

Data control: ensuring transparency and reliability in the procurement process

Data control refers to the systematic review, approval and continuous monitoring of master data, transaction data and process data along the entire procurement and supply chain. It ensures that procurement decisions are based on complete, up-to-date and consistent information – from the bill of materials and supplier data through to invoice verification. In industrial supply chains, data control is the prerequisite for traceable procurement decisions, audit-proof processes and reliable supplier evaluations. Without effective data control, media discontinuities, incorrect orders and measurement or compliance risks arise, which have a direct impact on costs and delivery reliability.

Key facts

- Data control covers the review, approval and monitoring of master data, transaction and process data across the entire procurement function.
- Core fields include material master data, supplier master data, price terms, bills of materials and movement data.
- Typical control mechanisms are the four-eyes principle, plausibility rules, periodic master data audits and access rights concepts.
- In practice, clean master data often saves valuable percentages of the search and rework effort in procurement.
- Data control is a prerequisite for reliable KPIs such as on-time delivery, price variance or supplier ratings.
- From a legal perspective, the GDPR, commercial and tax law retention obligations and GoBD requirements are particularly relevant.

Definition: data control

Data control is the entirety of all rules, processes and system mechanisms that ensure that data used in procurement is correct, up-to-date, complete and protected against unauthorised manipulation. It covers both the point-in-time review prior to approval and the continuous monitoring of ongoing data records. The term therefore goes beyond mere data capture and includes responsibilities, control stages and documentation.

Distinction from data maintenance

Data maintenance describes the creation and updating of data, whereas data control refers to the overarching assurance of its quality and integrity. The two complement each other: anyone maintaining master data should not simultaneously be able to approve it without counter-checking. In practice, many companies therefore consistently separate maintenance and approval roles, for example according to the four-eyes principle (P2P), which is firmly embedded in the procure-to-pay process.

Types of data in procurement

The focus is on four data classes: master data (materials, suppliers, terms and conditions), transaction data (purchase orders, goods receipts, invoices), master lists such as the bill of materials and specification data from specification management. Each class follows its own quality criteria – bills of materials, for example, require flawless quantities and units of measure, while supplier master data requires certified and auditable bank and contract data.

Tasks and methods of data control

Methodologically, data control combines organisational rules with technical validation mechanisms. The aim is to prevent errors at the source rather than having to correct them later at great expense. A multi-stage approach of prevention, checking and correction has proven effective.

Master data governance and approval processes

A central building block is master data governance: defined roles, uniform field logic, mandatory fields and standardised description conventions. Every new record or change goes through a documented approval process. Frequently, a dedicated master data team or a data owner in the functional department takes on quality assurance, while the requesting buyer checks professional plausibility.

Plausibility checks and business rules

System-side validation rules intercept typical errors: duplicate material numbers, implausible prices, missing purchasing groups or contradictory units of measure. Additionally useful are terms controls such as discount scale checks, which prevent agreed scale prices from a framework agreement from being transferred incorrectly. In tenders from the RFX process in procurement, all offers must be compared on an identical data basis – otherwise award decisions are distorted.

Periodic data audits

Master data ages: suppliers change addresses, materials become obsolete, terms expire. Periodic audits – typically annually or semi-annually – identify outdated, duplicate or no longer used records. In addition, supplier evaluations such as supplier rating provide signals when stored master data no longer matches actual delivery performance.

Data control in the purchase-to-pay process

In the operational procurement flow, data control is the backbone of process reliability. It accompanies every stage from requisition to payment and ensures that all parties work with the same information.

Requisition and ordering

Data quality already determines efficiency at the requisition stage: unclear material descriptions lead to queries, incorrect orders and extra effort. Standardised catalogues and structured entry screens reduce free text. In supplier enablement – the systematic connection of suppliers to electronic processes – data control ensures that imported catalogue data and prices correspond to the negotiated terms.

Goods receipt and invoice verification

At goods receipt, purchase order data is matched against the quantities actually delivered; discrepancies must be documented and clarified before the invoice is approved. Automated three-way matching (purchase order, goods receipt, invoice) makes implausible invoices visible. Transport data

such as the air waybill (AWB) in air freight also belongs here: otherwise, deviating consignment or weight data lead to freight cost disputes.

Replenishment and stock data

In planning-driven processes such as replenishment or milk run deliveries, security of supply depends directly on correct stock and reporting data. Incorrect physical stock figures generate wrong planning decisions, which manifest themselves as bottlenecks or tied-up capital. For this reason, cycle counts, inventory processes and automated stock reconciliations are an integral part of data control.

Key KPIs and metrics of data quality

Data control can be measured. A KPI set for data quality makes improvements visible and creates acceptance for governance measures. It is important to report the metrics regularly and underpin them with clear target values.

Data quality metrics

Typical KPIs include the proportion of complete and error-free master data records, the duplicate rate in the material and supplier master and the average time from data request to approval. The rate of subsequent changes to approved records is also informative: the lower it is, the more reliably the initial data maintenance works.

Process KPIs with a data link

Data errors feed into downstream KPIs: declining on-time delivery due to incorrect planning decisions, rising complaint rates due to incorrect specifications or increased process cost calculation values due to rework. Price variance and payment terms compliance show whether negotiated terms actually arrive in the systems. Anyone using supplier ratings must also control the underlying data sources, otherwise artefacts are evaluated instead of performance.

Reporting and review data

Monthly data quality dashboards with clear owners per data field have proven effective. Interpretation requires caution: absolute target values such as "99% complete master data" make sense to different degrees depending on the industry and data field; what matters is the trend and the field level at which errors occur.

Risks, controls and legal aspects

Poorly controlled data causes measurable damage: incorrect orders, duplicate payments, compliance breaches and distorted analyses. Structured data risk management minimises this exposure while simultaneously meeting internal and external audit requirements.

Typical risk areas

Particularly risky are supplier bank details (payment fraud), outdated terms data (over- or under-covering negotiated prices), faulty bills of materials (incorrect procurement) and incomplete compliance data such as customs codes or certificates. Interface errors in data transfers between ERP, e-procurement and supplier systems also belong on the risk list.

Internal controls and the four-eyes principle

Proven controls include segregation of duties, the four-eyes principle (P2P) for critical approvals, change histories with logging and periodic sample audits. Sensitive changes – such as bank details or terms in a framework agreement – should always pass through a second approval stage. Audit-proof documentation supports both external audits and any renegotiations with suppliers, which rely on reliable histories.

Legal framework

Relevant requirements include in particular data protection provisions (GDPR) for supplier contact data, commercial and tax law retention obligations and GoBD requirements for the audit-proof keeping of digital records. The specific obligations depend on legal form, industry and process design and should be reviewed legally on a case-by-case basis.

Current developments: automation and data control

Digitalisation is fundamentally changing data control. Rule-based checking is being supplemented by automated validation, machine learning and integrated supplier platforms. The human role shifts from checker to exception handler.

Automated master data validation

Modern systems check records already at the point of entry: duplicate matching, address validation, AI-based material classification and automatic standards matching significantly reduce manual checking. Nevertheless, human final review remains indispensable – algorithms detect structural errors well, but industry context and technical plausibility only to a limited extent.

Data as a foundation for planning and strategy

Reliable data is a prerequisite for forward-looking processes such as sales and operations planning or a well-managed sourcing pipeline. Without controlled demand, stock and cost data, planning approaches fizzle out. At the same time, a consolidated data position enables modern award procedures – from structured negotiation procedures to well-founded renegotiation based on real price and volume developments.

Typical metrics

Master data completeness rate: > 98%

Proportion of master data records without missing mandatory fields; benchmark varies by data field

Duplicate rate in the material master: < 1%

Proportion of identified duplicates among active records; regular duplicate checks required

Data approval lead time: < 3 working days

Time from data request to approval; varies depending on approval stages

Goods receipt matching error rate: < 2%

Proportion of purchase orders with order/goods receipt/invoice discrepancies

Practical example

A mid-sized mechanical engineering company with around 40,000 material master records notices

significant stock discrepancies during a special inventory count and frequent incorrect orders of standard parts. An analysis shows: material data had been maintained for years in a decentralised manner by different departments, without an approval process and with free-text descriptions. About one fifth of the active master records contained outdated units of measure, duplicate records or missing planning parameters. The company then introduces a central master data team with defined data owners, standardises entry screens and links stock management to automated plausibility rules.

- Introduction of a four-eyes approval process for all master data changes, including change history
- Cleansing of the material master followed by duplicate checking and standardisation of descriptions
- Automated matching of purchase order and goods receipt data in the purchase-to-pay process
- Quarterly data quality reporting with clear target values per data field

Conclusion

In industrial procurement, data control is not an end in itself but the foundation for fast, reliable and audit-proof decisions. It combines organisational clarity – roles, approvals, responsibilities – with technical validation mechanisms and regular audits. Companies that systematically measure and manage data quality benefit twice: through less rework in day-to-day operations and through reliable metrics for strategic decisions. Given increasing automation, its importance continues to grow, because even the best algorithms only work as well as the data they receive. Anyone investing in master data governance today is laying the foundation for future digitalisation projects in procurement.

Frequently asked questions

What does data control mean in procurement?

Data control in procurement refers to the systematic review, approval and monitoring of all data relevant to procurement processes – such as material and supplier master data, terms and conditions, bills of materials and transaction data. The aim is to ensure that procurement decisions are based on complete, up-to-date and consistent information. This includes clear responsibilities, control stages such as the four-eyes principle and audit-proof documentation.

Why is data quality in procurement so important?

Poor data quality leads directly to incorrect orders, duplicate payments, distorted supplier evaluations and wrong material planning decisions. Moreover, strategic instruments such as supplier rating, sales and operations planning or tenders in the RFX process depend entirely on reliable data. In practice, inadequate master data causes considerable rework and ties up capital through excess stock.

Which data is covered by data control in procurement?

Core fields include material master data, supplier master data (including bank and contract data), terms and price data, bills of materials and specifications from specification management. In addition, transaction data such as purchase orders, goods receipts and invoices, as well as stock and planning data. Transport and customs data also fall within the scope of control as soon as they become relevant for costs or compliance.

How can data quality in procurement be measured?

Typical KPIs include the proportion of complete and error-free master data records, the duplicate rate in the material and supplier master, the lead time from data request to approval and the rate of subsequent changes. Supplementary KPIs such as on-time delivery, complaint rates or price variance show where

data errors have an operational impact. Regular reporting, clear owners and trend analysis rather than absolute target values are important.

What role does the four-eyes principle play in data control?

The four-eyes principle (P2P) separates the entry and approval of critical data between two people in order to avoid errors and manipulation. It is particularly effective for sensitive changes such as supplier bank details, terms in framework agreements or prices in master contracts. The second approval stage should be professionally competent and independent of the requesting role.

Which legal requirements affect data control in procurement?

Relevant requirements include in particular data protection provisions under the GDPR for personal supplier data, commercial and tax law retention obligations and the principles for the proper keeping of digital records (GoBD). In addition, industry-specific requirements such as quality or compliance standards may apply. The specific obligations depend on the individual case and should be reviewed legally.