Mastering the Storms of Disruption in the Manufacturing Industry

How to Ensure Resilient Supply Chains, Smart Manufacturing, and Work Experience Transformation with Digital-First Strategies

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Manufacturers Face Storms of Disruption

Cybersecurity threats
Increasing cyberattacks raise the risk of disrupted enterprise and factory operations.

Macroeconomic and political uncertainties
Geopolitical uncertainties are increasing business risks for manufacturers, such as supply chain disruptions and loss of key export markets.

Pandemics
Low COVID-19 vaccination rates and new variants could lead to ongoing illness or absence among workers, which could increase the risk of further production shutdowns.

Supply chain disruptions
An ongoing lack of key components will lead to production delays and increase the risks of temporary production shutdowns.

Skyrocketing energy costs
Increasing risk that manufacturers will shut down factories.

Laws and regulations (e.g., sustainability)
Driven by European legislation, manufacturing organizations must embed sustainability targets into their operations.

Lack of digital skills
Manufacturers that can’t retain or attract the skills to develop smart connected products and engineering skills will fall behind their competitors.

Inflationary pressure
Rising costs of raw materials and components and union pressure to increase wages to adapt to the rise in the cost of living will push overall production costs up.
Digital Transformation: The Key to Navigating the Storms

Transforming supply chain/manufacturing operations and working experiences are top strategic priorities for manufacturing organizations.

**Strategic priorities**

- **Resilient supply chains**
  - To manage continuous supply chain disruptions, manufacturers will need to improve their ability to see and understand what is happening in the supply chain and to change conditions faster than before.
  - Optimized monitoring and planning of materials/finished goods inventory
  - Last-mile and reverse-logistics optimization
  - Green supply chain/sustainability initiatives

- **Smart manufacturing**
  - To prevent the factory from becoming a bottleneck in order fulfillment, manufacturers will need to increase the efficiency, agility, and resilience of manufacturing operations to meet customer expectations and stay globally competitive.
  - Quality inspection and quality analysis (including autonomous, AI-driven root cause analysis and collaborative issue resolution)
  - Production scheduling and execution (including material tracking and integration with supply chain fulfillment)
  - Real-time process visibility and analytics (e.g., real-time process status and OEE/other KPIs)

- **Working experiences**
  - Having the right skills and talent will be critical to digitally transform supply chain and manufacturing operations. Manufacturers will need to build and maintain working experiences that support talent and skill attraction and retention accordingly.
  - Personnel and process safety
  - Collaborative and productive physical workspaces
  - Talent and skill development/management
Digital Technologies: The Key Enablers to Execute on Strategic Business Priorities

European manufacturers’ top 5 IT technology investments

- **37% Automation**: Technologies to improve process quality and reliability, speed up decision making, and replace repetitive and manual tasks.
- **32% Analytics/AI**: Technologies that enable organizations to utilize data in a way that turns data into actionable insights, thereby improving quality and speed of decision making.
- **32% Data protection**: Technologies to defend against cyberattacks in both domains — IT and operational technology (OT) — and to ensure IT/OT/IoT security.
- **29% Collaborative cloud platforms**: Technologies that enable seamless collaboration within the enterprise and across the ecosystem.
- **28% Network capacity and manageability**: Technologies that enable reliable, secure, and scalable communications.

Source: IDC European Industry Acceleration Survey, Manufacturing 2021 (n = 198)
Manufacturers Need to Build a Digital Business

The role of digital technologies will change significantly as manufacturers move into the digital business era, from being an enabler of digital transformation to becoming a central component of digital-first strategies.

To ensure long-term and sustainable growth and to become more efficient, agile, and resilient, successful manufacturers will not only use digital technologies to execute strategic business priorities — they will also have digital-first strategies in place and will use digital technology to compete and to accelerate growth.
Digital-First Strategies: Key challenges that must be addressed

European manufacturers’ key challenges when investing in digital technologies

- **Regulatory drag**: 23%
- **Budget/financial constraints**: 31%
- **Customer trust and confidence issues**: 19%
- **Lack of leadership or organizational resistance**: 23%
- **Lack of a strong consulting partner**: 23%
- **Lack of strategic plans for adoption and development**: 22%
- **Lack of system interoperability**: 22%
- **Lack of access to data**: 27%
- **Lack of digital skills among employees**: 29%

- Organizations do not focus on ROI but on cost/budget.
- Organizations view regulatory requirements as a burden and not as a business opportunity.
- Organizations face resistance from workers/staff/management and customers.
- Organizations need external support.
- They lack a strategic approach.
- They need to invest in foundational technology to address system interoperability and bridge data silos.
- They face challenges when it comes to retaining and attracting the right digital skills.
Digital-First Strategies: The Three Key Pillars

Digital-first strategies must ensure that all initiatives to execute on strategic priorities use digital technologies in a way that is scalable, delivers measurable outcomes, and is trusted.

**Scale**
Initiatives must be enabled by scalable IT architectures and solutions that ensure cost-effective digital operations and that can easily be rolled out enterprisewide and across the ecosystem. Moreover, agility and resilience are key priorities in order to continue to scale.

**Impact**
Initiatives use digital technologies to deliver measurable business outcomes that significantly contribute to KPIs by improving the effectiveness, efficiency, and resilience of operations.

**Trust**
Initiatives use digital technologies to make the manufacturer a trustworthy customer, supplier, partner, and employer, and to positively contribute to society and to sustainability targets.
Key pillars of digital-first strategies and measures to make supply chains resilient

1. **SCALE**
   - Resilient supply chain operations require scalable IT architectures and infrastructures such as cloud-based solutions that support seamless integration and efficient onboarding of stakeholders in the supply chain:
   - Horizontal integration across internal domains such as procurement, production, logistics and distribution
   - Vertical integration across external stakeholders such as customers, channel partners, suppliers, and engineering partners

2. **IMPACT**
   - Resilient supply chain operations are enabled through improved transparency and visibility enabled by data. By utilizing internal and external data and by applying intelligence to it, manufacturers will be able to improve decision making through actionable insights that help to achieve measurable business outcomes such as:
   - Shorter/timelier order fulfillment, more accurate shipment and delivery forecasting through greater transparency and visibility
   - Reduced time to market for innovations, improved product quality and reduced product costs due to avoidance of emergency orders
   - Improved ESG/sustainability compliance enabled through optimized supplier risk monitoring and improved decarbonization

3. **TRUST**
   - Resilient supply chain operations require trusted and secure IT architectures, infrastructures, and solutions that enable reliable and secure data exchange and data sharing by:
   - Having cybersecurity/IT security concepts in place that include risk monitoring and assessment of suppliers' and partners' cybersecurity/IT measures
   - Supporting federated data architectures that address the data sovereignty needs of all stakeholders in the supply chain
Digital-First Strategies for Smart Manufacturing Transformation

To avoid the factory itself becoming a bottleneck in order fulfillment, increasing efficiency, agility, and resilience of manufacturing operations will be key to meet customer expectations and to stay globally competitive.

Key pillars of digital-first strategies and measures to transform factory operations

1. **SCALE**
   - Smart manufacturing transformations require scalable IT architectures, infrastructures, and industrial platforms that:
     - Securely connect and integrate physical production assets, machines, tools, vehicles, workers, workplaces, warehouses, and office facilities
     - Enable seamless data communications on the edge and from the edge to the cloud
     - Support enterprisewide data governance and architectures (e.g., data lakes)

2. **IMPACT**
   - Utilizing digital technologies and solutions such as edge computing and AI will help to achieve measurable business outcomes such as improving overall equipment effectiveness (OEE) KPIs through:
     - Predictive maintenance concepts
     - Digital twins of factory operations
     - Remote asset condition monitoring
     - AI-enabled quality control/inspection utilizing edge analytics
     - Implementation of production planning and management applications (MES/MOM)

3. **TRUST**
   - To securely collect, manage, distribute, and analyze shop floor data, some main challenges to address are:
     - Designing and implementing appropriate IT/OT/IoT security and cybersecurity concepts
     - The lack of trust between the OT domain and IT world; closer collaboration between IT staff and OT engineers creates a solid foundation to build trust
Digital-First Strategies to Transform Work Experiences

Having the right skills and talents on board will be critical to digitally transform supply chain and manufacturing operations. This requires manufacturers to build and maintain working experiences that support talent and skill attraction and retention.

Key pillars of digital-first strategies and measures to transform work experiences

1. **SCALE**
   - Working experiences that support talent and skill retention and attraction require IT infrastructures and solutions that:
     - Enable fast onboarding of new employees
     - Securely connect employees and workplaces to web-based enterprise applications and business operations
     - Support collaboration within and across enterprises (e.g., for content and communication)

2. **IMPACT**
   - Optimizing working experiences by utilizing digital technologies will help to reduce absenteeism, employee churn, and cost per new hire, and increase employee productivity and satisfaction through:
     - Application modernization
     - Enabling BYOD concepts
     - Augmenting workers with digital technologies that enable better decision making and/or manual tasks
     - Enabling knowledge transfer through content sharing platforms

3. **TRUST**
   - Optimized working experiences can make manufacturers a trusted employer. This includes:
     - Enabling employees to work from anywhere
     - Enabling employees to securely access enterprise applications from anywhere
     - Supporting skill development of employees
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IDC’s Key Takeaways

Digital-first strategies in the new digital business era see digital technology as a way to compete and accelerate growth.

Manufacturers that aim to transform into a truly digital business need to ensure that all initiatives scale, deliver measurable outcomes, and are trusted.

### Scale
- Cloud-based solutions
- Supplier integration platforms

### Impact
- Supply chain transparency/visibility
- ESG compliance and sustainability
- Predictive maintenance
- Digital twin of factory operations
- Energy management/decarbonization
- Remote monitoring and servicing

### Trust
- Data sovereignty
- Supplier risk monitoring
- IT/OT/IoT security
- Cybersecurity
- Secure and reliable data transmission

- Employee collaboration platforms
- Content sharing platforms
- Faster employee onboarding
- Remote/hybrid workplace concepts
- Physical and digital worker augmentation
- Knowledge transfer
- Improving employee productivity
- Skill development
- Meeting employee expectations to ensure retention
Message from the sponsor

Digital-First: Transforming manufacturing for the age of agility

From simplifying and fortifying your supply chain, to accelerating IT modernization for growth and innovation, to maximizing productivity via hybrid working, Citrix can enable a digital-first approach - and bolster your business through impact, scale and trust.

NetScaler
Any app, any infrastructure, any form factor. No matter where you are in your cloud journey, we’ve got you covered. NetScaler gives you greater agility and speed by providing operational consistency and holistic visibility across multi-cloud with a single pane of glass.

The most comprehensive application delivery and load balancing solution for monolithic and microservices-based applications.

Citrix DaaS
The leader in virtual apps and desktops, Citrix DaaS can have a major impact on productivity, delivering business critical apps to any facility, accelerating time to market, and even facilitating ESG targets by enabling hybrid working.

Citrix DaaS provides users with a high-performance experience in the apps and desktops they need, while adaptive security controls protect your corporate data wherever that work happens.

Citrix Secure Private Access
Your workers are remote. The devices they use may be unmanaged. And the network-centric approach you once relied on to keep data secure is no longer enough.

Citrix Secure Private Access delivers ZTNA (Zero Trust Network Access) with adaptive access to all IT-approved apps - web, SaaS, and client-server - whether they’re deployed on-premises or in the cloud, so you can prevent network level attacks and provide a better end user experience, too.

Learn more about how a digital-first approach can help manufacturers address some of the key challenges facing organizations today:
Digital-First: Transforming manufacturing for the age of agility - Citrix