

Demand Planning: Sales and Demand Forecasting as the Foundation of Procurement

Demand Planning refers to the systematic forecast of future demand for products, components and materials based on historical data, market indicators and planned orders. For technical buyers and suppliers, it forms the crucial interface between sales, production and procurement: only those who know the demand can reliably control lead times, inventories and capacities. In practice, the quality of Demand Planning determines whether warehousing costs, shortages and expedited orders remain manageable.

Key facts

- Demand Planning forecasts future material and product demand as the basis for disposition, production and procurement.
- Typical forecast horizons range from a few weeks (short-term) to 24 months (strategic).
- In practice, accuracy levels of 80 to 95 percent are often achieved depending on item class – simple, stable items score significantly higher than telemetry-dependent or project-dependent items.
- Key KPIs are Forecast Accuracy (e.g. MAPE), Backorder Rate and inventory coverage.
- The process combines statistical methods with the market and product knowledge of sales and procurement (Collaborative Forecasting).
- Errors in Demand Planning have a multiplicative impact along the supply chain via bullwhip effects.

Definition: Demand Planning

Demand Planning is the process of systematic demand and sales forecasting, which quantifies the demand for finished products, components and raw materials over a defined period. It provides the input data for Supply Planning, production planning and procurement.

Distinction from Supply Planning and S&OP

While Demand Planning answers the demand side, Supply Planning derives the procurement and production quantities from it. Both areas are frequently brought together monthly within Sales and Operations Planning (S&OP). For procurement this means: the Demand Plan provides the volume frameworks for framework agreements, capacity reservations and budgeting. Without reliable demand forecasts, requests for quotations and price negotiations with suppliers are typically less structured, as volume developments cannot be communicated with justification.

Relevance for Technical Buyers

In the manufacturing industry, component availability often depends on long procurement cycles – for example cast, milled or electronic parts with lead times of twelve to thirty weeks. Demand Planning translates sales information into plannable quantities and dates. The buyer uses it to submit binding

demand notifications to suppliers (Firm Demand vs. Forecast), to dimension safety stocks and to calibrate the Economic Order Quantity (EOQ) economically. The more accurate the forecast, the lower the effort required for expediting and alternative sourcing.

Methods and Approach in Demand Planning

The process typically follows a cycle of data preparation, statistical preliminary forecast, manual overrides and release. The choice of method depends on item structure, demand patterns and data quality.

Statistical Forecasting Methods

Proven methods include moving averages, exponential smoothing, regression and seasonal models and, more recently, machine learning approaches for complex patterns. In practice, it has proven effective to select a suitable method per item class (e.g. via ABC analysis): high-value A items receive elaborate models and manual review, while C items are automatically planned using statistics – close to Automatic Disposition. Regular measurement of model quality is important so that outdated algorithms do not generate systematic shortages.

Collaborative Forecasting with Sales and Suppliers

Statistics alone knows nothing about future projects, price promotions or design changes. Therefore, sales market information and customer order backlogs feed into the forecast; for critical components, buyers also exchange demand data directly with suppliers (Rolling Forecast). Formats such as EDI connectivity or supplier declarations on planned quantities create binding foundations here. Conflicts between the sales forecast and statistical forecasts are documented in alignment rounds and concluded with a weighted decision.

Process Cycle and Responsibilities

Demand Planning often operates in weekly or monthly cycles with a rolling horizon: with each period, a new time window enters the plan, while distant periods are planned in outline and near periods in detail. Role allocation: the Demand Planner moderates and consolidates, sales provides market signals, procurement checks availability and lead times, and production reports capacity limits. Clear release responsibility prevents multiple unofficial demand versions from circulating in parallel.

Key KPIs for Controlling Demand Planning

Without measurable accuracy, demand planning remains a matter of belief. Established metrics make forecast quality, delivery capability and inventory impact transparent.

Forecast Accuracy and Bias

Forecast Accuracy is usually measured via MAPE (Mean Absolute Percentage Error) or forecast variance, indicating how far plan and actual diverge. In addition, bias should be captured: a consistent under- or overestimation is often more valuable to correct than a high absolute error. In practice, MAPE values below 20 percent are considered acceptable for series items; significantly higher deviations are normal for new products or batch production. It is important to perform the measurement both at aggregated and at item level to avoid offsetting effects.

Backorder Rate, Service Level and Inventory Coverage

The Backorder Rate shows how large the share of items not immediately deliverable is – it is the most sensitive outcome of poor forecasts. In addition, companies consider the service level (Fill Rate) and inventory coverage to check whether accuracy was bought with excessive buffers. The goal is always the interplay: high delivery capability at an acceptable cost of capital tie-up. For procurement, supplier on-time delivery performance and the number of expedited reorders are also relevant downstream metrics.

Risks and Controls in Demand Planning

The greatest risks are a flawed data basis, silo thinking and a lack of feedback to procurement. Systematic controls significantly reduce these sources of error.

Data Quality as a Prerequisite

Forecasts are only as good as their history. Duplicates, incorrect units of measure, unclear cancellations or unadjusted large orders distort every model. A Data Quality Score for master data and transaction data helps to make systematic weaknesses measurable and to resolve them in prioritised fashion. Proven in practice are defined outlier rules, a documented quantity deviation workflow for implausible demand notifications and regular cleansing of legacy items in the product range.

Bullwhip Effect and Interface Problems

Inaccuracies amplify along the supply chain: small fluctuations in end-customer demand turn into large order impulses over several tiers. Countermeasures include shorter planning cycles, a shared view of real-time data, reliable framework volumes and, where necessary, contractually agreed audit rights so that buyers can verify supplier capacity and inventory figures. Internal silos – sales planning optimistically, procurement planning conservatively – should be mitigated through joint target agreements and a binding procurement policy on demand notifications.

Compliance and Contractual Aspects

When exchanging demand and sales data with partners, confidentiality and regulatory compliance must be observed: a Non-Disclosure Agreement (NDA) protects sensitive sales figures, and in compliance procurement the data protection and antitrust limits of data sharing must be checked. These points must be examined legally on a case-by-case basis. Funding and documentation obligations, for example in the context of EUDR in procurement (e.g. for wood or raw material purchases), also require that demand and origin data are merged cleanly.

Current Developments: Digitalisation and Collaborative Planning

Demand Planning is increasingly shifting from spreadsheet maintenance towards integrated, data-driven processes – driven by stronger demand fluctuations and shorter product life cycles.

Automation and AI-Supported Forecasts

Modern systems automate the statistical pre-calculation and leave planners to handle exceptions – a principle that also shapes Automatic Disposition in operational procurement. Machine learning models can incorporate external signals such as order cycles, weather or industry indices. What remains decisive, however, is manageability: transparent models, traceable overrides and clear governance often beat the highest technical maturity in practice. Integration via EDI and API interfaces reduces manual

duplicate entry between ERP, supplier and customer.

Resilience and Scenario Planning

After various supply chain disruptions, companies no longer plan only a point forecast but scenarios with ranges. Simulated are supply failures, demand surges and capacity bottlenecks, including alternative sources of supply and Cross Docking as an accelerated transshipment option. In the strategic context, demand insights feed into Early Supplier Involvement and Co-Development: those who know future volume developments can involve suppliers early in design and series preparation, for example along APQP processes in automotive and mechanical engineering supply.

Typical metrics

Forecast Accuracy (MAPE): typically < 20%

for series items; significantly higher for new products and batch production

Backorder Rate: typically < 2–5%

share of items not immediately deliverable; the most sensitive early indicator

Bias: close to 0%

systematic over-/underestimation should remain permanently below $\pm 5\%$

Inventory Coverage: approx. 30–90 days

industry-dependent; the goal is a balance between delivery capability and capital tie-up

Planning Horizon: 12–24 months

rolling; near periods in detail, distant periods in outline

Practical Example

A medium-sized mechanical engineering company with around 8,000 active items suffered from high capital tie-up and recurring shortages of castings with a twenty-week lead time. Until then, Demand Planning had only provided a single annual planning figure without a rolling horizon.

- Introduction of a monthly rolling forecast with an 18-month horizon, separated by ABC analysis classes
- Weekly alignment between sales, engineering and procurement with documented overrides
- Transmission of rolling demand notifications to strategic casting suppliers via EDI, plus quarterly business reviews with supplier declarations on capacities
- Monthly accuracy review covering MAPE and Backorder Rate with an escalating quantity deviation workflow for critical deviations

Conclusion

For technical buyers, Demand Planning is far more than a sales statistic: it is the quantitative foundation of every procurement strategy, every price negotiation and every supplier retention effort. Good processes combine statistical methods with market intelligence, continuously measure their accuracy and prioritise data quality. A lack of demand planning costs companies twice – through safety stocks and through shortages with expedited replacement sourcing. With a rolling, collaborative cycle and clear governance, stable supply chains can be built even amid volatile demand. The entry point is usually a few critical item classes before automation is scaled up.

Frequently asked questions

What is Demand Planning in simple terms?

Demand Planning is the systematic forecast of how much a company will sell or need in the future – broken down by product, quantity and period. This forecast serves as the basis for production, inventory and procurement. It combines historical sales data with current market information from sales.

Which methods are used in Demand Planning?

Statistical methods such as exponential smoothing, regression and seasonal models are common, supplemented by machine learning for complex patterns. These are combined with manual overrides from sales and procurement. Depending on the item class – for example according to ABC analysis – different methods are used.

Which KPIs are important in Demand Planning?

Central metrics are Forecast Accuracy (often expressed as MAPE), forecast bias and the Backorder Rate as a measure of shortages. In addition, service level, inventory coverage and inventory value are considered. Only the combination of accuracy and inventory efficiency reveals true process quality.

What is the difference between Demand Planning and Supply Planning?

Demand Planning answers the question of how much demand is expected; Supply Planning derives from this how that demand will be met through production and procurement. Both processes are typically aligned within the S&OP cycle. Procurement sits at the interface and translates demand requirements into supplier commitments.

How often should a Demand Plan be updated?

In practice, rolling monthly cycles have become established, supplemented by weekly short updates for critical items. The horizon is decisive: near periods in detail, distant periods in outline. Every update should be documented with version control so that deviations can be traced.

What role does procurement play in Demand Planning?

Procurement checks the availability of forecasted quantities, takes account of lead times and supplier capacity limits, and communicates demand notifications to strategic partners on a binding basis. Procurement also uses the forecast for framework agreements, volume tiers and budgeting. In alignment rounds, it represents the procurement perspective with realistic lead times.