

3 points to consider when designing your agility strategy for manufacturing operations

The concept of agility in manufacturing isn't new. But the conditions driving the need for agility are unprecedented.

Agility for a business is essentially the need for adaptation. And manufacturers have been continuously adapting to changing conditions for the past 100 years. Ever since Henry Ford pioneered the assembly line for the mass production of automobiles in 1913, companies have responded to consumer and market forces with excellence initiatives like zero defects (quality), zero incidents (safety), zero downtime (reliability), zero inventory (just-in-time), zero waste (lean), zero carbon (sustainability), zero latency (same-day delivery), among others. These efforts, through continuous improvement, helped organizations build the "muscle" that made them more agile and able to adapt to the conditions of the day.

Then the global pandemic happened. The speed and scale at which it affected the manufacturing industry was unprecedented, creating conditions for a stress test of agility – and resilience. Rapid shifts in market demand are changing product demand and packaging configurations. E-commerce has grown two to five times faster than before the pandemic, which equates to decreasing lead times for orders. The pandemic accelerated workforce trends like a growing skills gap, increased employee turnover, and the difficulty of attracting and training new talent.

To compete in the post-pandemic landscape, manufacturers should consider the following to make their operations more agile.

1 Agility starts with recognizing two opposing forces: efficiency and responsiveness.

Shipping a package offers a simple example to explain how these forces differ. The cheapest option (efficiency) takes the longest. The fastest option – next-day or same-day delivery (responsiveness) – is the most expensive. Supply chains (and factories) operate by the same principle. Networks and nodes can be optimized for cost or responsiveness. But it is difficult to optimize for both.

For decades, manufacturers pursued overall equipment efficiency (OEE) to achieve the lowest production cost. But ongoing supply chain disruptions caused by pandemic conditions challenged this objective. Supply chains optimized for cost efficiency and manufacturing plants optimized for steady-state OEE couldn't respond to the disruptions, booming online sales, and service expectations. So what can a plant manager do?

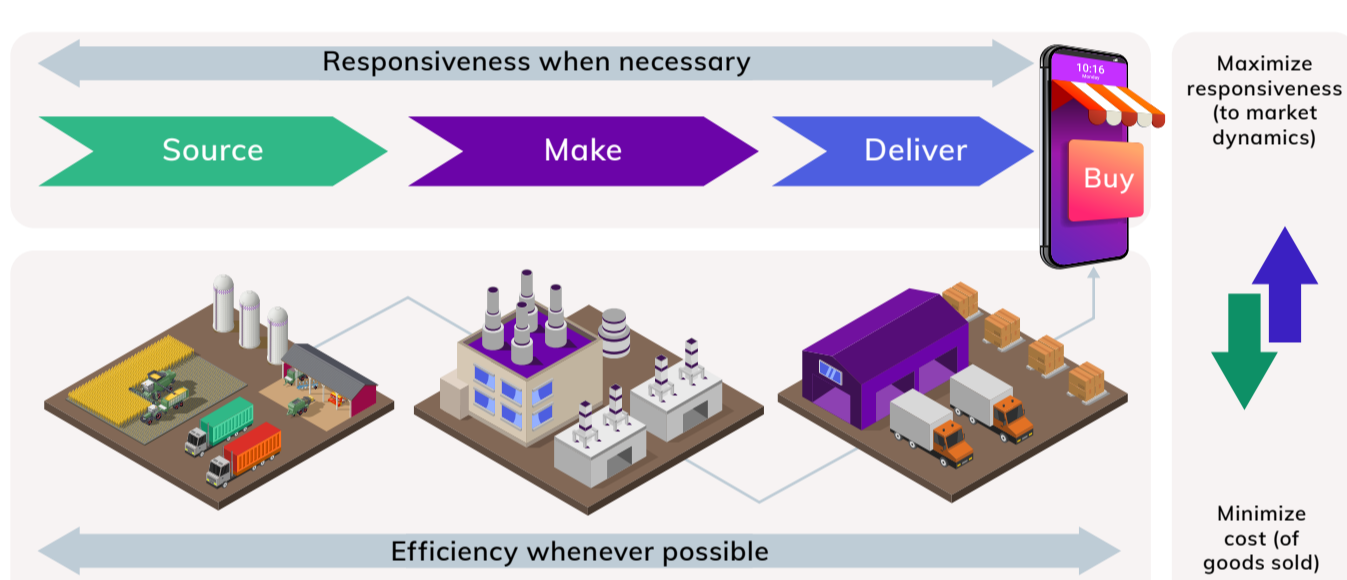
A pragmatic answer for the present dilemma was best summed up by Bharat Virmani, Schneider Electric's VP of Supply Chain Performance: "Efficiency whenever possible. Responsiveness when necessary."

For the post-pandemic era, manufacturers need to expand the plant's performance strategy beyond OEE. A pragmatic agility strategy principally includes two steps:

- 1 Continue to drive toward efficiency by eliminating the variability under the manufacturer's control within the four walls of the plant.
- 2 Respond to disruptions external to the four walls, i.e., variability outside of the manufacturer's control, while identifying and acknowledging these supply chain events.

Furthermore, specific capabilities like [Advanced Planning and Scheduling \(APS\)](#) can dynamically reschedule and help the plant adapt to changing conditions. While this enables situational agility, companies will be better served to step back and think about agility (and resilience) from a more structural perspective.

This pragmatic agility strategy enables plant management to proactively manage any performance gaps (i.e., the plan versus actual) by remaining accountable for efficiency goals but also explaining when responsive actions worked against the efficiency goals.



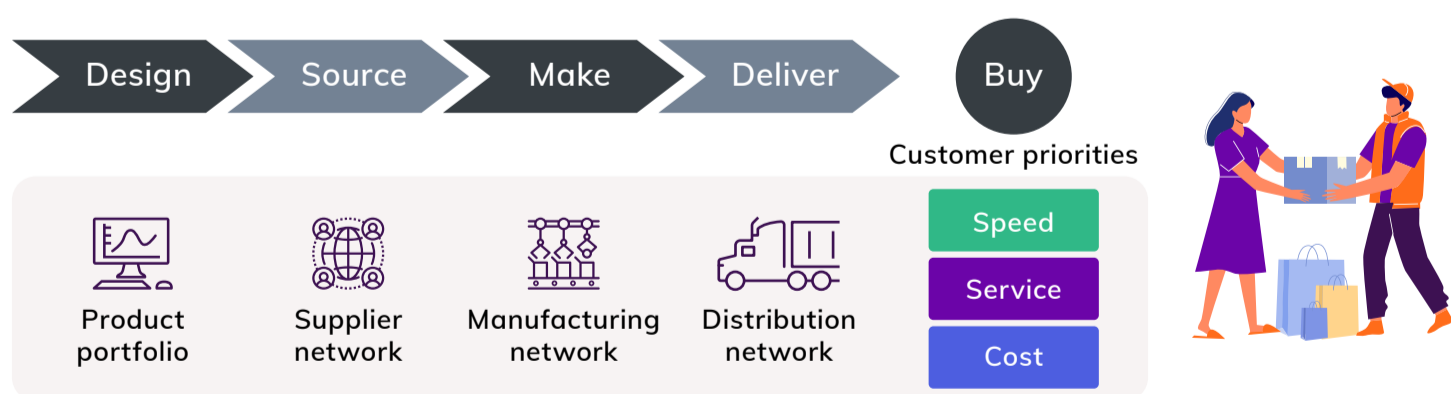
2 Designing for agility requires a holistic view or, more precisely, a network-level view of the business across the supply chain.

While plants must take the above steps to improve agility, for long-term success, manufacturers need to design for agility at the network level. As illustrated below, network-level agility depends on the customer for that industry. Based upon the customer, the company can determine its priorities in terms of cost, service, and speed – and subsequently, align its value chain to those priorities.

The following industry-specific examples help to further explain this:

- **Speed:** Dell pioneered the rapid-response supply chain for the computing industry over two decades ago. Today, products in this industry segment are often designed for postponement. Products are sourced and produced at global locations, where they can be easily configured and quickly fulfilled by the distribution network, to meet the customer specification.
- **Service:** Walmart and Procter & Gamble pioneered vendor-managed inventory (VMI) over three decades ago. To satisfy a service-level guarantee, the VMI system is designed around inventory replenishment signals (store shelves, warehouses, etc.) since availability is the key driver.
- **Cost:** For industries serving commodity markets (electricity, oil and gas, basic chemicals), such networks are accordingly built for economies of scale. Since these networks involve significant capital investment, the priority is often to "sweat the assets" since margins are low.

The above examples help highlight key differences and underscore the limitations of a "one-size-fits-all" approach to managing supply chains, which leads us to the next point.



3 The right strategy for agility and resilience depends on the market drivers of an industry segment.

Each manufacturing business experienced the pandemic's stress test differently.

Business models that had competed on cost efficiency by adopting just-in-time inventory models discovered their supply chains were brittle. This was the experience of most companies in the consumer goods industry. In contrast, a high-tech company that sold high-end servers with same-day order shipment fared better because it kept high levels of inventory as a buffer for responsiveness. Because the company's production had a premium margin, it could absorb higher costs when switching to different production locations and air-freighting its components inventory.

Before the pandemic, the conventional wisdom was to be good at one thing (cost, service, speed). But the events that unfolded at the height of the lockdowns, and the volatility that continues to reverberate since, exposed the limitations of that strategy. For example, those who competed with "just-in-time inventory," realized the value of "just-in-case inventory". In other words, inventory as a strategic lever can be used for both agility and resilience. Going forward, companies need to think about agility as expanding on their core strengths and capabilities instead of focusing on the one thing that they are good at. Building up several strengths enables companies to be more flexible and resilient to cope with uncertainty.

Read the white paper: [Agility for competitiveness: Transforming digital manufacturing operations for business agility](#)