Inventory Management: Controlling Stock, Tying Up Capital, Securing Supply Capability

Inventory management refers to the planning-based, controlling and monitoring management of stock levels along the entire value chain. In industrial procurement, it is the central lever for balancing the tension between supply capability and tied-up capital. Those who manage stock systematically reduce warehousing costs, cut obsolescence and at the same time improve delivery reliability towards their own customers.

As of October 2026 · amplifa-marketplace.ai/en/glossary/bestandsmanagement

Key facts at a glance

01 Inventory management covers raw materials, semi-finished and finished goods, spare parts as well as ancillary supplies and connects purchasing, production and sales.

02 Typical target KPIs are inventory turnover, stock cover, inventory record accuracy and service level.

03 In practice, ABC/XYZ analyses are the most common instrument for differentiating replenishment strategies.

04 Excessively high stock ties up working capital; stock that is too low jeopardises supply capability and increases reputational risk in procurement.

05 Modern ERP and digital supply chain systems automate order proposals and support S&OE processes.

06 Framework agreements in purchasing and consignment stock are common levers for inventory optimisation without supply risk.

Definition: inventory management

Inventory management is the entirety of all measures for defining, planning, controlling and monitoring stock levels. It answers the core question of which item in which quantity at what time must be available in the right place – with minimal capital commitment.

Distinction from warehouse management

Warehouse management describes the operational representation of physical processes: putaway, picking, stock counting. Inventory management is the planning discipline above it, which decides on quantities, thresholds and replenishment strategies. Only the interplay of both levels leads to reliable inventory data. Errors in warehouse management, such as incorrect quantities or load carrier assignments, distort every replenishment decision and render strategic inventory management ineffective.

Stock categories in industrial operations

In practice, a distinction is made between cycle stock (regular replenishment), safety stock (buffer against demand and supply fluctuations), seasonal stock for seasonal cycles and strategic stock for critical pre-products. In addition, there are WIP stock in production and spare parts warehouses. Each stock category follows its own logic and should be valued and managed separately, as mixed analyses typically lead to distorted target values.

Relevance for procurement

For buyers, inventory management is not purely a logistics task: order quantities, order cycles and safety stocks result directly from procurement terms, minimum order quantities and delivery times. Framework agreements in purchasing with call-off logic enable high supply capability with low on-hand stock. Conversely, expensive minimum quantities or long lead times force higher stock levels, which become visible in the procurement budget and in working capital management.

Methods and approach in inventory management

Proven methods differentiate items by value and demand behaviour and derive precisely fitting replenishment rules from this. The approach ranges from simple quantity-based methods to simulation-supported detailed planning.

ABC and XYZ analysis

ABC analysis classifies items by consumption value: A items typically account for the majority of value and deserve close management, while C items are replenished automatically. XYZ analysis adds demand stability: X demand is even, Z demand is erratic. The combination yields nine fields with clear strategies – from automatic reorder-point replenishment for CX items to manual case-by-case management for AZ items. Regular recertification, usually quarterly, keeps the classification up to date.

Replenishment methods

Common methods are the reorder-point method, periodic order quantities (driven by order cycles) and demand planning via bills of materials from the ERP. With variable lead times, the lead time distribution is factored into the safety stock calculation. For series production, Rough Cut Capacity Planning (RCCP) complements inventory planning with a capacity view, so that planned stock levels are also producible. Available to Promise (ATP) checks ensure that sales commitments are based on actually

available stock.

Safety stock and service level alignment

In practice, safety stocks are derived from target service level, demand variability and supply fluctuations. A somewhat rough but proven approach: differentiate service levels by customer and item relevance instead of aiming for 99% across the board. Closely linked to this is the freeze fence, i.e. the period in which planning data may no longer be changed – it stabilises inventory and procurement planning, but must not be set inflexibly.

Key KPIs in inventory management

Without sound KPIs, inventory management remains guesswork. The most important procurement KPIs and logistics KPIs measure efficiency, availability and data quality.

Turnover, cover, capital commitment

Inventory turnover puts annual consumption in relation to average stock; stock cover indicates how many days the stock covers demand. Both values are sector-dependent: high turnover is common for series components, low for spare parts. Capital commitment flows directly into working capital management – reduced stock often releases liquidity faster than negotiations on purchase prices.

Service level and inventory record accuracy

The service level (order fill rate) measures what percentage of demands could be met on time from stock. Inventory record accuracy compares booked with physical stock and is the strongest early indicator of data quality: if it is permanently below 98%, every replenishment decision operates on an incorrect data basis. Also relevant are stockout costs and the number of necessary expedited procurements.

Obsolescence and write-offs

The age structure of stock reveals dormant risks: items without movement over defined periods should be flagged systematically. In industries with rapid product cycles, significant write-offs would otherwise arise. A practical approach is a risk register for obsolescence-prone positions with clear responsibility for return, second-life use or disposal. Engineering Change Notice (ECN) processes should automatically take residual stock of old revisions into account.

Risks and controls in inventory management

Inventory risks are manifold: capital commitment, loss of value, shrinkage, mis-planning and dependence on individual suppliers. Effective controls combine process, systemic and contractual measures.

Supply-side risks

Long and fluctuating lead times force high safety stocks and increase susceptibility to errors. A well-maintained risk register for critical items and suppliers, clear escalation paths and a supplier ESG improvement plan for problematic sources reduce the probability of failure. Dual sourcing strategies for A items, even if more expensive in the short term, reduce inventory and stockout costs in the long term. Contracts with fixed call-off quantities within framework agreements in purchasing stabilise inbound planning.

Process and data risks

The number one cause of inventory problems in practice is data errors: missing bookings, wrong units, unresolved returns. Effective countermeasures are sample stock counts (perpetual inventory), clear process organisation around goods receipt and stock transfers, and clear responsibilities. Change order and ECN processes must keep stock levels and bills of materials in sync, otherwise phantom stock or incorrect production arise.

Organisational incentives

If sales demands high availability without cost responsibility and production favours large lots without an interest in warehousing costs, stock grows systematically. What has proven successful is defining inventory targets as a joint target agreement across purchasing, production and sales and discussing them monthly in the S&OE cycle. This makes target conflicts visible instead of quietly absorbing them in growing stock.

Current developments: digitalisation and resilient inventory strategies

The digital supply chain is fundamentally changing inventory management: real-time data, automated order proposals and AI-supported demand forecasts are gradually replacing static parameters. At the same time, the renewed focus on resilience has revitalised inventory strategies.

Automation and data integration

Modern systems generate order proposals automatically from forecast, reorder point and bill-of-material explosion and transfer them via standards such as cXML directly into supplier portals. Supplier enablement – i.e. the systematic digital connection of suppliers – reduces disruptions in the ordering process and makes lead times more reliable, which lowers safety stocks. Digital procurement and inventory management thus increasingly interlock instead of running one after the other.

From just-in-time to just-in-case?

The supply turmoil of recent years has led many companies to rebuild safety stocks and strategic reserves for critical items – especially for electronic components and specialty chemicals. In practice, a differentiated model has prevailed: lean for standard goods, buffered for bottleneck items. Consignment

stock and supplier-managed stock (Vendor Managed Inventory) tie up capital at the supplier rather than the buyer, but carry contractual and balance-sheet review points that must be clarified case by case.

Sustainability and circular economy

Inventory management also affects sustainability goals: lower stock means less spoilage, less disposal and fewer unnecessary transports. Concepts such as second-life use of components and materials reduce new demand and write-off risks. Increasingly, inventory and procurement decisions also feed into ESG reporting, for example on the question of how much value is lost through spoilage and disposal.

Typical metrics

Metric	Typical value
Inventory turnover	6–12 per year (industry, strongly sector-dependent) *Spare parts and strategic items justify lower values*
Inventory record accuracy	> 98% *Persistently below this means: replenishment planning runs on incorrect data*
Service level (order fill rate)	95–99% per item class *Differentiated by ABC/XYZ rather than across the board*
Stock cover	20–60 days (typical guideline value) *Consider industry and item class*
Obsolescence rate	< 2% of stock value *Share of stock with no movement in the defined period*

Practical example

A mid-sized mechanical engineering company with around 12,000 active items struggled with rising inventory levels and, at the same time, rising stockouts. An ABC/XYZ analysis showed that more than half of the stock value was tied up in just a few hundred A items, while C items were over-analysed and AZ items were not managed at all. Within one year, inventory was reduced by double-digit percentages without worsening the service level.

- Differentiated replenishment rules per ABC/XYZ field instead of a blanket reorder-point logic for all items
- Framework agreements in purchasing with weekly call-offs for A items instead of monthly bulk orders
- Perpetual inventory and clear process organisation at goods receipt to improve inventory record accuracy

- Monthly S&OE meeting with sales and production to align forecast, freeze fence and inventory targets

Conclusion

Inventory management is the triad of data quality, differentiated replenishment rules and aligned organisation. Companies that manage items not across the board but by value and demand behaviour quickly achieve measurable effects in capital commitment and supply capability in practice. Purchasing plays a key role here, because procurement structures, framework agreements and supplier performance decisively determine the required stock. Digitalisation accelerates this path but does not replace the foundation of clean master data and clear responsibilities. Those who combine both turn inventory from a cost block into a controllable competitive advantage.

Frequently asked questions

? What does inventory management mean?

Inventory management is the planning-based control of all of a company's stock levels – from raw materials to finished goods. The goal is to have the required quantity available at the right time in the right place, with minimal capital tied up. It covers replenishment methods, safety stock, inventory control and coordination with purchasing, production and sales.

? Which KPIs matter in inventory management?

Key KPIs are inventory turnover, stock cover, service level (order fill rate), inventory record accuracy and the capital tied up in stock. Obsolescence rates and stockout costs are also relevant. The combination matters: high turnover alone says nothing if the service level drops at the same time. These procurement KPIs should be reviewed regularly as a set in the management review.

? How can inventory levels be reduced without delivery problems?

The proven approach is differentiation rather than blanket cuts: ABC/XYZ analysis, then appropriate replenishment rules and safety stocks for each field. Stabilising measures such as framework agreements in purchasing, reliable lead times and good data quality (inventory record accuracy) create headroom. In addition, consignment stock and Vendor Managed Inventory help shift capital commitment to the supplier.

? What is the difference between inventory management and warehouse management?

Warehouse management is operational and descriptive: putaway, picking, bookings, stock counts. Inventory management is planning-oriented and decides on quantities, thresholds and replenishment strategies. Without error-free warehouse management, inventory management fails, because it builds on incorrect stock data. Both levels need clear process organisation and defined responsibilities.

? What is safety stock and how large should it be?

Safety stock buffers deviations in demand and lead time. Its size typically results from the target service level, demand variability and lead time variance. In practice, differentiated service levels per item class have proven successful, rather than one uniform value for all items. Excessively generous safety stocks are one of the most common causes of unnecessary capital commitment.

? What role does purchasing play in inventory management?

Purchasing directly determines the necessary stock levels via minimum order quantities, delivery reliability, lead times and contract structures. Framework agreements with call-off logic, consignment stock and reliable suppliers significantly reduce stock requirements. Conversely, unreliable sources lead to inflationary growth of safety stocks. Inventory targets should therefore be jointly owned by purchasing, supply chain and sales.

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