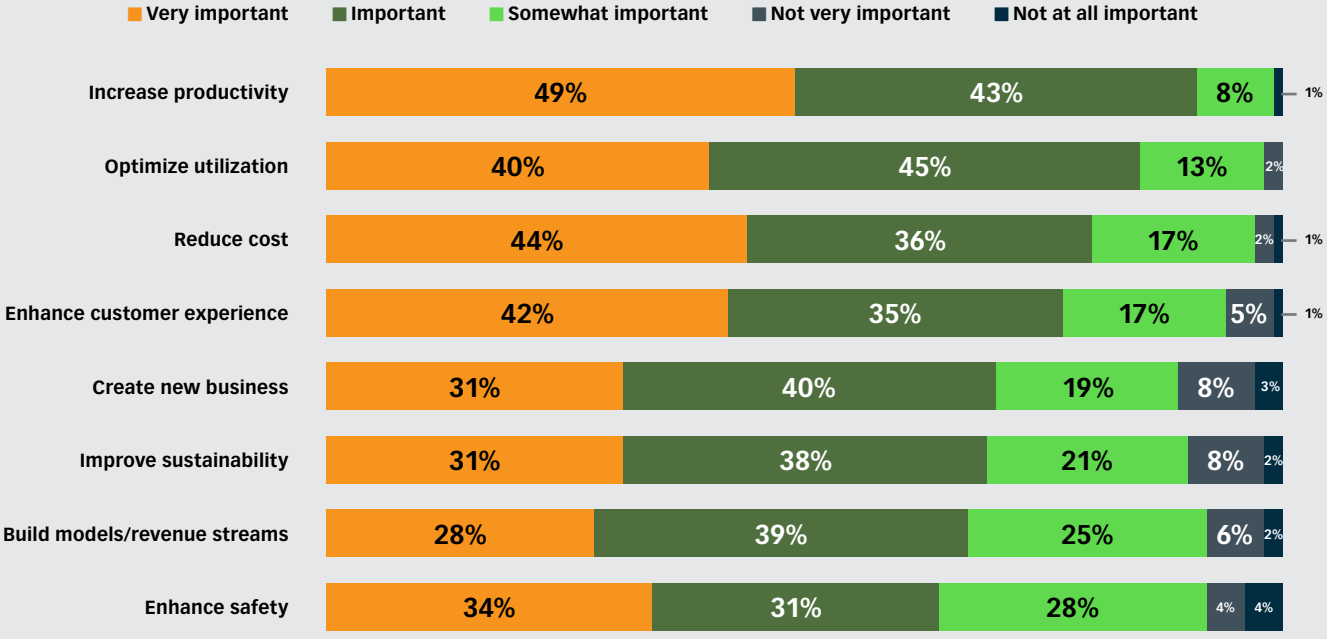

Figure 5. How important are the following when it comes to your business's interest and investment in digital transformation?

Challenges and Solutions:

- Workforce skills gap takes center stage: In a significant shift, the lack of business impact understanding, which topped the list of challenges in 2022, has dropped significantly to sixth place. This suggests a growing understanding of the potential benefits of digital transformation. However, the workforce skills gap has risen to the top concern, with 31% identifying it as the single biggest challenge. This underscores the need for targeted talent development and reskilling initiatives.
- Infrastructure and security concerns: Weaknesses in technology infrastructure and security concerns, both indicators of increased technology adoption and integration, rise in prominence, ranking third and fourth, respectively. These challenges demand investments in robust infrastructure upgrades and robust cybersecurity measures.
- Supply chain: Supply chain woes continue, with 75% saying they have experienced challenges with their incoming supply chain and nearly the same percentage having challenges with their outdoing supply chain. Twenty-five percent characterized supply chain challenges in both directions as drastic, an increase from last year. Digital transformation efforts should bring more visibility, predictability, and certainty to this ongoing challenge, though evidence of improvement has not materialized.

KEY OBSTACLES TO DIGITAL TRANSFORMATION	2023	2015	9-Year Change
1. Workforce skills gap	48%	28%	+20
2. Lack of employee knowledge	41%	44%	-3
3. Weakness in technology infrastructure	34%	25%	+9
4. Security concerns	32%	45%	-13
5. General economic uncertainty	29%	21%	+8
6. Lack of senior management knowledge	27%	33%	-6
7. Lack of business impact understanding	27%	44%	-17
8. Regulations (as for data privacy)	22%	34%	-12
9. Lack of senior management commitment	22%	30%	-8
10. Immaturity Standards	18%	23%	-5

Figure 6. Rate each of the following benefits in driving your business to explore and invest in digital transformation.

Overall, the 2023 data reveals a maturing digital transformation landscape in manufacturing. While challenges remain, the increasing number of successful cases, shifting priorities toward new business models, and declining concerns about business impact understanding paint a picture of progress and growing recognition of the transformative potential of technology. Addressing the workforce skills gap, strengthening infrastructure, and bolstering security will be key to unlocking the full potential of digital transformation and driving continued success in the years to come.

THE SHIFTING TECH LANDSCAPE: CLOUDS AND DATA TAKE CENTER STAGE

The digital transformation landscape is a kaleidoscope of ever-evolving technologies, and 2023 paints a picture of both com-

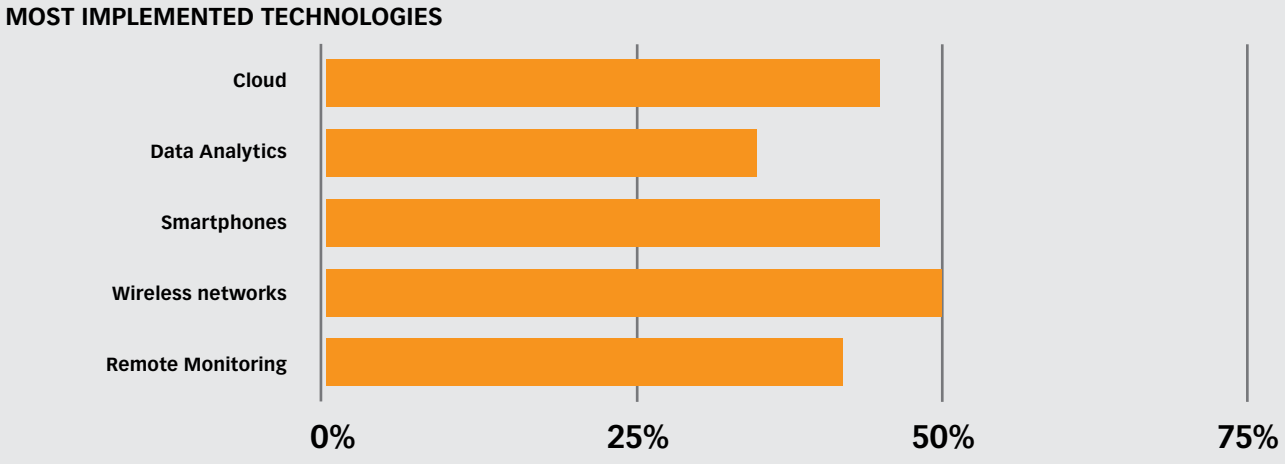

Figure 7. To what extent has your organization implemented or plan to evaluate/implement the following technologies associated with digital transformation?

plexity and clear priorities. Cloud connectivity reigns supreme, with 68% of respondents actively using or testing it. This closely intertwines with the ubiquitous presence of smartphones and tablets, with 67% highlighting the critical role of mobile access to cloud-based data and applications. Data analytics follows suit, securing the second spot as manufacturers leverage its power to glean actionable insights from their ever-growing data volumes. Wireless networks, vital for supporting data access and mobility, also land at number two, showcasing their crucial role in the digital transformation ecosystem. Artificial intelligence also ranked highly and will be featured in the final section of this report.

However, the spotlight has shifted away from certain technologies that once dominated the headlines. Augmented/virtual reality, wearables, drones, and blockchain — all once promising game-changers — find themselves relegated to the lower ranks of the list. This doesn't necessarily signify their demise, but rather a maturing landscape where the focus has shifted toward established and proven technologies with more evident value propositions. Cloud connectivity, mobile access, and data analytics provide a robust foundation for digital transformation, enabling manufacturers to streamline operations, optimize workflows, and gain valuable insights.

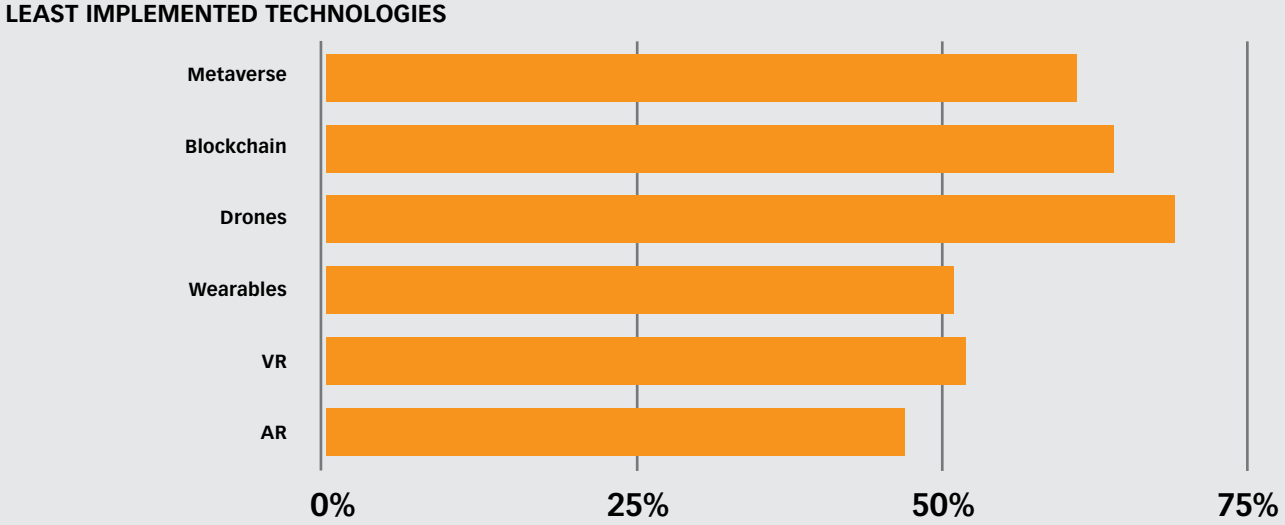

Figure 8. To what extent has your organization implemented or plan to evaluate/implement the following technologies associated with digital transformation?

SECURITY, CONVERGENCE, AND EDUCATION: CRITICAL PILLARS FOR DIGITAL TRANSFORMATION SUCCESS

As digital transformation weaves deeper into manufacturing, security concerns take precedence. The 2023 survey echoes this, with connecting operational technology (OT) to production processes with digital workflows remaining the top security priority for the second year in a row. Mapping processes and dependencies related to OT assets and dynamically assessing and prioritizing security vulnerabilities follow closely, highlighting the need for a holistic approach to securing increasingly interconnected systems.

However, securing these environments demands more than just technical solutions. IT/OT convergence, the seamless integration of information technology and operational technology, is crucial for optimizing efficiency and security. Yet, significant roadblocks remain. The survey reveals that 48% of respondents identify differing priorities between IT and OT as the biggest hurdle, followed by a lack of understanding between their respective technical languages.

Bridging this gap requires a multi pronged approach:

- Structural alignment: Restructuring corporate structures to eliminate the confusion of separate reporting lines can foster greater collaboration and understanding.
- Ongoing education and training: The survey paints a concerning picture, with 29% of IT and OT professionals receiving only 1-10 hours of training per year and nearly 25% receiving none at all. Investing in ongoing education and cross-training programs is essential to equip both IT and OT teams with the necessary skills and knowledge to navigate the evolving digital landscape.
- Open communication and collaboration: Fostering open communication channels and promoting collaborative problem-solving can help bridge the cultural and technical divides between IT and OT.

By addressing these challenges, manufacturers can unlock the full potential of IT/OT convergence, enhancing security, optimizing operations, and driving innovation. □

SURVEY METHODOLOGY

This report marks the eighth consecutive year of the State of the Initiative survey, tracking the ongoing digital transformation journey in manufacturing. We define digital transformation as the seamless integration of new automation, communications, and computing technologies (e.g., data analytics, IIoT, Industry 4.0, AI) into manufacturing and business processes.

Data for this year's report was collected in the fall of 2023 through an online survey distributed to our Smart Industry e-newsletter subscribers across diverse industrial sectors, from manufacturing and engineering to processing and related fields. The accompanying chart illustrates the broad spectrum of respondents.

Trend analysis leverages data gathered from over 3,500 professionals who participated in the survey series from 2015 to 2023, offering a rich and comprehensive view of industry evolution.

SURVEY RESPONDENTS BY INDUSTRY

Engineering/professional services	29%
Discrete manufacturing/industrial machine builder	17%
Process manufacturer	16%
Technology	7%
Oil and gas	6%
Power generation	3%
Sales and services	3%
Food and beverage	2%
Consumer goods	2%
Consulting	1%
Transportation/logistics	1%
Mining	1%
Other	13%

SURVEY RESPONDENTS BY FUNCTION

General/corporate management	18%
IT & networks	13%
Project management and execution	12%
Sales/marketing	12%
Maintenance/reliability	8%
Product design and development	7%
Logistics/supply chain	5%
Production/production planning	4%
Environmental health and safety	3%
Quality assurance	3%
Finance	1%
Other	14%