

The Right Stuff

Managing Inventory to Enable Agility for Manufacturing and Distribution Companies



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Challenges and Opportunities of Managing Inventory in Volatile Times

Inventory is the lifeblood of any manufacturer, brand owner, or wholesale distributor. Managing inventory well is the key to success: driving sales, profitability, cash flow, and customer loyalty. When a manufacturing or distribution business is first getting started, it may be able to get away with minimal inventory management systems and processes. The owner can tell how much of an item they have by simply looking or asking a trusted employee, who remembers where they put everything and knows about how many are left.

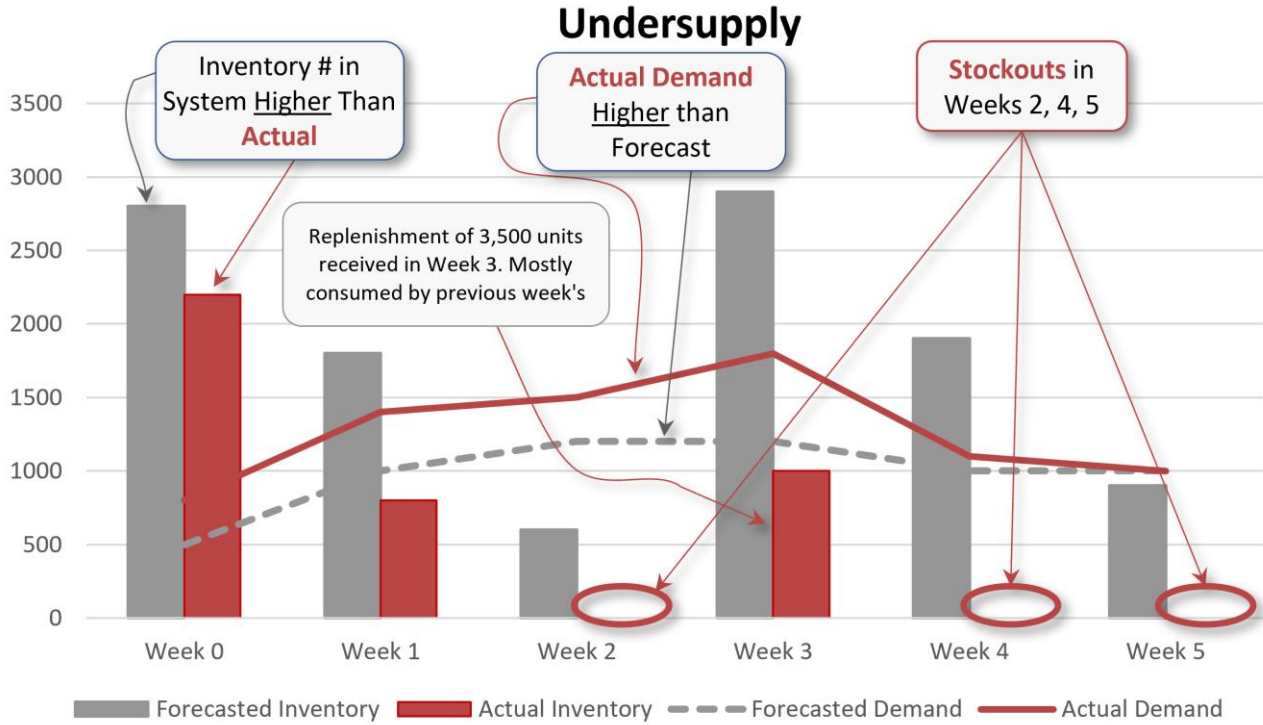
However, at some point, it becomes too much to remember it all. Inventory may exist in multiple locations: at various suppliers' sites, on inbound shipments, across various distribution centers, at channel partners' sites, at customers' sites, and in transit between all of these. At that point, the lack of systematic processes catches up, causing major problems. If there is extreme volatility in demand and supply on top of that, it can become an existential threat for the company. Putting the right inventory management systems and processes in place is essential for a company to survive in times of disruption and thrive in normal times.



Right Items, Right Place, Right Time, Right Quantity

The core of supply chain management is having the right products, in the right place, at the right time, in the right quantities ... and doing it without incurring unnecessary costs, such as excess inventory or transportation expediting costs. When inventory is not right (items, place, time, or quantity), it is usually due to inaccurate forecasting, volatile demand, incorrect inventory counts in the system, disrupted supply, or a combination of these and other factors.

Virtually all manufacturing and distribution businesses experience some amount of imbalance between supply and demand, due to a variety of reasons. As shown in Figure 1 below, your systems may show everything is on track (inventory is sufficient to meet forecasted demand), when in reality, demand may substantially exceed available inventory. In this scenario, it was a combination of 1) having the wrong count of current inventory—the inventory count in system is higher than actual # of items on hand, and 2) actual demand is higher than the forecasted demand. In this hypothetical scenario, a shipment of 3,500 units arrives in week 3, but too late to avoid a stockout in week 2 and again in weeks 4 and 5. Having less inventory than projected can also be caused by supply disruptions and delays to incoming shipments. In any case, the result is undersupply, with potentially serious consequences, including lost sales and possibly losing a customer for life. For a manufacturer, it could cause production stoppages at their plant due to lack of key materials.



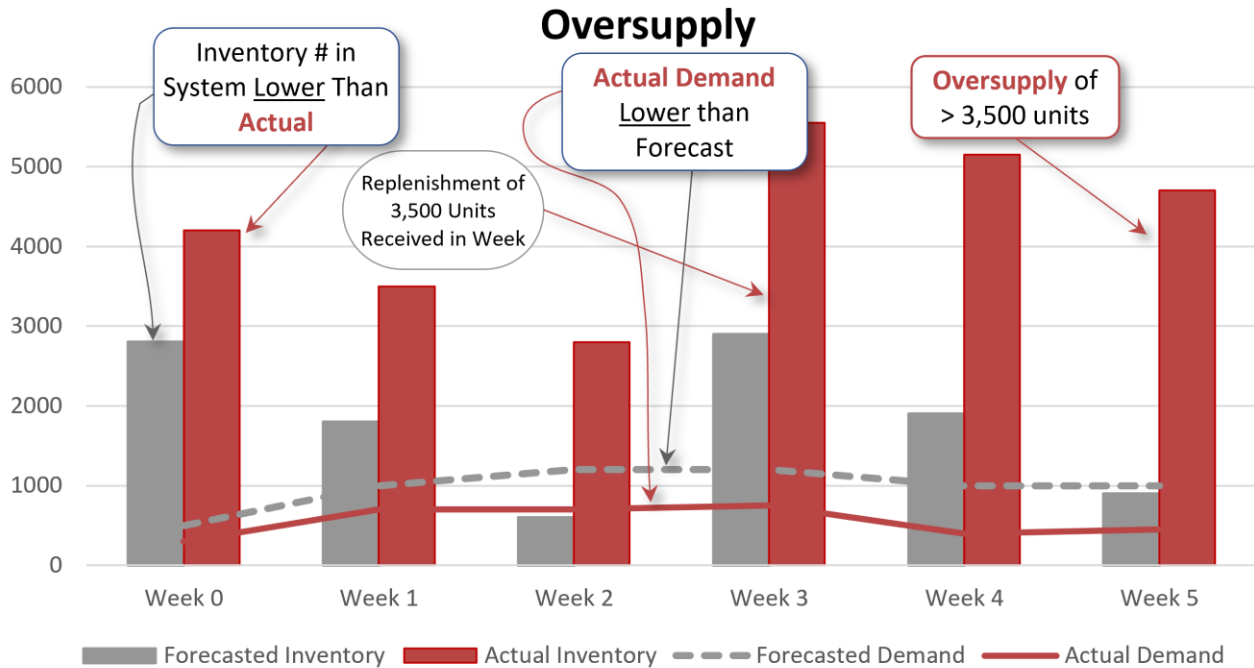
- **Out-of-Stocks** • **Lost Sales** • **Lost Customers for Life** • **Production Stoppages**

Figure 1 – Undersupply: Demand Exceeds Available inventory

Conversely, another common scenario is oversupply, as depicted in Figure 2 below. In this case the initial inventory count in the system (at week 0) is less than what is actually on hand. That error is compounded by actual demand being less than forecasted demand. Since a replenishment order had already been placed, 3,500 units arrive in Week 3, further exacerbating the excess. The result is an oversupply of more than 3,500 units by week 5.



In this case, all the cash used to buy that inventory remains locked up and unavailable to buy more goods or to use for other purposes. There is less cash coming in, due to decreased sales, potentially causing a cash crunch. Beyond the cash tie-up, there are other carrying costs for the inventory—storage costs, handling, insurance, depreciation, and the opportunity costs (what could have been done with that space, money, and resources). Depending on the lifecycle and/or perishability of the products, there may also be a high risk of the inventory becoming obsolete, forcing the business to sell it at a discount or liquidate the inventory altogether.



- Cash Tied up in Inventory
- High Carrying Costs
- Obsolete and Excess/Dead

Figure 2 – Oversupply: Inventory Far Exceeds Demand

Developing Company/Product-Specific Demand Forecasting Knowledge and Expertise

COVID-19 shined a harsh spotlight on how hard it is to anticipate demand when the unexpected happens. The toilet paper shortage was not caused by any change in the underlying rate of consumption, but rather due to panic buying¹ (which is notoriously hard to predict) and a dramatic shift in *where* it was being consumed (at home rather than at work or in public places). Some items, such as hand sanitizers, masks, and gloves, experienced enormous surges in consumption, while many sectors experienced extreme reductions in demand. For example, the mass closure of bars and restaurants hit major food distributors hard, while the inability for consumers to visit auto dealers and test drive vehicles, combined with automotive factory closures, decimated automobile sales.

While COVID-19 is an extreme example of unanticipated disruption, fluctuations in demand happen all the time. Smart manufacturers and distributors learn to monitor key indicators that will influence demand for their specific products. For example, an industrial pipe manufacturer might monitor events in oil-producing countries that influence the price of oil. When oil prices are high, oil companies invest in developing more wells, requiring more pipes. When prices are low, then investments in new wells dries up and demand for

¹ Panic buying happens when there is a real or *perceived* shortage looming, causing large numbers of people or companies to make ‘forward buys’; buying more than they need right now in anticipation of future shortages. In the case of a perceived shortage, the panic buying itself becomes the cause of a real shortage. Panic buying is difficult to forecast as it is often based on predicting human emotional responses, rather than rational assessments by buyers.

pipes goes down. Another example is mosquito repellent manufacturers who monitor long-term weather forecasts; specifically, the amount of rain predicted, which creates standing water that causes more mosquitos to breed. The manufacturer may then share their location-specific demand forecasts with the retailers they sell through. They will send more repellent to certain parts of the country and less to others, based on the weather forecast. It behooves each manufacturer and distributor to become an expert in understanding the key factors that influence demand for their product(s).

Right Items and Quantity ... But in the Wrong Place

In today's fast-paced online world, the location of inventory is of critical importance. Companies invest billions in trying to get the right inventory at the right location in order to rapidly fulfill orders and requests. Without the right tools and processes, it is extremely hard to get the right SKUs, in the right quantities, at the right location. It is common to have the right aggregate amount of inventory across the whole business, but in the wrong places—i.e. oversupply at one location and undersupply at another. In that case, the business is unable to realize the benefit of that inventory without incurring the additional costs and delays of transshipping between locations. In some cases, that may be prohibitively expensive. In all cases, it delays delivery and/or increases expediting costs, and eats into margins. This is why it is so important to have in place the required forecasting capabilities and inventory processes needed to achieve inventory accuracy at a SKU-per-location level.

Accurate Inventory Visibility is Foundational

The foundation for inventory management—and a prerequisite to being able to balance supply and demand—is having accurate, up-to-date inventory visibility. When a company has manual processes, lacking error detection/correction, then errors creep into the perpetual inventory² numbers. If the inventory data about each item at each location is incorrect, then decisions are made based on false assumptions. The business will be unable to optimize replenishment or production plans to ensure it has the right amount of inventory at each location.

Accuracy Requires Methodical Processes and Systems

Inventory accuracy depends on having consistent, disciplined processes at each *inventory control point*³ in the cycle, preferably driven by a single company-wide system. An inventory control point is the step within a

² Perpetual inventory management (aka continuous inventory management) keeps an ongoing running tally of inventory across the organization. In contrast, periodic inventory management counts and updates inventory numbers at regular intervals and does not keep a running tally in-between the inventory counts. Modern fast-paced businesses require accurate perpetual inventory numbers to compete and succeed.

³ This is not to be confused with the US military use of the term ICP (Inventory Control Point), which refers to an organization unit within the DoD supply system responsible for materiel management of a group of items. In this paper, we use 'inventory control point' to refer to the point within a process where the disposition of an inventory item changes.

process where the disposition of an inventory item changes. Often the change in disposition is when an inventory item is moved to a different stocking location, such as when the item has been received into a warehouse, or putaway to a specific bin number. It can also be a non-location change in disposition such as a quality hold for a part or product. For example, if there are 1,000 of a specific part in stock within a manufacturing plant, it would be critical to know if 600 of them are on quality hold. In that case, the *available* inventory is only 400 parts, not 1,000 parts.

Consider a manufacturing plant, as shown in Figure 3. With paper-based or spreadsheet-based manual data entry processes, mistakes can be made at each inventory control point—i.e. at receiving, putaway, raw material retrieval, WIP movements, finished goods putaway, and pick, pack, ship. These errors accumulate and the inventory numbers become increasingly inaccurate. Much higher accuracy is maintained by using barcode or RFID scanning at each step, preferably with some sort of double-checking mechanism, such as weigh scales that ensure the weight of the items matches the number and type of item being recorded into the system.

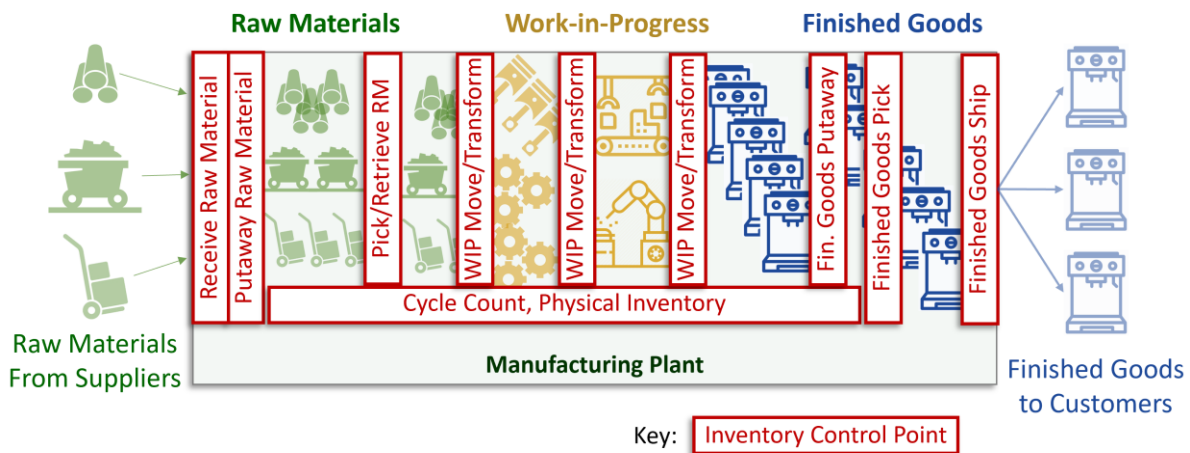


Figure 3 – Inventory Control Points in the Flow of Inventory Through a Manufacturing Plant

For critical steps—such as pick, pack, ship to a retailer that charges hefty fines for incorrect shipments—some companies go as far as having a second employee rescan or physically recount each order, to ensure high shipping accuracy. That becomes another time and cost sink. A high-accuracy inventory control system reduces the need for that kind of labor-intensive inventory counting and double-checking.

Regardless of the system in place, employee training and monitoring is needed to ensure compliance with process and proper use of the system. The amount and intensity of training and monitoring can be reduced by the use of human-error-preventing systems that automatically double-check workers’ actions to catch and correct errors or raise an alert for potential data errors in real-time.

The same concept of inventory control points applies to inventory flowing through a warehouse or distribution center (DC) which also has inventory control points where receiving, putaway, move, pick, pack, and ship are done. High-accuracy mechanisms (e.g. barcode scan, system double-checks vs. expected quantity, etc.) and process discipline at each control point ensure more accurate perpetual inventory counts. Inbound inventory

can be matched against the ASN⁴ and/or PO (purchase order) to ensure the proper inventory was received. In the handoff to transportation, high accuracy counts (barcode or RFID scans) of what is loaded and unloaded from trucks and containers is also quite valuable.

Beyond the Four Walls of the Business

When an enterprise has many suppliers, channel partners, and customers spread out across the globe, it becomes more important that it gains better visibility into inventory outside of its direct ownership and control, on both the supply and demand side (see Figure 4 – End-to-end Inventory Visibility). On the supply side, the company has outstanding POs and needs reliable estimates of when those will ship, as well as early indications whenever there will be delays in shipment. Once shipped, updates on estimated time of arrival (ETA) are important, particularly when there are delays.

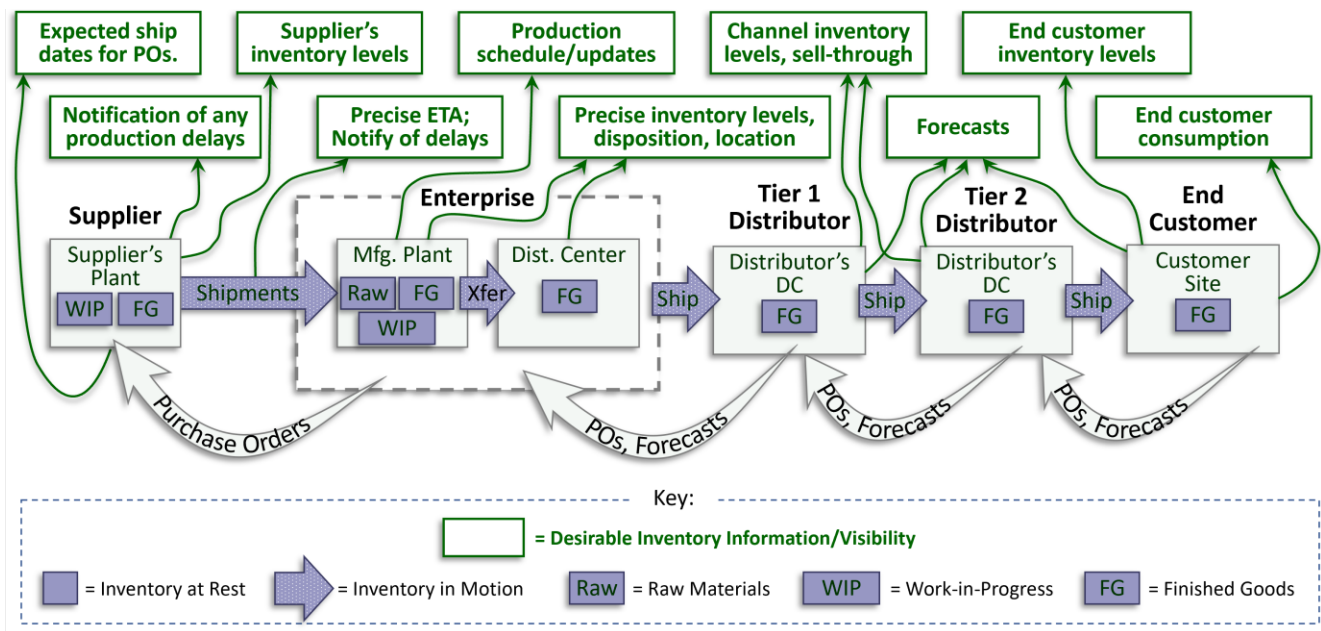


Figure 4 – End-to-end Inventory Visibility

This external visibility is even more important during times of disruption. Early visibility into disruptions in supply or rapid changes in demand is key to providing the *intelligence to drive agility*. By responding earlier, faster, and with more accurate intelligence, a company has more options, makes smarter decisions, and avoids catastrophes.

⁴ ASN = [Advanced Ship Notice](#), an EDI message that provides details on a shipment before it arrives, enabling the recipient to better plan ahead.

Demand-side information can be harder to obtain but is extremely useful in creating a more accurate forecast. This becomes even more essential when launching a new product through a multi-tier distribution channel.

Knowing how much inventory is in the channel and sell-through rates at each tier is key to ‘clearing out the channel’—i.e. getting most of the old model inventory sold before launching a new product, without running out of the old models before the new product launches.

It is also very useful to understand customers’ inventory levels and get visibility into actual consumption as it occurs, whether selling direct or through a multi-tiered channel. End customer consumption is the only consumption that *really* matters in the supply chain—everything else is there to serve the end customer. Customer onsite inventory visibility is imperative when there is a VMI (Vendor Managed Inventory) relationship with the customer.⁶

Traceability

Certain industries—such as pharmaceuticals, food, and aerospace—require traceability which typically includes lot and batch traceability and *may* include serialization and individual item traceability. Most food and pharma supply chains use one-up/one-back traceability⁵ (aka 1-up/1-down), where each participant in the end-to-end chain keeps track of where every item (or batch of items) they received came from, and where each resulting item (or batch or lot) is sent to. Pharmaceutical companies will need to implement end-to-end traceability by 2023 in order to comply with the Drug Supply Chain Security Act.

In addition, for any imported goods, the source, country of origin, transfer price, and other data is required to clear customs and cross borders. With a well-integrated inventory system, this data can be entered once and flow through other processes to accurately and swiftly facilitate import/export and customs clearance, avoiding fines and delays.

Inventory Management Strategies

A company’s inventory management strategy impacts its customer service and satisfaction, cash flow and cash availability, logistics strategy, size and location of distribution centers, third-party partnerships, and more.

There is a core tradeoff between service levels and inventory levels—in general, the more inventory a company has, the higher the service level. However, if it is the wrong inventory at the wrong location, that correlation falls apart. Adding inventory intelligence into the equation can allow lowering of inventory levels while simultaneously improving service levels. Inventory intelligence starts with accurate inventory visibility and an understanding of actual demand patterns. Building on that, more sophisticated inventory optimization may be implemented.

To Be Lean or Not to Be Lean ...

Companies face a tradeoff between service levels and inventory levels. Some companies will choose a strategy to hold a lot of inventory in order to ‘never run out of stock,’ in particular when the consequences of running out are high. For example, hospitals want to ensure that needed supplies are always available for critical or

⁵ One-up/one-down traceability in the food supply chain is mandated in the United States by Section 306 of the 2002 Bioterrorism Act.

⁶ A 3PL (Third Party Logistics) provider may provide storage and fulfillment services at a VMI hub or site near the customer. In that case, the 3PL may give updates on inventory on hand and consumption by the customer.

life-threatening situations. Automotive parts providers want to ensure that they always have the needed part when a dealership calls—with the car up on the lift, demanding immediate delivery so they can finish the repair. In contrast, other companies, such as those producing commoditized items on low margin, with reasonably predictable demand, may take aggressive steps to minimize inventory levels.

Improving the Service↔Inventory Tradeoff

Regardless of where a company falls on the spectrum of service-level↔inventory-level tradeoffs, there are almost always opportunities to improve that tradeoff – i.e. to increase service levels without adding inventory, or lower inventory levels without lowering service levels, or improve both simultaneously. This can be accomplished through some combination of the following capabilities:

- Accurate SKU-location inventory data—As discussed above, the foundation is having accurate SKU-level inventory data for each location. This provides the underlying raw data needed for better forecasts, optimization, and process improvements.
- Improved forecast accuracy—When forecast accuracy is improved, the amount of safety stock can be reduced⁷ without sacrificing service levels.
- More accurate lead times—Inaccurate lead times are a perennial problem. Replenishment decisions and algorithms depend on the lead time being accurate. The most reliable way to improve lead time accuracy is with a system that monitors actual lead times and reports when they deviate too much from the lead time recorded in the system that is used for replenishment decisions/optimization. Such an approach can also capture lead-time variability, which is also needed for proper replenishment decisions.
- Shorter lead times—Inventory levels can be reduced by shortening lead times and by reducing lead-time variability. Companies may choose to source locally to reduce the transportation portion of lead times. They can work with their strategic vendors on reducing production lead times, as well as improve their own internal processes to reduce internal lead times (such as in-house production cycle times and fulfillment lead times) and make lead times more reliable and consistent (less variability in lead times).
- Kanban/Just-in-Time—Just-in-Time lean techniques, such as kanban replenishment, can be used to reduce the amount of inventory needed. Modern kanban typically uses barcode scanning and EDI (the latter for sending external replenishment orders).
- Inventory optimization—As a firm’s operations become larger and more sophisticated, it may use inventory optimization algorithms to create more optimal levels⁸ of inventory across its network, while maintaining or improving service levels.

⁷ It should be noted that some safety stock will still be needed for many reasons: to absorb variability or uncertainty in demand and supply, to account for lead times, to enable optimal order sizes, to compensate for any remaining inaccuracies in the forecast, and to provide other benefits.

⁸ An inventory optimization system will not reduce inventory at all locations. Rather it recommends the optimal levels, which may mean increasing inventory for certain SKU-locations, while decreasing inventory for other SKU-locations.

Spare Parts and Multi-echelon Networks

Spare parts often present a multi-echelon inventory challenge, spanning the parts manufacturing plant, central DC, regional DCs, repair depots, parts retailers, dealerships, and trunk stock. Spare parts are also often a multi-enterprise inventory challenge involving inventory being produced and stocked by suppliers and/or third-party parts manufacturers, and carried by distributors, dealer networks, retailers, and third-party service providers.

Spare parts inventory is subject to fundamentally different demand patterns⁹ and geographic distribution than primary product inventory. Therefore, spare parts inventory requires its own set of algorithms and strategy to ensure that required service levels are met without having to carry an enormous amount of extra inventory, spread out across the multi-echelon service network. This unique functionality includes:

- Algorithms to help decide how much to hold at each echelon; how much to pool at the center vs. keep at the edges, including in the trunk stock of repairpersons;
- Dealing with extremely slow-moving parts (sometimes less than one consumed per year for a given location);
- Consideration of the consequences of a stockout, such as service level agreements that promise delivery within a specific time window and/or the loss of lifetime value of a customer, whose \$1M/hour production line might go down for want of a spare part;
- Make-to-order and/or Engineer-to-order machines and parts.

A good spare parts inventory management software solution will address these.

The Real World is Full of Constraints: Logistical, Production, Cash Flow, ...

Developing an optimal inventory strategy requires dealing with real-world constraints. Sometimes logistical considerations have a major impact on inventory strategy. For example, [Eco-Bags Products](#), a manufacturer of eco-friendly reusable bags, has one main supplier in India for all of their products (about 300 different SKUs). The most cost-effective way to ship from their supplier is ocean shipment of a full container load (FCL). It is somewhat less expensive than 'less than container' (LCL) shipments and much less expensive¹⁰ and more environmentally friendly than shipping by air. Carbon footprint is an important consideration for Eco-Bags Products, driven by their ecological values and mission.

One full container equates to about three to four months of demand across all products for Eco-Bags Products. Therefore, they try to consolidate all of their orders to create a full container load shipment every

⁹ Product demand is based on sales—how many and at what locations product is bought. Spare parts demand depends on where products are actually used and thereby where the repairs occur, as well as on the longevity of parts (mean-time-to-failure), warranties, service level agreements, maintenance policies, and other factors. Product inventory requirements are typically constrained to the life of the product, whereas spare parts are needed after end-of-life of the product, often for many years.

¹⁰ Shipping by boat is about 50X-100X less expensive per ton-mile than shipping by air. Ocean transport also produces about 60X less greenhouse gases per ton-mile than air transport.

three to four months. Another constraint is the minimum order size that the factory will accept, which generally ranges from 1,000 to 5,000 units, depending on the product. The economics of logistics and production constraints force Eco-Bags Products into these infrequent consolidation of orders, meaning they will hold more inventory and take bigger out-of-stock risks than they would in theoretically ideal circumstances (i.e. if they could order each SKU separately, to be shipped at its own ideal time for replenishment).

Furthermore, because their supplier is in India, Eco-Bags Products has to work around the monsoon season, when things tend to shut down. In addition, lead times from the supplier change from time-to-time, depending on what other demands are being placed on the factory. On top of all that, cashflow constraints prevent Eco-Bags Products from ordering the full optimal quantities of items they need. All of these challenges, combined with unexpected surges in demand, force them to airship some items from time-to-time.

Since 2005, Eco-Bags Products has been using NetSuite’s cloud ERP platform to run and grow their company. The company uses NetSuite (in combination with custom code and Excel spreadsheets) to generate a time-phased view of future demand and inventory levels, in order to calculate which products and quantities to include in their next orders, as well as identify when air shipments are needed. This is where the balancing act comes into play; deciding which SKUs to replenish (potentially overstocking some of them) and which to wait on (taking a chance they will run out before the next FCL shipment). Having all their data in a single system helps Eco-Bags Products manage these inventory challenges.

Big-Business Inventory Capabilities for Small Businesses

Small Businesses *Can* Have Sophisticated Systems and Processes

Sophisticated high-value inventory capabilities are not just for big businesses. In fact, modern inventory management systems can be intuitive, not requiring too much specialized expertise. A small business *can* access and implement sophisticated inventory management strategies and processes by adopting the right combination of partners, systems, processes, metrics, and training. With modern cloud-based offerings, it is possible for a small business to have systems and processes for managing inventory that are as sophisticated as many of their much larger competitors.



Integrated Inventory Control Within the Enterprise

Typically, a variety of systems within a company handle inventory as it traverses their supply chain and the organization. Within the enterprise, these may include finance/core ERP, demand management/forecasting,

production/manufacturing systems (MES), procurement, order management and fulfillment, transportation management (TMS), warehouse management (WMS), and other systems. A small business may only have a subset of these as formal software systems, with other functions being handled manually. There may be dedicated modules (or spreadsheets) for inventory management and/or inventory optimization, as well as specialized modules such as spare parts inventory optimization and VMI (vendor managed inventory) functionality. If these systems and data sources are well-integrated, then the handoffs between these systems can provide double-checking and reconciling to ensure ongoing inventory accuracy. Often that is not the case.

Integrating multiple systems and data sources (e.g. spreadsheets) together is feasible, but brittle, and the integrations are expensive to build and maintain. Whenever one of them changes, the intersystem integration might break, causing interruptions to the business. Often a better approach is to use a solution that includes all of these different systems together sharing a single common database.¹¹ That way many of the handoffs between systems can be done automatically with no latency, maintaining consistency via the shared data.

Another advantage of a single unified system is providing broader access to inventory data. Inventory numbers are not as useful if they are inaccessible across the organization—tucked away in someone’s spreadsheet or in an accounting system only available to a handful of people.

Beyond the Four Walls—Achieving Upstream and Downstream Inventory Visibility

Beyond the organization, automation can be quite helpful or in some cases is a strict requirement. For example, some customers (e.g. large retailers) require EDI or AS2 capabilities. The customer may provide a portal for suppliers to enter shipment information and send an ASN indicating exactly what items and quantities are in each shipment. When a shipment is received, the receiving system of the WMS at the warehouse can check if the quantities being received match what the supplier said they shipped. If not, the discrepancy can be reconciled immediately (before the driver leaves) or in short order, rather than showing up as a dispute to be dealt with months later. EDI can be valuable not just to meet key customers’ requirements, but for improving the operation of the business. EDI is a powerful tool for providing accurate data across the supply chain and integrating that data directly into the business’ systems.

Visibility into inventory outside of the company can be done in a number of different ways, including:

- EDI—EDI can provide POs (EDI 850) for orders, ASNs (EDI 856) to communicate what has been shipped, Inventory Inquiry/Advice (EDI 846) with updates to on-hand inventory at various holding locations, including status (on hand, committed, on order, etc.), forecasts (e.g. EDI 830 planning schedule with release), shipping schedules, and other useful information about inventory in transit or at rest. EDI can be challenging for a smaller company to implement, especially without the right partner and solution. For this reason, not all suppliers or customers will necessarily have EDI. In those cases, an alternate approach, such as a portal, is needed to serve the remaining non-EDI trading partners. EDI systems are often run in batch mode, which causes delays in receiving the information.

¹¹ A good example of this kind of integrated system for emerging companies is [Oracle NetSuite](#) which provides [ERP](#), [Procurement](#), [MES/Production Management](#), [Quality Management](#), [WMS](#), [Inventory Management](#), [Supply Chain Management](#), [Case Management](#), and much more, all running on a single integrated database.

- Supplier and Customer Portals—Portals provide a way for suppliers or customers who do not have EDI capabilities to update inventory, production, and order status. This requires some training and communications so that the trading partners use the system consistently, properly, and in a timely manner.
- External Inventory Locations/Accounts—Some ERP systems allow supplier or customer stocking locations to be set up within the solution, so those locations look like another DC or plant, but with the inventory in those locations not being owned by the company. Personnel at the supplier or customer can then be given an account within the ERP system to update their inventory information.¹² The account may provide additional functionality to the supplier or customer as well. If the trading partner actively uses the system to run a part of their operations, the data are more likely to be timely and accurate.
- API Integration—Trading partners may provide inventory data via an API in the ERP system.¹³
- Supplier or Channel Network—Trading partner networks¹⁴ can be used to connect with and communicate with suppliers and channel partners.

What to Look for in a Solution

Here are some things to look for in a solution, to enable businesses of any size to realize advanced inventory management processes and capabilities:

- Replenishment algorithms, optimization, and auto-execution—Within production, warehouse, and inventory management functions, look for flexible and extensible replenishment algorithms, as well as the ability to automate replenishment orders. This should include not only the ability to set min./max. levels based on forecasted demand, but also incorporate shipping costs, carrying costs, economic order size, expiration dates (for perishable items), and grouping of inventory by velocity and other dimensions that impact replenishment choices. Manually maintaining all of these parameters is labor-intensive and time-consuming, so the ability for the system to automatically optimize can be valuable. Automatic generation of replenishment orders keeps things running and lets planners focus on higher value tasks.
- Demand-supply alignment—The core of managing inventory is aligning supply and demand. This is done using demand management tools (e.g. forecasting, demand-sensing, demand-shaping, channel management, order management), supply management tools (e.g. PO logistics management, supplier portal and collaboration tools, supply chain risk), and demand-supply balancing tools (e.g. S&OP/IBP,¹⁵ demand shaping, agile execution tools). Continually monitoring supply and demand execution vs. plan

¹² For example, some NetSuite users create locations for their supplier or channel partner's sites and reflect inventory at those sites at zero cost, until title is transferred. The trading partner's employees are given user accounts with access restricted to the inventory and sites they control.

¹³ NetSuite enables this kind of approach, with relatively simple customization capabilities.

¹⁴ While these can be EDI messaging networks, the more useful networks provide rich inter-enterprise functionality beyond messaging.

¹⁵ S&OP = [Sales & Operations Planning](#), IBP = [Integrated Business Planning](#)

is critical to enabling the supply and demand sides to work together and continually make smart adjustments.

- Single database for inventory—Because so many different functions are involved in managing inventory, it is highly preferred that they share a single database for tracking inventory across all of the functions and systems. The alternative is to use integration tools between systems, which is expensive to maintain, prone to problems when one system changes, and can introduce latency into processes. Unintegrated systems are even worse, as they require changes to the data from one system to be manually entered into the other, which consumes labor and time, and introduces more latency and data entry errors.
- Industry-specific blueprints—These are implementation templates, focused for a specific industry or micro-vertical, incorporating sector-specific best practices and processes. We discuss these in more detail in [Industry-specific ‘Successful Practice Blueprints’ Accelerate Implementation](#). Industry-specific blueprints not only accelerate implementation, but also help a company adopt ‘success-yielding’ practices and processes.
- Simple, future-proof customizability and extensibility—The ability to easily plug in company-specific algorithms and customize the system, in a way that is guaranteed to smoothly deal with upgrades, is critical to help businesses stay agile and create a system to meet their unique needs.
- Rich network of well-integrated partner applications—No single solution provider can deliver everything a business needs as it evolves and grows. Best-of-breed solutions will be required. Finding a solution provider that has a large and functionally rich network of partner solutions pre-integrated into the core platform is valuable. It is prudent to see what advanced inventory-related functionality a solution providers’ partners provide—such as advanced demand management, channel management, inventory optimization, logistics (TMS and WMS), S&OP, supply chain risk management, and so forth.
- Scalability—Some systems scale better than others as a system grows. This is not just about system performance, but also scaling new functionality and evolvability. NetSuite’s cloud ERP platform is one of the best examples, used by companies ranging from startups with fewer than ten people all the way up to multi-billion-dollar organizations,¹⁶ all using the same adaptable platform. In fact, NetSuite meets virtually all of the requirements described above.

Inventory Management is Vital for Manufacturers and Distributors

Now more than ever, good inventory management, with accurate inventory data, is a core element of success for manufacturers and wholesale distributors. Having the right products, in the right place, at the right time, in the right quantities—and doing so at a low cost—drives profitability, cash flow, customer loyalty, and success for a company. This can be a difficult balancing act, especially when demand is volatile and supply disruptions occur. It can be achieved with the right inventory strategy, process disciplines, risk management, and capable systems in place. Excellence in inventory management, with the right systems, is key to enabling business to survive in challenging times and thrive in the market during good times.

¹⁶ For more on NetSuite’s ability to grow with a company, see [Enabling Growth: More Than Just a Tagline for NetSuite](#)



About ChainLink Research

ChainLink is a recognized leader in custom research and advisory services, with a focus on supply chain, Internet of Things, and blockchain. Founded in 2002, our emphasis from the start has been on inter-enterprise interactions and architectures ('the links in the chain'). We have conducted over 75 primary research projects, interviewing and surveying over 10,000 executives and professionals. Much of our research focuses on industry-specific use cases, business cases and ROI, and drivers/inhibitors of technology adoption, and business change. As a result, we have developed a deep, multi-industry practice, founded on real-world, validated, supply chain-wide, end-to-end perspectives that have helped our clients understand, plan, and succeed as they move into the future.

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