



# MANUFACTURING TRENDS 2024

Focusing on Growth and Resiliency



## **Manufacturers Focus on Growth and Resilience Opportunities**

Manufacturers are using technology and data insights to stay profitable and resilient. The NAM has compiled the top eight manufacturing trends for 2024 from member surveys, studies and feedback. Access curated resources to help stay on top of each trend from the NAM and our partners, the Manufacturing Leadership Council, the Innovation Research Interchange and the Manufacturing Institute.





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## 1. Creating the Use Case for AI

### THE TREND:

Artificial intelligence is one of the most important strategic considerations for manufacturing companies, the industry and the U.S. in the years ahead. It is already changing the world and the way people work. AI touches every facet of manufacturing, including software applications, plant floor control systems, sustainability efforts, ethics, the workforce and more. The early application of AI is already an important ingredient for manufacturing competitiveness.

# RESOURCES

## Leading Edge SmartBrief

Stay abreast of trends and manufacturers in the news with this quick daily summary of relevant articles around technologies, safety and sustainability, supply chain, workforce and more.

[SUBSCRIBE >](#)

## Survey: Manufacturers Go All in on AI

Discover what manufacturers have invested in and plan to do with AI technologies on their shop floor in this survey.

[LEARN MORE >](#)

## Podcast: Legal Implications of AI for Innovators

What do innovators need to know about integrating AI tools into their organization? A law professor from William & Mary joins the IRI for this discussion.

[LISTEN >](#)



## Key Focus Areas for Manufacturers

- ✔ Understand where to apply the combination of advanced data and algorithms to predict, identify and solve problems in manufacturing.
- ✔ Discover how AI can be used in manufacturing, especially among small and medium-sized manufacturers, and how it can be the differentiator.
- ✔ Use AI technology to increase speed and agility across the organization.
- ✔ Define the return on investment for AI.



## EXPERT INSIGHT

*Author: Matt Dollard, Principal, RSM US LLP*

Manufacturing is one of many sectors across the economy adopting generative artificial intelligence and exploring its potential to revolutionize processes and unlock new human capabilities. As we navigate a world where machines able to mimic human intelligence and automate complex tasks are increasingly prevalent, organizations need to understand the applications, benefits and potential challenges these technologies bring, especially to the middle market.

The manufacturing industry has witnessed a remarkable evolution in the past two decades, with the adoption of advanced technologies, particularly AI, leading the way. Today's manufacturing landscape bears little resemblance to previous industrial revolutions. From early machine automation and data integration to advanced stages of machine learning, collaborative robots and intelligent supply chains, the impact of AI within the manufacturing sector has been nothing short of revolutionary.

### Use Cases for Manufacturing

AI's growing significance in manufacturing cannot be overstated.

This game-changing technology has already unlocked a wide array of benefits and introduced unprecedented levels of efficiency, productivity and innovation to manufacturers. As organizations continue to better understand how they can apply and manage AI, they should consider several notable use cases:

1. Improving predictive maintenance
2. Optimizing supply chains
3. Enhancing quality control and defect detection

Manufacturers are expected to accelerate their use of AI in operations in the coming years, with levels of investment predicted to rise in 96% of companies, per the MLC; however, understanding the technology's implications will be an essential first step before adoption.

## The Potential ROI

For manufacturing companies, AI's potential to enhance predictive maintenance, optimize the supply chain and improve quality control is only the beginning. Increased productivity, enhanced decision making and improved cost savings will continue to drive broader adoption of the technology across the middle market. And while challenges exist, if companies plan carefully, invest in infrastructure and focus on ethics, AI will continue to revolutionize the industry, creating smarter factories and equipping manufacturers to stay competitive in the digital age.

*A longer version of this article was published originally on the RSM US website.*

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## 2. Meeting Increased Scrutiny on Sustainability



### THE TREND:

Manufacturers' environmental, social and governance practices will face increased scrutiny from environmental groups, the public, lawyers, partners and regulators. Climate change litigation cases are on the rise, and definitions of ESG vary considerably, which can lead to potential compliance headaches for manufacturers. Some have been fined already for overstating sustainability claims. Manufacturers are rising to the challenge, with an increased focus on measurable sustainability efforts as essential to future competitiveness.





## Key Focus Areas for Manufacturers

- ✓ Craft an overall organizational sustainability plan with metrics and reporting.
- ✓ Make changes and upgrades to support energy and resource efficiency, as well as reduce waste and emissions.
- ✓ Focus on sustainable products and packaging in addition to sustainable processes.
- ✓ Improve product reclamation or recycling in the circular economy.

## RESOURCES

### NAM Energy

Connect with an adviser to create an energy management strategy that will not only increase resiliency and set a path toward achieving sustainability goals but also can reduce costs.

[LEARN MORE >](#)

### Podcast: Thought Leadership Interview with Milliken & Company

Listen to a discussion with the director of research, compliance and sustainability for Milliken as he shares how the company proactively responded to challenges posed by PFAS.

[LISTEN NOW >](#)

### NAM Policy, Legal and Other Stories: Environmental Issues

Scroll through this feed of stories covering the latest regulatory developments, legal issues and manufacturers leading the charge to address the topic of sustainability.

[READ MORE >](#)



## EXPERT INSIGHT

As companies wrestle with the realities of ESG-related pressures, effective board engagement is an emerging factor in the successful implementation of corporate stewardship programs.

Increasing the use of clean energy and improving efforts to tackle climate change have become central concerns for all stakeholders, from customers and investors to local communities and regulators. Human rights and other social factors, and corporate governance practices with an emphasis on policymaking, influence and business ethics, have gained significant attention, too.

In 2019, only 25% of the world's largest companies had board involvement in environmental matters, increasing to 73% in 2022.<sup>1</sup> First and foremost, boards of directors are bound by their fiduciary responsibilities to shareholders, but savvy directors also recognize that environmental and other ESG-linked risks and opportunities are vital to the long-term health of their organizations. For certain companies and industries, ESG-related pressures may push directors to modify company culture and business operations to enhance resilience and market differentiation, and the board can play a role in helping develop

the organization's ESG vision. Ultimately, boards of directors represent a powerful ally in advancing their organizations' ESG progress, and their support of the executive management team's efforts is critical.

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Source:

1. Jamie Smith, "[How committees are evolving to meet changing oversight needs,](https://www.ey.com/en_us/board-matters/how-committees-are-evolving-to-meet-changing-oversight-needs)" posted to ey.com on Oct. 17, 2022.  
[https://www.ey.com/en\\_us/board-matters/how-committees-are-evolving-to-meet-changing-oversight-needs](https://www.ey.com/en_us/board-matters/how-committees-are-evolving-to-meet-changing-oversight-needs)

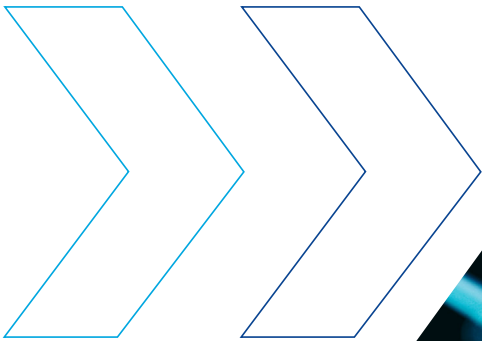


### 3. Understanding Actionable Data



#### THE TREND:

Manufacturers who want to stay competitive will need to understand not just the role and value of data, but also how to gain operational and business insights from it. Data powers all advanced manufacturing technologies. It redefines culture, work, leadership, organizational structures and the customer experience, opening opportunities for new business models and revenue streams. The rapidly growing volumes of data are creating new ecosystems across partners and customers that are transforming the future of the manufacturing industry.



# RESOURCES

## MLC Master Class Series

Need ideas on how to use data to transform your business operations? Register for upcoming MLC Master Class sessions for case studies and best practices around different facets of digital transformation.

[LEARN MORE >](#)

## CONNEX Marketplace

Power data visualization tools are part of this manufacturing buyer-seller connection platform, allowing users to obtain a clear view of supply chain strengths and potential vulnerabilities.

[EXPLORE NOW >](#)

## Power of Small

The NAM's exclusive resource network for small and medium-sized manufacturers provides access to trusted advisers and delivers intel and analysis on operational excellence as well as advocacy, workforce development, legal action and news focused on supporting long-term success.

[LEARN MORE >](#)



## Key Focus Areas for Manufacturers

- ✓ Understand how to gather data to enable meaningful analytics.
- ✓ Improve data governance for quality and security.
- ✓ Determine what data are important to the business and operations.
- ✓ Learn how to assign value and view the data through the appropriate lens.
- ✓ Know how to use data to make business decisions.





## EXPERT INSIGHT

*Author: John Petrusick, Managing Director, Manufacturing – Data and Analytics Practice*

Depending on the manufacturer, a company's most valuable asset may vary. It might be people, physical assets or the company's intellectual property. But for all modern manufacturers, data has become incredibly valuable. When you fully optimize its use, data can provide insights, enable speed to market and improve decision-making. Generally, data can help businesses create and maintain a competitive advantage. The challenge lies in effectively gathering, analyzing and utilizing data. In this article, we'll explore key aspects of understanding actionable data.

Most of us have grown up in a world where we think of data as a flow from source to consumer, or left to right. In such thinking, we have generated analytics and insights historically by first thinking about "what data do I have?" But what if we thought about generating analytics and insights by thinking "right to left"?

### Define Actions

To truly harness the power of data, the first step is to think about how the data is used in taking action within our business processes. By adopting this perspective, actors in the business (shop floor operators, procurement officers, sales personnel, etc.) can see what analytics are needed to take critical, value-creating actions to increase efficiency, control costs, generate revenue opportunities and more.

### Answer Questions

As actions are defined in the context of business processes, the next step to creating actionable data insights is to map out the questions that must be answered to determine which action must be taken. Doing so establishes the decision path to create value in the business.

### Confirm Metrics

Metrics and measures that define how we answer the questions in our decision are critical in determining the value of the data within the enterprise. By tying to metrics, you can measure value in the context of the process. This allows you to quantify and measure clearly the effects of actions you take against benchmarks and targets.

### Identify Data

Once the actions, questions and metrics are understood thoroughly, we can now determine exactly what data is necessary to construct the analytic insights that create the most value for the business. Then, manufacturers can collect the right data from the right sources to enable value, including production, supply chain, customers, equipment, sensor systems and applications.

By effectively creating data analytics insights, manufacturers can gain a competitive edge, spur innovation and make value-based informed decisions.

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### MAINTENANCE CONNECTION

MACHINE NUMER: S/N 212793

LOCATION ZONE 710  
SUBZONE -LANDING GEAR

CEC 9313

SYSTEM NO	SENSOR NO	LOCATION
1	5848	LEFT
2	7845	RIGHT

737 QUANTITY ANALYSIS  
DATA SECTION 30-33

0.085 INCH  
0.075 INCH  
0.90 INCH

THIS MACHINE SHALL ONLY BE OPERATED AND MAINTAINED BY TRAINED AND EXPERIENCED PEOPLE WHO HAVE READ AND UNDERSTOOD THE OPERATOR AND SERVICE MANUALS. IT IS USER'S RESPONSIBILITY TO FOLLOW THE MANUFACTURER'S INSTRUCTIONS ON MACHINE OPERATION AND APPLICATION AND TO OBEY ALL PLACEMENT, AND, REGULATIONS.

### MANUALS

### LOCATION

## ONLINE--LAB--359

- BRASS PIVOT HING [x1]
- OHM METER [x2]
- 12 VOLT TEST BATTERY [x1]
- 1.25" PVC ELBOW [x1]
- 3.55- ACCFF [x1]

Production Capacity: 409/day  
Uptime: 99%

Energy State : Active  
Pressure : 42/3  
Auto Errors : 0

### MAXData

CONTROLLER TYPE: PLC  
SERVICE MODE: INSPECTION  
MACHINE: G-XP32  
LAST CLOSED CALL: 10/10/2023

### RULES

- Enable automation using supporting systems
- Report any/all unsafe conditions immediately
- Use age-protection when working in being done in lab
- Remove jewelry from clothing, long hair and jewelry
- Stay out of safety sites, unless you are operating the machines

CONNECTED

### S/N 212793

DEFINITION

### SUMMARY

Diagram

Quick start

PROPERTIES

TAGS

Datasets: 3

Pipelines: 2

With errors: 0

IngressPipeline

MatchPipeline

Linked services: 4

Data Stores: 3

OPERATIONS

Events in the past weeks

Alert rules: 0

S/N 212793

0 rules



## 4. Innovating Processes



### THE TREND:

To guard against economic uncertainty, manufacturers will need to enhance and innovate their existing processes to increase productivity while reducing costs. Possible improvements will include upgrading equipment and technology, fine-tuning production lines, training and upskilling staff, streamlining customer service, optimizing the supply chain and more. To reach desired outcomes, process innovation will require new approaches to leadership with a focus on the future.







## Key Focus Areas for Manufacturers

- ✓ Rethink how to operate to succeed in times of economic uncertainty.
- ✓ Consider improvements to techniques, tools, software, technologies and behaviors.
- ✓ Streamline customer service and the way products are sold to customers.
- ✓ Optimize the supply chain with help from partners, automation and design improvements.
- ✓ Reinvent processes to realize benefits (e.g., speed time to market, cut costs, work around supply challenges).

## RESOURCES

### Innovation Research Interchange

This division of the NAM focuses on value creation and top-line growth through the management of innovation. Explore opportunities for peer-to-peer interactions and a variety of resources and training to assist in all phases of innovation.

[LEARN MORE >](#)

### Manufacturing Leadership Council Plant Tours

Get an inside look at how other manufacturers have reshaped processes to advance their business by joining a tour or perusing summaries of past tours.

[LEARN MORE >](#)

### Input Newsletter

Stay on top of policy and business developments that could serve as catalysts for innovation. The NAM's morning newsletter delivers exclusive insights from across the industry.

[LEARN MORE >](#)



## EXPERT INSIGHT

Author: Brian M. Legan, EY Americas Industrial Products Leader, Advanced Manufacturing & Mobility, Ernst & Young LLP

### Reframing Digital Manufacturing Investments

- *Manufacturers are **reframing their approach to transformation** with the goal of maximizing investment dollars and delivering innovation at scale.*
- *The **ability to finance innovation endeavors** by freeing up cash committed to working capital is a common challenge for manufacturing companies.*
- ***Data analytics has become an essential tool** to inform strategic decision-making as manufacturers plot their approach to innovation.*

Current economic headwinds demand that companies make wise technological investments to gain an enduring business advantage, while also addressing pressures for near-term value creation and cost containment. **Nearly half (49%) of manufacturing CEOs** who participated in the EY CEO Outlook Survey plan on **accelerating or maintaining current levels of innovation investment** and portfolio transformation. A focus on innovation and research and development is the **leading strategy** among manufacturing **CEOs to emerge from the downturn in a stronger competitive position**. Product/service innovation and corporate venturing can unlock new growth opportunities.<sup>1</sup>

However, measuring **return on innovation investments**<sup>2</sup> for digital projects, programs and use cases is still not applied systematically. **Three out of five companies don't know how much they spent in digital operating or capital expenditures last year or what value it yielded in incremental revenues, reduced cost and working capital.**

During this time of reduced discretionary spending and constrained budgets, more than half of these CEOs (56%) also indicated that the **main source of financing for these investments will be from savings generated from business performance improvements**. This feedback further indicates a changed environment—CEOs have shifted from growth at any cost to investments that must show a clear path to profitability or value creation and a sustainable financing approach.

**Industrial product companies have more than \$230B in cash tied up in working capital.**<sup>2</sup> Cash is often tied up in physical assets and working capital that does not support long-term value creation directly. Furthermore, diversified industrial companies have had one of the **lengthiest cash conversion cycles** of any industry because they are capital intensive and depend on physical inventories and global supply chains. In aggregate, the industry CCC, which measures a company's efficiency in turning its resource inputs into cash, has **exceeded 60 days consistently (other industries typically see 25–30 days)**.



To optimize balance sheets, drive improved financial KPIs and liberate trapped cash, leaders can do the following:

- Reduce the amount of cash tied up in working capital.
- Purge the fixed asset ledger of “ghost assets.”
- Rationalize software applications across the enterprise.
- Optimize the real estate footprint.
- Strike the right balance between debt vs. equity.
- Reduce days inventory outstanding and days sales outstanding.

A coordinated, multistep approach should include **strategic process adjustments** supported **by artificial intelligence and machine learning enhanced analytics, monitoring and a cash-culture focus.**

The ideal outcome for manufacturers is an **improved return on invested capital** and more operating **cash to finance innovation investments.** In our experience, EY clients typically achieve **average working capital improvements of \$50M to \$100M for every \$1B in sales,** creating enduring value through increased cash on hand and financial leverage for innovation investments.

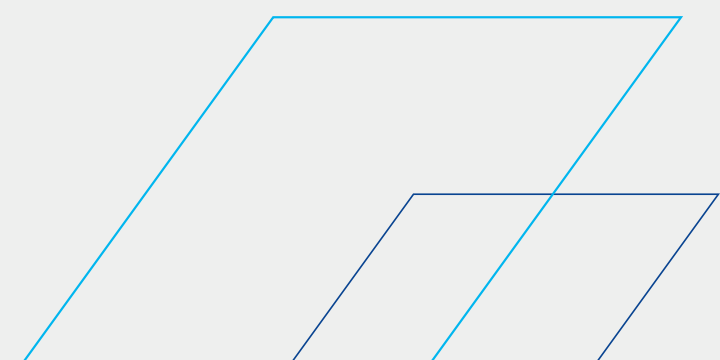
*The views reflected in this article are those of the author and do not necessarily reflect the views of Ernst & Young LLP or other members of the global EY organization.*

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Sources:

1. CEO Outlook Pulse, March 2023
2. EY analysis





## 5. Building Resilience Across Different Pillars

### THE TREND:

Manufacturers will need to protect their businesses from a range of new and emerging threats in the year ahead. As a result of these unknowns, many manufacturers are shifting away from disaster recovery plans focused on individual incidents and instead moving toward a culture of overall resilience. Cybersecurity will continue to be a key area of focus in 2024. Additionally, manufacturers will need to adjust their leadership style and succession planning to prepare for future disruptions.

# RESOURCES

## Business Continuity Handbook

Refer to this quick resource guide from the NAM's Emergency Response Committee partners for a list of organizations to know, steps to take and a sample business continuity plan template.

[DOWNLOAD NOW >](#)

## NAM Shipping & Logistics

Don't be caught unprepared if your organization experiences a delay in shipments and funds are not received when expected. UPS Capital, offered through the NAM Shipping program, provides peace of mind that your cash flow will not be impacted negatively by things out of your control.

[LEARN MORE >](#)

## NAM Legal Referral Service Powered by Meritas

If an unexpected legal issue arises, access world-class attorneys from full-service law firms to help answer questions from contracts to labor and employment, environmental compliance to product safety, trade and intellectual property. Get a personal introduction to a qualified law firm and a 30-minute courtesy advice call.

[LEARN MORE >](#)

## Key Focus Areas for Manufacturers

- ✔ Enhance cybersecurity to guard against new and emerging cyberthreats.
- ✔ View resilience as a necessary tool to protect business amid economic uncertainty.
- ✔ Shift leadership strategies to build a strong plan for future success, including establishing a path for development and cultivation of future leaders.
- ✔ Plan for more and as-yet-unknown disruptions in the future.





## EXPERT INSIGHT

*Author: Mike Lipinski, Cybersecurity Partner, Plante Moran*

### Manufacturing Cybersecurity and the Rise of Ransomware

Cybersecurity attacks on manufacturers' systems, equipment and technology are trending up—and more likely today than ever, ransomware is the culprit.

According to Statista, manufacturing experienced the greatest percentage of cyberattacks among top industries globally in 2022.

Many times, a breach occurs after criminals access your system through social engineering. Often the purpose is to perpetrate financial fraud. For instance, attackers might spoof a phishing email, instructing the recipient to update payment account information. Guess where your funds now go?

### What Is Ransomware, and How Does It Impact Manufacturers?

Before, cybercriminals “only” encrypted your data until you paid their ransom. Now, not only do they hold data for ransom—they also threaten to sell or publish information extracted from the network if a company also refuses to pay.

Manufacturing businesses that fall prey to ransomware can be attacked multiple times. Adversaries who breach your system sell other

cybercriminals information about how they got in. The risk isn't only data theft and access to information but also the criminals' ability to create backdoors into your environment.

### Operational Technology and Manufacturing Cybersecurity

Operational technology can give hackers a new edge over manufacturers. Automation and smart manufacturing mean more plant floor equipment is controlled by computers and internet connectivity. Bad actors no longer have to encrypt your data to hold it for ransom; they can launch a denial-of-service attack that shuts down your operations.

And if you're running old technology, your OT is potentially even more vulnerable than your IT.

### Why Are Ransomware Attacks on Manufacturers Rising?

Factors like a low tolerance for downtime make manufacturers a common target of ransomware. Ransomware attacks take organizations down for more than three weeks on average. With just-in-time contracts and facilities running at more than 100% capacity, lost production time can't be made up.

And that, often coupled with legacy systems, is why patching known vulnerabilities falls behind. According to Ivanti, 76% of recent attacks have exploited a known vulnerability.

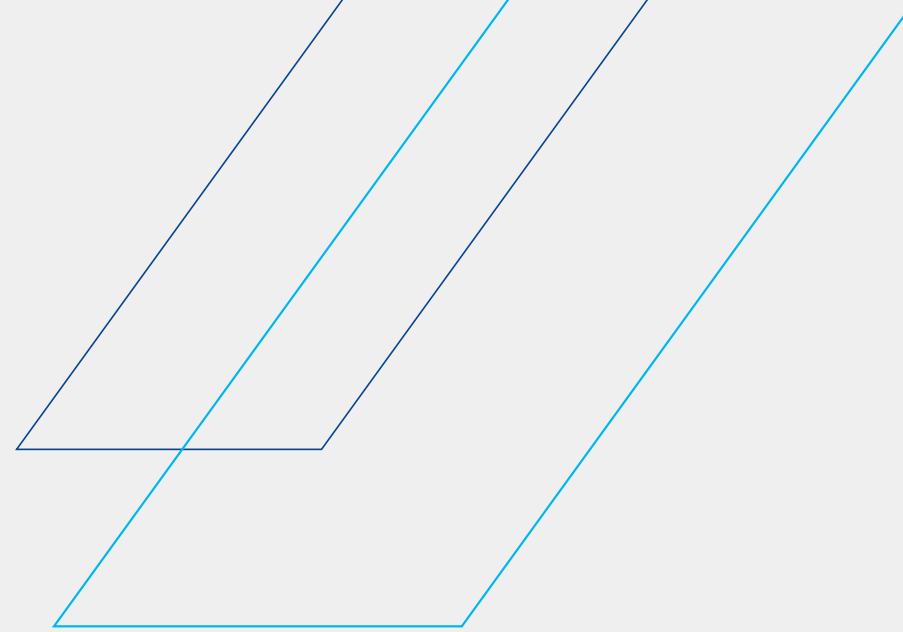
Additionally, IT and cybersecurity spend tends to track toward compliance, and because manufacturing historically lacks regulatory and compliance requirements for cybersecurity, most manufacturers lag in their cyber investments.

## Prioritizing Manufacturing Cybersecurity

Too many manufacturers are failing to take the steps needed to prevent a cyberattack, including major disruption caused by ransomware. Do you know where the threats and vulnerabilities lie in your organization? Risk assessments and penetration testing are two types of verification that can uncover gaps before cybercriminals expose them for you.

The cost of prevention is far less than the costs of recovery after a breach—and the costs of lost production. Don't put your business's ability to operate at risk.

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## 6. Focusing on Smart Factories



### THE TREND:

Digital progress varies considerably across manufacturing, but the universal focus will continue to be on smart factories as a source of competitive advantage in 2024 and beyond. To further their Manufacturing 4.0 journey, manufacturers will leverage digital roadmaps, maturity models, new technologies, streamlined designs, advanced data analytics and more. These enhancements will enable them to derive value from digital investments in product design, innovation, supply chains, customer relationships and eco-efficient manufacturing operations.







## Key Focus Areas for Manufacturers

- ✔ Create efficiencies to improve the bottom line with automation and other M4.0 technologies.
- ✔ Leverage smart factories to overcome challenges, such as the workforce crisis and supply disruptions.
- ✔ Ensure connectivity on the factory floor to allow for use of plant data to create new business models and revenue streams.
- ✔ Use M4.0 technologies to improve quality control, speed time to market, enhance safety, boost profits, contribute to sustainability goals and engage employees.

## RESOURCES

### Manufacturing Leadership Council

The NAM's digital transformation division, the MLC offers connections, insights and strategies to help manufacturing leaders progress on their journey to use the most advanced technologies.

[EXPLORE >](#)

### NAM Cyber Cover

Advanced manufacturing and smart factories increase the attack surface and vectors for bad actors. Ensure your business and reputation are protected with risk mitigation, including automated alerts of vulnerabilities, and cyber insurance specifically for manufacturers, with policies that cover Industrial Control Systems, SCADA, bodily harm and pollution liabilities.

[LEARN MORE >](#)

### Podcast: Innovative Thinker and Disrupter Identification

Listen to the discussion with a professor of technology and innovation management as he shares findings from research into adoption of research technologies, handling the barrage of data and best practices for global rollout.

[LISTEN NOW >](#)



## EXPERT INSIGHT

*Author: James Zhang, Vice President, Market Development of IoT, PTC*

Manufacturers around the world are investing increasingly in smart factories, ushering in a new era of industrial production that we expect to see accelerate in 2024 and beyond. These smart factories, often associated with Industry 4.0, leverage cutting-edge technologies, including industrial connectivity, industrial IoT and analytics to revolutionize the way products are made. This transformation is leading to significant improvements in quality, productivity and efficiency, offering numerous benefits for both manufacturers and consumers.

### **Industrial Connectivity Unlocks Plant Data**

Often referred to as industrial networking or industrial communication, industrial connectivity establishes reliable, efficient and standardized communication methods between industrial equipment and the software that controls, stores and analyzes data from those machines, networks and protocols to facilitate seamless data exchange and control of equipment and processes. It's essential for ensuring smooth operation of modern factories, and the data is fundamental to uncovering insights that drive continuous improvement.

As investments in smart factory initiatives accelerate, more and more manufacturers are rethinking their approach to industrial connectivity—a trend expected to continue into 2024. Rather than approaching industrial

connectivity with point-to-point integrations, companies are developing holistic, enterprise-wide industrial connectivity strategies. This approach streamlines and standardizes data from heterogenous manufacturing environments to a single industrial connectivity platform to provide secure, reliable data for OT systems, including MES and SCADA, and IT systems, including data analytics and industrial IoT.

### **Industrial IoT Powers Continuous Improvement**

For manufacturers, getting the most out of their factory is a top priority, yet more than half of executives run their continuous improvement programs reactively. They are often never truly aware of the underlying problem until issues take place. Without an objective measure of what projects need to be prioritized, it is difficult to know if they are focusing on the most critical issues.

According to the latest Federal Reserve report, manufacturers are running, on average, at only 65% capacity. What that means is that there is the potential to improve capacity anywhere from 1 - 20%. This type of tangible impact allows manufacturing organizations to move from a largely reactive model to one that is fully integrative, predictive, sustainable and adaptive.

Performance management is a concept that has become a direct response to this limitation, helping organizations identify and prioritize improvements based on their true productivity. This real-time closed-loop problem-solving capability is used to achieve operational and efficiency excellence with a focus on driving financial impact. It allows everyone from operators to plant management and manufacturing executives to collaborate and continually improve their overall factory performance.

The investment in smart factories is a game-changer for the manufacturing industry. Through industrial connectivity, industrial IoT and data analytics, manufacturers are elevating the quality, productivity and efficiency of their operations. As technology continues to advance, smart factories will play an increasingly critical role in shaping the future of manufacturing.

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DIGITAL TRANSFORMS PHYSICAL





## 7. Cross-Training Employees



### THE TREND:

To stay agile and flexible in the digital future, manufacturers will need to cross-train employees to perform multiple roles across the organization. Cross-training will alleviate labor challenges and improve employee engagement. It will also contribute to process innovation and resilience by breaking down siloes. In the smart factory of the future, cross-training employees will ensure manufacturers have the tech-enabled workforce necessary to navigate disruption and leverage opportunities.



## RESOURCES

### The Manufacturing Institute

This 501(c)3 nonprofit workforce development and education affiliate of the NAM builds, diversifies and strengthens the modern manufacturing workforce. Tap into the MI to access resources as well as a talent pool of highly skilled women, military veterans and students.

[LEARN MORE >](#)

### NAM Incentives Locator

Connect with an expert to identify, apply and comply with incentives available at the federal, state and local level that can reduce above-the-line operating costs and below-the-line tax burdens for capital plans, including training and job creation.

[EXPLORE >](#)

### Manufacturers Retirement 401(k) and Savings Plan

Ensure that you offer the benefits desired by employees to retain the workforce you cross-train. This high-quality multiple-employer plan helps employees feel secure while reducing the amount of time, manpower and money spent managing a retirement plan.

[LEARN MORE >](#)

### Key Focus Areas for Manufacturers

- ✔ Combat the labor shortage with a team that can perform a range of roles.
- ✔ Improve employee engagement by making them feel part of the bigger picture.
- ✔ Increase flexibility in scheduling to augment employees' work-life balance.
- ✔ Break down siloes that inhibit process innovation.
- ✔ Equip the workforce to thrive in smart factories.



## 8. Structuring Supplier Development Plans



### THE TREND:

As supply disruptions and challenges continue into 2024, manufacturers will need to structure supplier development plans to support resilience and business competitiveness. Ideally, these plans will be mutually beneficial and define how to be a good trading partner. They will outline criteria that manufacturers want from their suppliers and how suppliers can meet that criterion. Increasingly, supplier development planning will lean on AI and data for informed decision-making.

# RESOURCES

## CONNEX Marketplace

Ensure your supply chain is resilient by identifying additional suppliers based on capabilities, equipment, processes, materials and more. Mitigate supply chain risk with in-depth data visualization tools and blacklist verification with this platform built specifically for manufacturers.

[LEARN MORE >](#)

## Operational Insights

This twice-monthly resource for manufacturers focuses specifically on topics that are part of overall operations, such as environmental, health and safety regulations, energy efficiency and sustainability, workforce and labor management, cybersecurity tactics, risk compliance, supply chain management, product development and more. Find articles on best practices and emerging trends, as well as downloadable checklists and assets.

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## Supply Chain Survey: Manufacturing Leadership Council Results

A recent survey indicates that manufacturing supply chains may be less resilient than the previous year, yet the industry continues to implement technologies and solutions to mitigate risks.

[READ MORE >](#)

## Key Focus Areas for Manufacturers

- ✓ Define how to be a good trading partner.
- ✓ Outline supplier criteria and how to meet that criterion.
- ✓ Include scenario planning to stay resilient in a more disrupted future.
- ✓ Increase transparency with suppliers.
- ✓ Use AI and data-driven decision-making to optimize supplier relationships.





## EXPERT INSIGHT

*Author: Lora Cecere, Founder, Supply Chain Insights*

Supply chains should be a team sport, but too often they are not. While trading partners—customers and clients—share assets and data across multiple tiers of manufacturing and distribution, network collaboration over the past decade declined as companies focused inward on transactional efficiency. Only 30% of companies have a supplier development program, and less than 20% know the location of their second- and third-tier suppliers.

### **What Makes a Great Trading Partner—Customer or Client? Here We Share Seven Key Elements**

1. **Clear Definition of Loading:** Less than 50% of manufacturers have clear information on their shipping instructions on load delivery. The required information includes definitive and appointment logistics along with designated parking areas. With traffic congestion issues and tighter appointment windows, there is often a need to reschedule appointments. A good trading partner staffs an appointment communication device 24 hours per day.
2. **Supplier Development:** Great supplier development programs work to provide help to suppliers. Key elements include clarity on product quality of design specifications, tolerances, payment schedules and conformance quality. A great trading partner offers resources to help, focusing on carrots, not sticks.
3. **Sharing of Data and Insights with Minimal Latency:** A great trading partner believes in network enablement and reducing the latency of data sharing. A great trading partner adopts interoperability standards early and drives supplier adoption. With great trading partners, data moves the network seamlessly.
4. **Builds Talent:** By 2030, the industry will be short of talent by 30%. A great trading partner builds talent internally through shared cross-functional experiences and ongoing training. Great trading partners work hand-in-hand with local universities.
5. **Improves Visibility:** Great trading partners provide transparency on payment information and streamline onboarding.
6. **Responsible for Shared Assets:** Trucks, pallets, containers and chassis are all shared assets. The sharing of assets is often problematic. The problems are many. Containers sit as de facto warehouses, pallets are not returned, and chassis are not maintained. A great trading partner is a steward of shared assets.



7. Thought Leadership: A great trading partner demonstrates leadership in process innovation, paving the way for industry thought leadership with technologists. They understand that the same process discipline in managing product stage gates needs to extend to process innovation. They staff to participate in industry process testing and actively participate with industry think tanks.

## In Summary

Great trading partners are industry leaders. They act with integrity, hold themselves accountable and drive innovation.

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## OPERATIONAL SOLUTIONS

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### Operational Insights

This biweekly newsletter from the NAM focuses specifically on overall operations, ranging from environmental, health and safety regulations to energy efficiency, from benefits for workforce to cybersecurity tactics. Each issue contains articles, downloadable assets and links to additional information, such as webinars and podcasts. Geared toward small and medium-sized companies, any manufacturing leader in operations will find value.

### Input

The NAM's morning newsletter delivers exclusive insights while keeping manufacturers informed on policy and business developments as well as the NAM's activities.

### Power of Small

The NAM's exclusive resource network for small and medium-sized manufacturers provides access to trusted advisers and delivers intel and analysis on advocacy, workforce development, legal action, operational excellence and news focused on supporting manufacturers' long-term success.

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