

Consumption Forecast: Identify Demand Early, Control Procurement

The consumption forecast is the quantitative estimate of future material and goods consumption based on historical consumption data, current incoming orders and known planned figures. It forms the foundation of demand-appropriate procurement and determines which quantities are ordered at what time and in what lot size. In industrial procurement, its quality determines inventory levels, on-time delivery and liquidity – inaccurate forecasts lead to shortages or tied-up capital. For technical buyers, it is therefore the central control instrument between materials scheduling, supplier management and production planning.

Key facts

- The consumption forecast estimates future material requirements based on historical data and planned figures.
- Typical methods range from moving averages to AI-supported demand sensing.
- A distinction is often made between deterministic primary requirements (bills of materials) and stochastic secondary requirements (statistics).
- In practice, forecast accuracy for series production materials is often between 80 and 95 per cent.
- Inaccurate forecasts cause either shortages with production downtime or excessive blocked stock and tied-up capital.
- Regular reconciliation using delivery date deviation analysis and spend analysis continuously improves forecast quality.

Definition: Consumption Forecast

The consumption forecast is the systematic prediction of future demand for materials, components or trading goods over a defined time horizon. It is based on past consumption, known incoming orders and planning figures from sales and production. In contrast to one-off demand determination, it is a continuously updated process that constantly feeds materials scheduling.

Distinguishing Primary and Secondary Requirements

For materials close to production, requirements arise deterministically from bills of materials and production orders; here, the consumption forecast is more of a validation than an estimate. For consumables, wear parts, auxiliary materials or spare parts, statistical secondary requirements dominate, which can only be estimated through consumption analyses. The forecasting method must therefore reflect material class and demand structure.

Distinction from the Demand Forecast

While the term consumption forecast focuses on quantities actually consumed, the demand forecast additionally covers planned but not yet consumed quantities such as safety stocks or project procurement. In practice, the terms blur; what matters is that procurement and materials scheduling use

a uniform definition and keep planned figures transparently separate from pure consumption.

Methods and Approach in Consumption Forecasting

The methodological spectrum ranges from simple statistical methods to data-driven approaches. The choice depends on data quality, demand pattern and the importance of the material to production. A staged approach has proven its worth: first cleanse the data basis, then select the method, and subsequently validate regularly.

Statistical Methods

Moving averages, exponential smoothing and trend or seasonal models are the classics of consumption forecasting. They are transparent, automatable and require hardly any master data maintenance – ideal for C-parts and consumables with a stable pattern. With sporadic demand, as is typical for spare parts, classical averages fail; here, Croston methods or interval forecasts are used.

AI-Supported Demand Sensing

Demand sensing supplements historical consumption data with short-term signals such as current orders, supplier feedback or market data, thereby shortening response times. Machine learning models can process multidimensional influencing factors, but require cleansed data and continuous model checking. A combination often proves successful: statistical baseline forecast plus manual correction by buyers and schedulers.

Data Cleansing as a Prerequisite

Without a clean consumption history, every forecast is worthless. Outliers caused by inventory count discrepancies, incorrect material numbers or one-off large orders must be identified and corrected. Systematic data cleansing – including a uniform spend taxonomy – is the most common adjustment lever when forecast accuracy remains permanently below expectations.

Key KPIs for Controlling the Consumption Forecast

Forecasts only have an effect if their quality is made measurable. Metrics on forecast accuracy, inventory effects and delivery performance show whether the consumption forecast actually improves downstream processes.

Forecast Accuracy and Error Measures

Standard measures are forecast accuracy (hit rate) and mean absolute percentage error (MAPE). In practice, a hit rate of typically 85 to 95 per cent is considered a good range for series production materials; significantly lower values are normal for sporadic demand. It is important to evaluate at material group level, not just on average, in order to identify systematic misdirection.

Inventory and Delivery Effects

The quality of the consumption forecast is ultimately reflected in coverage, inventory levels and service level. Recurring metrics such as supplier on-time delivery or delivery date deviation analysis reveal whether purchase order proposals derived from the forecast had realistic dates. Lot size optimisation also benefits directly: the more stable the forecast, the more precisely optimal order quantities and safety stocks can be derived.

Cycles and Review Cadence

Forecast accuracy should be evaluated in fixed cycles – often monthly – per material group. The feedback loop is essential: deviations are analysed, causes documented (special orders, downtime, seasonal activity) and fed back into the next forecast period. Without this learning cycle, forecast quality remains at a low level.

Risks and Controls in Consumption Forecasting

Inaccurate consumption forecasts have a direct impact on availability, capital commitment and supplier relationships. In addition, risks arise from a lack of transparency between the parties involved. Deliberate control mechanisms limit these effects.

Shortages and Tied-Up Capital

Forecasts that are too low lead to shortages and, in extreme cases, to production stoppages with reputational risk towards one's own customers. Forecasts that are too high tie up capital, cause storage costs and generate amortised blocked stock that must be laboriously disposed of through blocked stock management. Safety stocks are therefore not a substitute for poor forecasts, but only for genuine random fluctuations.

Reliability Towards Suppliers

Forecast values that are regularly not met undermine supplier trust and worsen terms and willingness to reserve capacity. Forecasts to suppliers should therefore be structured into binding call-off orders and non-binding planning forecasts, with clear rules on change lead times. Regular supplier evaluations and a supplier audit programme help keep the impact of forecast-related fluctuations assessable.

Organisational Controls

Effective controls include clear accountability for forecast values (owner principle), an approval and change management process for forecast updates, and stakeholder management that aligns sales, production and procurement on common planning figures. A culture that treats forecast errors as a learning signal rather than concealing them is also important – otherwise pessimistic estimates and buffer stocks dominate.

Current Developments: Digitalisation and Integration

The consumption forecast is shifting from an isolated scheduling topic to an integrated, digitally controlled process across the entire supply chain. Systems today provide real-time consumption, automatic forecast proposals and direct interfaces to suppliers.

Integration into ERP and Procurement Platforms

Modern ERP systems calculate consumption forecasts automatically and generate purchase order proposals from them, which are transmitted to the supplier as call-off orders after approval. A supplier portal can make forecasts and call-offs transparently available to the supplier, improving the supplier's own scheduling and on-time delivery. Supplier enablement – the targeted empowerment of suppliers for digital collaboration – is thus also a lever for forecast quality.

Spend Analysis and Traceability as Added Benefits

Consolidated consumption and spend data from spend analysis show which material groups are

forecastable and where standardisation should take place. At the same time, traceability of batches and consumption increases data quality, as consumption disruptions become detectable earlier. For critical materials, this creates an informed basis for risk management and dual scheduling.

From Forecast to Strategic Steering

Consumption forecasts increasingly also provide input for strategic decisions: framework agreements, price enforcement in competitive bidding or capacity reservations with suppliers are supported by forecast-based justifications. Recently, the link with financial topics has also come into focus, for example when financing terms via supply chain finance are tied to plannable, forecast-based order flows.

Typical metrics

Forecast Accuracy: typically 85–95 %

for series production materials; significantly lower for sporadic demand

MAPE: < 15 %

common guideline as an acceptable forecast error for stable A-parts

Supplier On-Time Delivery: > 95 %

indicator of whether forecast-based call-offs have realistic delivery dates

Inventory Coverage: material-group specific

should typically decrease after forecast implementation while maintaining the same service level

Service Level (Delivery Rate): > 98 %

measures availability; the trade-off against inventory levels reflects forecast quality

Practical Example

A medium-sized mechanical engineering company with around 4,000 actively procured items suffered from frequent shortages of wear parts and, at the same time, high inventories of rarely used components. Procurement introduced a two-stage consumption forecast: statistical methods for A- and B-parts with a fixed monthly review, and manual adjustments for sporadic C-parts. In parallel, the forecasts were communicated to key suppliers via a supplier portal and translated into call-off orders with defined change lead times.

- Consumption history prepared in a cleansing project: outliers, duplicates and outdated material numbers removed
- Forecast methods defined per material class and forecast accuracy established as a KPI with monthly review
- Call-off orders and non-binding forecast quantities clearly separated for suppliers, with regulated change lead times
- Safety stocks recalculated and surplus residual stock reduced through blocked stock management

Conclusion

The consumption forecast is not purely an IT matter, but a cross-disciplinary steering task between sales, production and procurement. Its quality determines whether inventories, on-time delivery and shortages remain within target ranges. What matters is cleansed data, a method suited to the demand profile and a regular learning cycle based on forecast deviations. Those who also integrate forecasts

into supplier communication and call-off processes achieve an impact beyond their own system boundaries. Investment in forecast quality therefore pays off twice over: operationally through more stable supply and strategically through robust negotiation and planning foundations.

Frequently asked questions

What is a consumption forecast?

A consumption forecast is the quantitative estimate of future material requirements based on historical consumption data, order backlog and planned figures. It serves as the basis for material scheduling, lot sizes and purchase order proposals. In procurement, it governs which quantities are drawn from which supplier at what time.

What methods are available for consumption forecasting?

Classic methods include moving averages, exponential smoothing and seasonal/trend models. For sporadic demand, specialised methods such as interval forecasting are suitable. In addition, companies are increasingly using demand sensing with AI models, combined with manual expert judgement.

How accurate should a consumption forecast be?

For series production materials, hit rates of typically 85 to 95 per cent are considered a good range in practice; lower values are normal for sporadic demand. More important than the absolute value is the systematic evaluation of deviations at material group level. Corrections derived from this continuously improve forecast quality.

How does the consumption forecast relate to the call-off order?

The consumption forecast provides the quantity- and date-related basis for call-off orders, which draw on a framework agreement over an extended period. It is common practice to distinguish between binding call-off quantities and non-binding forecast quantities with defined change lead times. This keeps the supplier manageable without completely sacrificing flexibility.

What role does data cleansing play in consumption forecasts?

Without a cleansed consumption history, all methods deliver unusable results, as outliers and duplicates distort the estimate. Structured data cleansing, including uniform material classification, is usually the single biggest lever for better forecasts. It should precede any method selection and be repeated regularly.

Who is responsible for the consumption forecast?

Responsibility typically lies with materials scheduling or materials management, closely interlinked with procurement and sales. It is important to have a clearly named owner per material group who maintains planned figures and explains deviations. Functioning stakeholder management ensures that all parties work from the same planning figures.