SUPPLY CHAIN & OPERATIONS RISK

When JIT breaks: Building resilience into the supply chain.

How to stop treating inventory as a cost center and start treating it as insurance.

supply chain · lean manufacturing · risk management · electronics

> The newsletter for operations leaders who prefer robust continuity over optimized cash flow.

Summary: The brittleness of 'just enough'

The fundamental problem with modern Just-in-Time (JIT) manufacturing is that it was designed for a world that no longer exists—a world where borders were open, logistics were predictable, and the supply chain was a steady stream rather than a series of hurdles. We have spent decades perfecting the art of removing "waste," which in many cases meant stripping away every gram of inventory until our operations became incredibly lean.

But there is a difference between being lean and being fragile.

When we optimize for "just enough" in a stable environment, it’s high-level efficiency. When we do it in an era of geopolitical volatility and component shortages, it becomes a liability. We have reached a point where many operations are so tightly tuned that they lack the "give" required to absorb even minor shocks. A single missing capacitor or a delayed shipment from a port halfway across the world doesn't just cause a delay; it grinds the entire line to a halt.

The thesis here is simple: J1T is not an excuse for zero-preparedness. It is a strategy for high-velocity flow, but it cannot be used as a shield against systemic instability. We must move from a mindset of "just enough" to one of "managed risk." This means identifying where we need buffers and treating those specific inventory points not as waste, but as insurance.

The BOM Audit: Where your supply chain really breaks

To fix this, you have to stop looking at the Bill of Materials (BOM) as a list of parts and start seeing it as a map of risk exposure. Most managers look at their BOMs and see components; I want you to look at them and see potential points of failure.

I recommend auditing your high-risk items using a three-tier system:

1. **Commodity Items:** These are the nuts, bolts, and standard fasteners. They are easy to source from multiple vendors. You don't need much buffer here; you just need a reliable vendor who can fulfill a basic order.
2. **Multi-source Active Components:** These are more complex—integrated circuits or specialized connectors that have several manufacturers but perhaps only one or two local distributors. Here, the risk is moderate. A "just enough" approach works if your secondary source is active and verified.
3. **Single-source Anchors:** This is where the danger lives. These are components that can *only* be sourced from one manufacturer or a very narrow set of suppliers. If these parts fail to arrive, your production stops. Period.

When you audit your BOM this way, you stop treating all inventory as equal. You identify the "Anchors" immediately. Any item categorized as an Anchor should not be managed with a JIT mindset. It needs its own protection plan because it is the linchpin of the entire operation. If a single-source anchor isn't buffered correctly, your lean processes won't matter—the line will be silent while you wait for a shipment that isn't coming.

Why we mistakenly believe lean is always best

There is a common trap in our industry: confusing "lean" with "fragile." We often see teams defend low inventory levels because it looks good on a spreadsheet or fits the standard definition of waste reduction. But if your lean strategy creates an "optimization blind spot," you aren't being efficient; you are just deferring the cost of failure to a later date.

The difference between these two states is often hidden in how we justify our choices. The following table illustrates the gap between what many leaders say they want and the reality of the floor:

The Lean Mantra (What people say)	The Operational Reality (What actually happens)
"We are minimizing waste by keeping inventory low."	"We are removing our ability to react when a supplier fails."

The Lean Mantra (What people say)	The Operational Reality (What actually happens)
"Just-in-time is the ultimate goal of flow."	"Single-point failures are being ignored until they stop production."
"Inventory is an expensive cost center."	"Stockpiling critical components is a necessary insurance premium."
"We want to be as lean as possible."	"We need to be robust enough to survive the next disruption."

When we prioritize "lean" over "resilience," we aren't making a choice for efficiency; we are choosing to accept an unacceptable level of risk. A process that works perfectly until it stops completely is not a successful process. It’s a gamble.

The Cost of Zero Buffer: Operational Failure Points

When the buffer disappears, the costs don't just disappear with it—they multiply. I have seen this play out on the floor repeatedly. When a single-source anchor fails to arrive because of a logistics hiccup or a factory shutdown, the "cost" isn't just the price of that missing part.

The cost is the **Stagnation Penalty**.

When your line stops because you lack a $0.50 component, you aren't just losing production time; you are incurring several layers of costs:

1. **Labor Idle Time:** You still have to pay the operators and technicians who can’t work while they wait for parts.
2. **Contractual Penalties:** Your customers won't care that your JIT model failed; they will only see that you missed their delivery date, triggering late fees or contract violations.
3. **The Chaos of Reactive Logistics:** You end up spending thousands on "expedited" freight and hot-shot shipping to get one small part across the country because you didn't have a buffer in place six months ago.

This is what I call **The Fragility Trap**. It’s the belief that because something *usually* arrives on time, it doesn't need a safety net. In reality, every piece of equipment that stops moving represents a massive drain on your bottom line. A "lean" process that results in an empty factory floor is not lean; it is broken.

Designing Strategic Buffers (The 3 Pillars)

We must move away from the idea of "holding stock" as something we do because we're lazy or disorganized. Instead, we treat buffers as a deliberate engineering choice to mitigate specific risks. To build resilience into your supply chain without bloating your warehouse with unnecessary waste, focus on these three pillars:

1. Capacity Reservation

Instead of just buying more parts, you pay for the *right* to have them. This involves negotiating contracts where a supplier guarantees a certain amount of production capacity specifically for your components. You aren't necessarily holding all that stock in your warehouse every day, but you are ensuring that if demand spikes or supply thins out, you have a reserved "lane" in their factory.

2. Co-funded Stock

For those high-risk Single-source Anchors, work with the vendor to share the cost of inventory. You agree to pay for them to hold a certain amount of your specific components at their facility or a regional distribution hub. This is "insurance" that doesn't clutter your floor but ensures the parts are physically closer and available when you need them.

3. Alternative Sourcing Contracts

This requires an upfront investment in engineering time, but it pays dividends in peace of mind. You must qualify at least two different suppliers for every critical component on your BOM. Even if the second supplier is slightly more expensive or harder to work with, having a "hot-swappable" alternative means that if Source A fails, you can pivot to Source B without stopping the line.

Tomorrow's Gemba Walk: Actionable Steps

Don't wait for the next supply chain crisis to audit your risks. You should start this process during your next walk of the floor or while reviewing your production schedules. Here is what I want you to do over the next few days:

1. **Identify the Anchors:** Pull your top 20 most-used components and identify which ones have only one source. These are your primary risk points.
2. **Quantify the Stagnation Cost:** Calculate exactly how much it costs the company in labor and penalties if a single line stops for 48 hours due to a missing part. This number is your "insurance premium."
3. **Map Your Buffer Strategy:** For every "Anchor" identified, decide which of the three pillars (Capacity Reservation, Co-funded Stock, or Alternative Sourcing) will be used to protect that specific item.
4. **Update the Plan:** Move these items out of the "Standard JIT" bucket and into a "Managed Risk" category in your procurement system.

Closing Thoughts on Resilience

The goal here is not to return to a world where we have massive, wasteful warehouses full of parts we don't need. We aren't trying to undo the progress made by Lean manufacturing; we are trying to mature it.

True operational excellence isn't about having "zero" inventory; it’s about having **managed risk**. A mature organization recognizes that a perfectly lean system is often a brittle one. By identifying your

anchors and building strategic buffers into your supply chain, you aren't adding waste—you are ensuring the survival of your production flow.

Stop treating inventory as something to be eliminated at all costs. Start treating it as the insurance policy that keeps your doors open when the world gets complicated.

Call to Action

What component in your BOM do you treat as 'just another commodity' but should be protected? Share this article with a colleague who needs to stop optimizing for the last quarter’s cost sheet. Send questions to newsletter@sixsigmakaizen.com.

Newsletter replies: newsletter@sixsigmakaizen.com · X: @kaizen_6sigma

Stay curious, stay improving,

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References: The Death of Pure JIT: Why Electronics Manufacturing Demands Strategic Buffering (SupplyChainBrain)