

ORACLE

MANUFACTURING STARTER KIT

6 ways for manufacturers to create resilient supply chains





INTRODUCTION

Manufacturers have been living with business model upheaval and supply chain disruption for so long that many have accepted it as “business as usual.” Current supply chain struggles, however, go beyond the traditional challenges of global competition, just-in-time delivery windows, and thin-margin contracts. Increasingly volatile weather can disrupt production and shipping or damage inventory at a greater scale and frequency. Customers and regulators are putting a greater emphasis on more sustainable logistics and operations, including a desire to understand how manufacturers are achieving it. Labor issues can appear on all sides of the equation, from sudden illness outbreaks to an older workforce aging out and taking decades of knowledge with them.

How do you get past simply responding and adapting to truly thriving? A resilient and sustainable supply chain helps manufacturers identify problems as they occur and provides real-time context and options.

Here are some best practices for building a resilient supply chain capable of handling the next once-in-a-lifetime event. Which, if recent history has taught us anything, is likely to happen sooner rather than later.

6 best practices for a resilient supply chain

1 Sourcing: Resiliency through diversification

The COVID-19 pandemic caused the general public to think differently about the notion of a supply chain. Once hidden from consumers, the pandemic brought an understanding that supply chain interruptions can ripple into everyday life. **91% of Americans now consider the supply chain when making a purchase**, including **84% who would cancel an order if a delay might be involved**, a recent Oracle survey showed. A resilient supply chain has become a customer-facing priority rather than an operational concern.

An effective way to minimize supply chain disruption is for organizations to utilize diverse sourcing. Relying on one source for a particular material creates a single point of failure, and though workarounds can be possible, a delay is often unavoidable.

Diverse sourcing, then, is a necessary strategy in a world where natural disasters, pandemic-related labor shortages, political unrest, and international conflicts can upend the supply chain at any moment. This goes beyond simply having multiple vendors for each part; factors such as regional climate, geopolitical stability, and local delivery capabilities should be considered to assess the associated risk and the contingencies that could be triggered if required. The added benefit is that diverse sourcing also provides manufacturers leverage to negotiate better contracts and provide the flexibility to scale as needed.



2 Planning: Resiliency through strategy, shared data, and connected processes

Resiliency starts with planning—which requires the right tools, data, and insight to offer smart, flexible choices across the entire organization. On a top-level, resiliency translates to teams making quick and precise movements during sudden upheavals.

Consider the way the global supply chain was turned on its head because of the pandemic. In an example of best-case/worst-case scenarios, some industries such as automotive and semiconductor saw their supply chains face brutal disruptions. For semiconductors, this came with a huge increase in demand for chips that power computers, mobile devices, home appliances, and consumer electronics due to remote work and travel restrictions. Limited manufacturing capacity for semiconductors also impacted availability of chips for automobiles. By implementing a resilient plan before disruptions hit, an organization can combine flexible strategies, robust data, and precise execution to turn disaster into triumph.

Let's play out the above demand-surge/supply-pinch scenario and apply a resilient plan. Integrated supply chain collaboration and planning applications generate real-time looks at inventory, delays, and supply bottlenecks. This information can feed departments across an organization for robust integrated planning across finance,



operations, sales, and more. Demand, order, and logistics management tools empower teams to consider the best ways for juggling backorders and transportation issues. When combined with precise execution, an entire organization can prioritize their actions based on real-time data, from the size of a customer's order to the severity of the supply shortfall. Accurate data powers informed decisions which then drives swift execution for plans changing by the day—or even the hour.

Will there still be shortfalls amid cases of global upheaval? Sure. But many organizations found immense success in 2020 and 2021 despite global challenges thanks to detailed and flexible planning that let them make the best possible decisions, even under difficult circumstances. In those cases, resiliency can seem like it was all part of the plan—because it was.

3 Making: Modernize with data-driven smart manufacturing

Organizations investing in digital transformation saw a **20% increase in employee productivity**, according to a 2021 IDC survey¹. Such a transformation often includes utilizing flexible machinery that can be rapidly retooled and configured to support product changes, high throughput, and monitoring using Internet of Things (IoT). It also involves modern manufacturing execution systems that provide the operations data to power artificial intelligence (AI) and machine learning (ML), with the ensuing results offering benefits across the manufacturing process. Though every organization may implement automation differently, examples of smart manufacturing include:

- **Production:** Automated manufacturing using robots can increase both production volumes and accuracy. With forward-thinking planning, computer-controlled production can be agile enough to be quickly reconfigured for producing multiple product lines.

¹ IDC's Future Enterprise Resiliency & Spending Survey Wave 6, July 2021



- **Maintenance:** By using IoT to monitor machinery and tool performance and life cycles along with maintenance software powered by AI/ML, teams can predict failures and proactively head off problems before they start, before equipment breaks, all without the need for lengthy and intensive manual inspection.
- **Quality control:** How often do defects happen at each stage of the manufacturing process? What are the conditions that create the most material wastage? Do certain brands of tools wear out faster? AI/ML analysis can quickly process data in large volumes to maximize quality.
- **Data-driven manufacturing:** Integrating information technology and operational technology data enables insights needed to improve manufacturing processes. With a robust data lakehouse, shop floor data can be tied to enterprise data across the organization to drive process decisions.


Investments such as these aren't just insurance against dire circumstances. The resilience they provide delivers cost savings even during steady-state operations while also opening the door to future improvements.

4 Shipping: A shock-ready approach to logistics

Inbound and outbound logistics mark the start and end of a manufacturer's production cycle—the start and finish lines for success. Resilient logistics aim to mitigate surprises and disasters on both ends, allowing for smooth adaptability that gets the job done.

In times of severe supply chain disruption, logistics and transportation decisions can't rely simply on manual efforts. Dependence on manual oversight slows down day-to-day processes and creates numerous roadblocks for big-picture planning—and in the face of supply chain disruptions, it makes pivoting extremely difficult.





Instead, these teams need the support of automation, handing tasks within logistics planning to AI/ML algorithms built around exceptions, guidelines, transportation modes, destinations, and real-time fleet status. A resilient supply chain starts with unifying data into a single source, from fleet status to logistics budgets to order destinations. From here, organizations move forward with stronger logistics data, modeling capabilities, and more ways to analyze options for improvements.

For example, if a natural disaster interrupts the supply chain, resilient logistics can build logistics network models to recommend mode changes, combined shipments, and prioritized destinations, all within a given budget. Transportation management systems then enable optimal execution of the revised plan. Teams can apply these pivots short-term while analytics continues to assess if the changes should be made permanent. Successful modern logistics are built on data visibility and adaptive strategies.

5 Talent: Maximizing retention during an era of change

One in five manufacturers consider access to a skilled workforce their biggest internal growth challenge, an Industry Week survey² found. This isn't surprising given the wide range of labor issues facing the industry. In the US, manufacturing jobs have declined for decades, leading to a message that the new generations would be better off finding different career paths. This stigma leads to industry veterans ending their careers without rising talent to replace them.

What can manufacturers do to change this? Any approach requires both talent retention and recruitment. Perhaps the most important element for both strategies is to make talent feel supported and valued during massive industry and global changes. The tactics for delivering that cover a wide range, such as implementing hybrid work models, providing support for higher education, and utilizing technology such as IoT devices to streamline laborious and repetitive tasks.

² "Manufacturing in the New Next." IndustryWeek



From embracing remote work in applicable areas (such as operations, engineering, project management, data analysis, and procurement) to applying digital manufacturing, manufacturers can both attract the next generation while retaining talent in a competitive industry.

6 Sustainability: A commitment to greener operations

The sincere desire by a manufacturer to lower its carbon footprint—and to document the results—can become extremely complicated when it involves procurement, manufacturing, and logistics. Staying true to sustainability ideals while improving efficiency and reducing cost starts with an organization-wide commitment to sustainability and then requires a multi-faceted approach, including:

- **Sourcing:** By ensuring that materials are ethically sourced, the first step of a complete product life cycle can be handled with sustainability in mind.
- **Process:** The manufacturing process can be reconfigured to reduce energy usage, use environmentally friendly materials, and minimize wastage.
- **Inventory:** Real-time tracking of inventory allows for just-in-time manufacturing with notifications that lead to faster resolutions as issues occur. While improving performance and profits, this work can also help reduce material waste for greater sustainability.
- **Logistics:** Similar to sourcing, logistics providers and supply vendors can be selected based on their environmental impact and sustainable practices.

Efforts like these can be best achieved with comprehensive data consolidated on a scalable infrastructure. By applying this approach, an organization can make strides towards its sustainability goals—and in doing so, establish an identity as an industry later capable of meeting the moment.



Steps to get started

At the July 2021 World Economic Forum³, experts presented the Resiliency Compass: Navigating Global Value Chain Disruption in an Age of Uncertainty. Here is a summary of their recommendations to getting started.



Understand your current landscape

To build resiliency, you must know what's in your technology and product portfolio. Your current product roster, customer base demographics, and your existing technology infrastructure provide the starting point for any resiliency plan. By doing a thorough examination into all of these elements, there will be no surprises as you begin to integrate data, automation, and redundancy into your supply chain.



Build with flexibility in mind

Perhaps the most important element of resiliency comes down to quick adaptability in the face of disaster. That requires building logistics systems with flexibility in mind to enable control over warehousing, transportation, and inventory. Supplier rosters and production networks require the same mindset. All of this ensures various levels of redundancy that can scale as needed when disaster strikes.

³ "The Resiliency Compass: Navigating Global Value Chains Disruptions," World Economic Forum, 2021





Plan ahead

With the pieces above in place, the final step is to start looking ahead and building plans in advance through modeling and data-driven insights. Using this approach, shifts in supply and demand can be handled with appropriate pivots thanks to servicing and executing through a series of diverse supplier and logistics channels.

Case study excerpt

The COVID-19 pandemic saw many people shift to outdoor activities to socialize and engage with the world. For Specialized Bicycles, that meant an unexpected spike in bike orders from all over the globe. In April 2020, bike sales doubled their normal seasonal rates while port closures and factory quarantines created a global supply chain crisis. Specialized's legacy data center architecture struggled to keep up amid the shifting dynamics, and the company decided to move key enterprise business applications including its ERP and product lifecycle management to run on cloud infrastructure.

The result was the reliability and scalability necessary to handle immense order demand while optimizing constantly changing supply chain and logistics capabilities. Built on both public and private subnets, Specialized experienced greater reliability and stronger visibility into inventories, production, and deliveries. [Read the full case study.](#)

Quick reminders



Do



Expect the unexpected—again



Consider alternative sourcing



Embrace the possibilities of automation



Invest in data that powers logistics modeling



Don't



Assume there will ever be a “normal”



Treat sustainability as a PR move



Ignore the latest workforce trends



Overlook geopolitical impacts

Looking ahead

Recent years have produced startling shocks to manufacturers' supply chains, shocks that demonstrate the critical need for resiliency. A focus on resiliency improves efficiency, reduces cost and waste, and sets an organization up for success no matter what challenges arrive.

Success requires the right tools applied in scalable ways. Oracle's suite of cloud applications offers functionality targeted to finance, human resources, and supply chains, as well as to the specific industry needs of manufacturers. Built on the scalable backbone of Oracle Cloud Infrastructure, Oracle enables planning, tracking, and analysis for organizations facing regional or global needs. With the ability to handle intense surges, Oracle delivers adaptability for stability in an unpredictable world.

Learn more about how Oracle can help you build resiliency.

[Visit our site](#)



Copyright © 2023, Oracle and/or its affiliates. This document is provided for information purposes only, and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document, and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission. Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

