

ABC-XYZ Analysis: Managing Product Groups Systematically by Value and Demand Pattern

The ABC-XYZ analysis is a two-dimensional procurement controlling method that classifies items and product groups by their value share (ABC) and the regularity of their demand (XYZ). It thus combines the classic ABC analysis with the demand structure perspective of the XYZ analysis and creates a reliable basis for inventory control, sourcing and supplier strategies. In industrial procurement, it serves primarily to reduce complexity, manage inventory in a targeted manner and identify shortage risks earlier.

Key facts

- The ABC-XYZ analysis combines the value perspective (A, B, C items) with the demand pattern perspective (X, Y, Z items) in a 3x3 matrix model.
- A items typically account for around 70 to 80 per cent of procurement value with only about 10 to 20 per cent of the item count.
- X items show stable, easily plannable demand; Z items display sporadic or barely forecastable demand.
- The analysis provides clear recommendations for action: from framework agreements and delivery schedule call-offs to safety capacity and emergency orders.
- The data basis and observation period (typically 12 to 24 months) are key determinants of the validity of the findings.
- In procurement, it supports prioritisation in supplier qualification, sourcing strategy and inventory optimisation.

Definition: ABC-XYZ analysis

The ABC-XYZ analysis is a tool of materials management and procurement controlling that evaluates items or product groups along two dimensions: financial significance (ABC) and the forecastability or plannability of demand (XYZ). The result is a nine-field matrix that suggests different inventory control and sourcing strategies for each field.

ABC dimension: value share and criticality

The ABC analysis ranks items by their share of procurement volume. In practice, A items often account for around 70 to 80 per cent of value with a small share of the item count, B items a middle range and C items the remainder in large quantities. In addition to pure value, criticality for production should also be considered, as a low-value C item can still bring manufacturing to a standstill if unavailable.

XYZ dimension: demand structure and plannability

The XYZ analysis evaluates the demand pattern over time. X items have stable, even demand with low variability; Y items are subject to recognisable seasonal or trend-like fluctuations; Z items occur sporadically, as one-offs or with high volatility. A common rule of thumb is classification based on the

coefficient of variation of demand, with the specific thresholds to be defined individually per company.

Methods and procedure of the ABC-XYZ analysis

The execution follows a clearly structured process whose quality depends primarily on the data basis. Whether in the ERP system, in e-procurement in purchasing or in the data catalogue – what matters are consistent item master data and a sufficiently long history.

Data basis and observation period

The basis is usually consumption or sales data from the last 12 to 24 months, supplemented by price data and current bills of materials. For items with long life cycles or project business, the history should be supplemented by foreseeable future orders. Cleansing should be carried out for outliers such as large orders, blocked stock management cases or one-off emergency orders that distort the picture.

Classification and matrix formation

After cumulative value share calculation, items are assigned to A, B and C; in parallel, the XYZ rating takes place using variability measures or expert assessment. Cross-referencing both classifications produces nine fields with typical patterns of action. It is important to repeat the analysis regularly, e.g. annually or on major range changes, as class memberships can shift.

Strategies per matrix field

Typical patterns are: AX items receive framework agreements, stable supplier relationships and high focus density in supplier management; AZ items require safety capacity, alternative sources and clear escalation paths; CX items lend themselves to automation, optimised electronic delivery schedule call-offs or VMI approaches; CZ items are candidates for lot splitting, minimum stock control or consistent standardisation and range rationalisation.

Key KPIs and areas of application

The ABC-XYZ analysis is not an end in itself but steers measurable objectives: inventory reduction, delivery reliability, workload relief in procurement and negotiation focus. Its impact shows up in KPI-based target systems.

Use in inventory control and inventory management

Graduated inventory control rules are derived per field: A items receive close inventory monitoring and, if necessary, safety time buffers, while C items are managed with simple minimum stock procedures. For Y and Z items, planned safety capacity increases availability without all items needing to be stocked equally. This reduces overall inventory while maintaining reliable delivery capability.

Use in strategic procurement

In strategic procurement, the matrix prioritises negotiation topics, supplier visits and supplier qualification: resources are concentrated on A classes. For sourcing strategies, it follows that AX items move into framework agreements with longer terms, while CZ positions are handled via catalogues or standard processes. Benchmarking in procurement is also focused along the matrix.

Risks and controls in the ABC-XYZ analysis

The method is simple but carries typical sources of error. Anyone steering blindly by class membership wastes potential or creates new risks.

Typical sources of error

Common problems: outdated or incomplete master data, failure to cleanse outliers, observation periods that are too short and the neglect of critical C items. Static class boundaries are also problematic – the shift of an item from AX to AZ, for example, can indicate changed market conditions and should act as a trigger signal for supplier evaluation or the search for alternative sources.

Controls and governance

Effective controls include a defined data maintenance responsibility, documented classification rules, regular reviews with the specialist departments and a link to supplier risk management. For critical AZ and CZ items, an additional criticality assessment from a production perspective is recommended, so that supply bottlenecks become visible in good time despite low value share.

Current developments and digital implementation

Modern ERP and analytics systems automate the classification and continuously update matrix fields. Machine learning approaches refine demand forecasting, particularly for Y and Z items, where classical statistical methods reach their limits. Moreover, the analysis is gaining greater attention in the context of supply chain disruptions.

Automation and data quality

No analysis works without reliable master data – data catalogue approaches close the gap between ERP, e-procurement and supplier portals here. Automated classifications should nevertheless be verified by buyers, as systemic class assignments cannot capture contextual knowledge about future projects or product path changes.

Resilience as a supplementary dimension

Many companies supplement the matrix with a resilience dimension: how critical is the item, how substitutable, how dependent on the supplier? In this way, the ABC-XYZ analysis connects directly to supply chain resilience management. From the AX and AZ fields, measures such as dual sourcing, safety time buffers or contractual safeguards can be specifically derived.

Typical metrics

A-class value share: typically 70–80%

Share of A items in total procurement value

A-class item share: typically 10–20%

Share of A items in the item count

Delivery reliability for A items: > 98%

Target value for critical AX and AZ items

Inventory coverage for C items: to be defined individually

controlled via minimum stock procedures

Practical example

A medium-sized mechanical engineering company with around 15,000 active item positions carried out the ABC-XYZ analysis in a structured manner for the first time over an 18-month window. Result: around 7 per cent of items displayed an AZ character – low to medium value but strongly fluctuating demand – and yet caused a disproportionate share of expedited purchases and emergency orders.

- For AX items, framework agreements with semi-annual delivery schedule call-offs were optimised.
- For AZ items, safety capacity was defined and a second source qualified for each position.
- CZ items were consolidated, standardised and switched to automated ordering processes.
- Inventory control rules were stored per matrix field in the ERP system and reviewed quarterly.

Conclusion

The ABC-XYZ analysis combines the procurement value perspective with a realistic assessment of demand plannability, making it one of the most practical prioritisation foundations in procurement. Its value depends less on the methodology than on data quality, regular updates and the consistent implementation of the derived strategies. Those who include criticality and supplier risks as supplementary dimensions obtain a reliable steering tool for inventory control, negotiation and resilience. The prerequisites are clean master data and clear responsibilities. This turns the matrix from a snapshot into a continuous steering instrument of procurement.

Frequently asked questions

What is the ABC-XYZ analysis?

The ABC-XYZ analysis is a two-dimensional classification method in materials management and procurement. It assigns items to a nine-field matrix based on value share (ABC) and demand plannability (XYZ). From this, graduated strategies for inventory control, sourcing and supplier management are derived.

What do AX, AZ, CX and CZ mean in the ABC-XYZ matrix?

AX denotes items with a high value share and stable demand – candidates for framework agreements and intensive supplier management. AZ means high value with irregular demand and requires safety capacity and alternative sources. CX and CZ describe low-value items with stable or sporadic demand respectively, which are managed efficiently through automation, lot splitting or range rationalisation.

How do you create an ABC-XYZ analysis step by step?

First, consumption and value data for a meaningful period, typically 12 to 24 months, are prepared and cleansed of outliers. Next, the ABC classification is carried out based on cumulative value shares, and the XYZ rating based on demand variability measures. Cross-referencing the two produces the nine matrix fields, for which specific inventory control and sourcing rules are defined.

What thresholds apply to A, B and C items?

Common rules of thumb are: A items account for roughly 70 to 80 per cent of value with around 10 to 20 per cent of the item count, B items for a further 10 to 20 per cent of value, and C items for the remainder. The thresholds must however be adjusted individually per company and should consider criticality and supply risk in addition to value.

What is the difference between ABC analysis and XYZ analysis?

The ABC analysis assesses exclusively the financial significance of items, measured by value or consumption share. The XYZ analysis, by contrast, assesses the demand pattern, i.e. whether consumption is stable, fluctuating or sporadic. Only the combination of both dimensions allows reliable conclusions about the right inventory control and sourcing strategy.

How often should the ABC-XYZ analysis be updated?

In practice, an annual update has proven effective, or quarterly for dynamic product ranges or volatile market environments. Trigger-based reviews are also important when individual items move between matrix fields. Such shifts can be early indicators of changed market conditions or supplier risks.