

Inventory. It's always inventory.

Every business needs inventory. The trouble is that every customer, product, project and change it ever took on left some behind. Nobody chose the pile. It accumulated. And whatever went wrong upstream, the warehouse is where the chickens come home to roost.

The data room said the inventory turned briskly. The steel on the racks had a different view, and had been expressing it in rust for some time.

Spreadsheets can be persuaded. Steel cannot. The steel was written off and the deal insurance paid for it. The insurers never saw the steel. They just got the bill, which is how most people meet inventory.

Nobody had set out to own rusty steel. Every piece of it had arrived for a reason: a customer, a product, a program, a forecast. The warehouse was simply the one place in the business where all of those reasons were still physically present, long after the people who made them had moved on. **A warehouse is the company's history, stored at cost.**

One customer, one product, one project

Every business starts simple. One customer, one product, one project. The warehouse is a few shelves, everything on them is needed next week, and the owner can tell you what each item is for. Enjoy it. It is the last time anyone will be able to do that.

Then the business grows, which is the point. More customers, more products, more projects, and a steady stream of engineering changes to keep them all current. Each is a good decision on the day it is made. Each needs inventory to support it. Not all of them work out. The inventory stays either way.

You need it

Start with the honest part. Inventory is not the villain. Businesses carry it for good reasons:

- **Growth.** You cannot ship what you have not bought, and suppliers want the order before you have the sale.
- **Service.** The key customer wants it this week, not in your lead time.
- **Support.** The installed base needs spares for as long as it runs, often longer than the product was sold.
- **Market lead times.** When the component takes 40 weeks and the customer will wait four, somebody holds the other 36.

Lean calls inventory waste, and on its own terms it is right: stock hides problems and ties up cash. But a business with no inventory is not lean. It is out of stock, which customers find less inspiring. The question is never whether to carry inventory. It is whose decision each piece of it represents, and whether that decision is still true.

Every customer leaves some behind

A new customer rarely buys your standard product. They want their label, their connector, their packaging, and their safety stock held on your floor “so we can call off at short notice.” You agree, because they have promised volume.

The volume does not come. Or it comes for two years, and then the customer is acquired, or re-sources, or simply stops calling. The relationship ends. The customer-specific stock does not. It sits in a corner with a name on it that nobody in sales now recognizes.

Every warehouse has this corner. Some have a mezzanine.

Every product leaves some behind

The long tail is where most of the catalog lives and very little of the volume. Each of those items still needs raw material, a minimum order quantity, a safety stock and, once sold, spares.

Nobody launches a product planning to sell eleven. But the stock was sized to the launch plan, the spares obligation is sized to the installed base, and neither shrinks when the sales do. The eleven customers expect support for as long as their machines run, and machines nobody else wanted have a way of running forever.

Every project leaves some behind

New projects are launched on forecasts, and forecasts are written by people who want the project approved. This is not dishonesty. It is optimism with a purchase order number.

Atari made about five million copies of *E.T.* for Christmas 1982 and sold about one and a half million. In 1983 a large share of its unsold stock went into a landfill in Alamogordo, New Mexico. When a documentary crew dug the site up in 2014, the cartridges were still there. Inventory is patient. Given long enough, it becomes archaeology.

In 2014 Amazon took a \$170 million charge on the Fire Phone and disclosed \$83 million of phones still in stock. The company that knows what you want before you do built a phone for a demand it had not measured.

Most businesses do this on a smaller scale and more often. Pre-launch inventory built to the plan. Long-lead parts ordered before the design froze. A pilot run sized for the customer who was “definitely” going to order. The project is quietly cancelled. The purchase orders are not. Nobody holds a meeting to cancel a purchase order.

Every engineering change leaves some behind

An engineering change improves the product and obsoletes whatever was built to the old revision: parts on the shelf, parts on order, parts in work at the contract manufacturer, and sub-assemblies nobody can rework.

The change order says “use up existing stock.” The planner reads it as “buy the new part now.” Both happen. The warehouse now holds two revisions of the same part, neither of which fits the other’s product, and a third is in design review.

I would give an example, but I stopped counting them years ago. So, it turns out, did the warehouse. The change process itself is a separate paper, *It was only a small change*. This is the bill for it.

And every mistake leaves some behind

The forecast. In April 2001 Cisco wrote down \$2.2 billion of inventory and laid off 8,500 people. During the 2000 shortage it had committed to buy components “no matter what,” while customers, afraid of allocation, placed the same order with several suppliers at once. The demand was real. It was just the same demand counted several times, by suppliers who each believed they had won it.

The system. Target entered Canada in 2013 with an item master later estimated to be accurate about 30 percent of the time. Dimensions were in inches where the system expected centimeters. Case packs were wrong, so shipments arrived

that the warehouse software could not receive and went into quarantine. Distribution centers overflowed while store shelves sat empty, both at once, which takes some doing. Target closed all 133 stores in 2015 and took \$5.1 billion of pre-tax charges on the way out.

You do not need to open a country to manage this. Most businesses do it by spending a fortune on a shiny new system and discovering, a year after go-live, that they still do not know what is where. The system was never the problem. The data was.

My favorite version is the part with several numbers. An engineer needs a bracket. Searching the item master for an existing bracket takes an afternoon; creating a new part number takes five minutes. Nobody had the discipline to insist on the afternoon, so nobody spent it. Do that for a few years and the same bracket lives under three numbers, with three safety stocks and three minimum order quantities. MRP sees a shortage on one while the other two sit on the shelf, and orders more with great diligence.

MRP is a very fast, very obedient clerk. It will order a lifetime supply of anything you mistype, and file the paperwork beautifully.

The recession. Four weeks of inventory is a good number until the demand changes. Take a line running 100 units a week with 400 on hand: four weeks of cover. Demand falls 85 percent, to 15 a week. Twelve weeks of purchase orders, 1,200 units, are already on the supplier's line, and most will arrive. Stock of 1,600 against a run rate of 15 is 107 weeks.

Four weeks became two years, and nobody bought a single extra part.

They just did not stop the ones already bought. That is what happened across industrial supply chains in 2008 and 2009, and it was worst for capital equipment. Charlie Fine, who taught me supply chain at MIT, describes why in *Clockspeed*: the further a business sits from the end consumer, the more the volatility amplifies. A wobble at the checkout becomes a cliff at the machine builder.

Some of it walks

In 1963 Allied Crude Vegetable Oil borrowed against tanks of salad oil in Bayonne, New Jersey. Inspectors dipped the tanks and found oil. They did not find the water underneath it. The receipts claimed roughly sixteen times the oil that existed, and losses ran to about \$180 million. It remains the best argument ever made for putting the dipstick all the way to the bottom.

Most theft is less ingenious and more regular. US retailers lost \$112 billion to shrink in 2022, and theft by customers and employees accounted for nearly two-thirds of it.

I have met theft more times than I would like, and it was almost never found by security or by the system. It was found by counting: a cycle count that would not reconcile, or a physical inventory with a hole in it. I call the follow-up forensic stock keeping. Every variance is treated as a question, not a correction, and chased back to a person, a date and a document until it has an answer. It is slow, unglamorous and the only control that looks at the shelf rather than the screen.

It is rarely found by a tip-off, and there is a reason. The people most likely to know are the warehouse team, and they work alongside the people doing it. In more than one case I have seen, they were frightened of them. So they said nothing, which is not a failure of character. It is a reasonable reading of who they have to stand next to on Monday.

When someone does speak up, it has cost them something. Act fast. Protect the person who told you, and bring in the police or a private investigator. The evidence can walk as easily as the stock did.

Why lean does not clear it

Lean has a list of seven wastes. Inventory is on it, and so is overproduction, which is how most inventory gets made. The prescription is flow: make what the next step needs, when it needs it, and let pull replace the forecast.

That works where there is flow to be had. Most industrial businesses have less than they think. I learned the tool for telling the difference at Lucas Industries in the UK, where it was developed: runners, repeaters and strangers. Sort everything you make by how regularly the demand repeats. **Runners** repeat every week and can run on a dedicated, leveled pull system. **Repeaters** come round on a predictable cycle and share capacity. **Strangers** turn up irregularly or once, and in most catalogs they are most of the items.

Kanban works on runners. Applied to strangers it fails, and that is how a lean program gets a bad name. A business whose catalog is mostly strangers cannot pull its way to zero inventory, because there is no steady demand to pull against. So the strangers are bought in minimum order quantities, to forecasts, in advance, and what is not used stays. Lean removes the inventory that flow makes unnecessary. It does nothing for the inventory that complexity made necessary.

Treat them differently

If flow cannot clear the tail, something else has to. The tool I use is 80/20. ITW, where I learned it, taught it on profitability: put the best service behind the customers and products that make the money. In practice nobody knows which customers are profitable. Years of activity-based costing rarely settle it. So I start with volume. Volume does not prove a customer is profitable, but it gives you the chance of profit.

The cut is the easy part. The question 80/20 actually asks is harder: which customers and products can you treat differently? Run the cut twice, once on customers and once on products, and cross the two lists. You get four boxes:

- **A customers buying A products.** The core. Stock on the shelf, short lead times, the best service the business can give.
- **A customers buying B products.** Keep them. A slow product bought by a key customer is often why that customer calls you first. It stays, on different terms.
- **B customers buying A products.** Serve them from standard stock on standard terms. They ride on the core; they do not get a core of their own.
- **B customers buying B products.** Quadrant four. This is where most rusty steel comes from.

Quadrant four gets three answers, usually in this order. **Raise the price** to what it actually costs to serve. It is the polite way of asking the question, and most of the time the customer answers it for you. **Move it to make to order**, and quote a lead time that is true. This is the most common outcome, and the one that stops the shelf refilling. And where neither works, **say no**.

Saying no is the hard one, because it feels like turning away revenue. It is not. It is being honest that you are not in that business anymore, and have not been for some time. Only the warehouse had not been told.

Make to order is not a cure. It is a milder case. The finished goods stop piling up; the leftovers do not. Every order is bought in minimum quantities, every job has a few parts over, and every cancelled order leaves its material behind with a job number on it. Some of the most expensive things I have found in warehouses turned up in forensic stock keeping: a part worth a great deal, a thick coat of dust, and a job number for an order that shipped years ago, or never did.

For whatever nobody will buy at the new price, the last answer is end of life, the decision most businesses never make. Ending a product properly is a sequence, not an announcement: a last-time buy for the parts nobody will make again, a final build, a spares-only period sized to the installed base, and a date after which the remaining stock is sold, returned or scrapped. Then take it off the price list. Otherwise sales will sell one more. Sales can always sell one more.

None of this is glamorous. It is also the only part of this paper that makes the pile smaller rather than merely slower-growing.

The chickens come home to roost

Every function in a business can defend its own number. Sales has a forecast. Engineering has a revision. Finance has a valuation. IT has a system that is working as designed. Each is an opinion. Inventory is the one place where all of them have to agree with a physical object, and the object has never lost an argument.

That is why it is always inventory. Not because inventory is the failure, but because it is where every other decision is finally counted. The customer who left. The product that did not sell. The project that was cancelled. The change that obsoleted the old part. The forecast that was one order counted several times. Each one is still in the warehouse, and most of them still have a location code.

The fix is almost never in the warehouse. It is at the moment the customer, product, project or change is approved, when somebody should ask what inventory it will need, what it will leave behind if it fails, and who will own that when it does.

Be careful what you take on. Be disciplined about what you end. And be honest about what is already in the corner.

If you want to know where your own chickens are, walk the warehouse and ask four questions:

- **How old is the oldest thing on this floor, and whose decision was it?**
- **Who can cancel what is on order, and what can they not cancel?**
- **Which of our products has an end-of-life date?**
- **When was the last full count, and who did it?**

The warehouse team already knows the answers. It is usually only the person asking who is surprised.

That is the work I do.

SOURCES

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WHERE THIS GOES NEXT

How not to have millions in inventory and still disappoint the key customer →

The practical companion: seven moves, in order, to set inventory policy that serves the key customer without stocking everything for everyone.