Master Data Process: Data Quality as the Foundation of Procurement

The master data process describes the structured capture, maintenance, release and updating of master data within the company – in particular material, supplier and service master data. In procurement, this data forms the basis for enquiries, purchase orders, framework agreements and supplier evaluation. A cleanly defined master data process reduces error costs, accelerates ordering processes and creates the data foundation for analytics, compliance and reporting.

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Key facts at a glance

01 The master data process covers creation, maintenance, release, change and archiving of material, supplier and service master data.

02 Data Owners per data domain are frequently regarded as a proven organisational principle.

03 In practice, data quality metrics such as completeness or error rate are typically managed with target attainment of 95 to 98 per cent.

04 Duplicate records and incorrect supplier data are among the error sources in the procurement process that can be avoided at low cost.

05 Recurring master data changes – such as price data or bank details – require clear verification rules due to fraud risks.

Definition: master data process

The master data process is the company-wide regulated life cycle of master data: from initial creation through maintenance, quality review and release to change and archiving. It connects departments such as Procurement, Quality Assurance, Finance and IT with a unified data responsibility.

Distinguishing master data from movement data

Master data are relatively constant reference data – material numbers, supplier records, delivery

instructions, prices and terms. Movement data such as purchase orders, goods receipts or invoices, by contrast, are generated continuously in day-to-day operations and refer to master data. Errors in master data therefore have a multiplicative effect on all downstream processes: an incorrectly maintained supplier address creates effort in every single ordering transaction.

Relevance for procurement

For buyers, supplier records, material master data with purchasing views, purchasing info records and contract data are particularly relevant. They directly influence supplier qualification, the supplier evaluation system and the compliance-compliant mapping of purchasing terms. Without consistent master data, tenders, reports on savings realised or the steering of a sourcing wave plan are hardly reliable.

Methods and approach in the master data process

An effective master data process follows a clear process model with defined roles, review rules and system support. The separation of data capture, functional review and technical creation in the system has proven effective.

Process phases from creation to archiving

The life cycle typically comprises five phases: request submission by a business department, functional review (Procurement for suppliers, the Technical Procurement Office for material master data), technical creation in the system, ongoing maintenance, and change or blocking. For changes – such as new bank details or altered delivery terms – the same review discipline applies as for initial creation, supplemented by verification against an independent source.

Roles and data responsibility

Roles established in practice are Data Owner (functional responsibility), Data Steward (operational maintenance and quality control) and requester. The procurement manual should sensibly document the responsible roles, release levels and review rules for procurement-relevant master data. The four-eyes principle and segregation of duties – for example separating supplier creation from payment processing – are standard requirements from internal control and external audit.

Tools: ERP, MDM and classification

Larger organisations deploy master data management systems that maintain master data centrally and distribute it to ERP systems. Uniform classification is crucial: material groups, commodity group schemas (such as eCl@ss or UNSPSC) and supplier classifications enable comparability, bundling potential and reliable analytics. Integration with the low-value ordering process or catalogue solutions also presupposes that material and supplier master data are properly maintained.

Key KPIs and data quality criteria

Data quality can be measured and thus steered. Proven criteria are completeness, correctness, currency, consistency and uniqueness (deduplication).

Metrics for steering

Typical metrics are the error rate for new records, the share of duplicate records, the lead time from request to release, and the currency of mandatory fields. A target value of at least 95 to 98 per cent is often set for mandatory-field completeness. Particularly meaningful for procurement: the share of purchase orders with an incorrect or incomplete master data basis, and the number of queries raised by clerks due to unclear data.

Impact on downstream processes

Good master data quality noticeably reduces rework and clarification effort – in practice, a substantial share of clerk capacity in procurement is consumed by this. It is also a prerequisite for reliable metrics across the entire purchase-to-pay process, for evaluation within quality management in procurement, and for the robustness of supplier evaluations via a scoring matrix.

Risks and controls in the master data process

The greatest risks lie in fraud, mispostings and compliance violations caused by incorrect or manipulated master data. Controls must therefore be designed on a risk-oriented basis.

Fraud risk with changes

A well-known attack pattern is the fraudulent change of supplier bank details. Protection comes from a rigorous four-eyes process, a call-back to the supplier via a previously verified contact source, and logging of all changes. Similar diligence applies when reviewing supplier financial risk aspects such as creditworthiness information or submitted bank guarantee evidence.

Incorrect material and terms data

Incorrectly maintained material master data lead to wrong orders, incorrect prices and problems extending into quality processes – for example when delivery instructions or requirements for an Initial Sample Inspection Report (ISIR) are not stored. Poorly maintained terms from a framework order result in purchase orders being placed at outdated prices. Regular data quality audits and rule-based checks (for example for missing unit prices or expired validities) are therefore standard practice.

Compliance and auditability

Master data also carry evidence obligations: sustainability and origin data, for instance on the EU taxonomy or on origin preference for customs matters, must be systematically stored. Requirements for service credits (SLAs) in service master data or documentation from freight cost management also belong here. Retention and deletion rules (data retention) should be firmly anchored in the master data

process.

Current developments: automation and data modelling

The master data process is increasingly shifting from manual maintenance towards system-supported validation, deduplication and automation. AI-supported classification and duplicate detection noticeably reduce manual effort.

Automated validation and AI support

Modern systems check entries in real time against reference databases (for example commercial registers, VAT ID verification) and automatically detect duplicates. AI approaches classify free-text descriptions into standardised material groups – a step that is often labour-intensive when done manually in practice. Human expert review nevertheless remains necessary, particularly for functional attributes and approved supplier qualifications.

Integration into planning and procurement processes

Master data gain value through linking: supplier capacity and safety capacity information, data from Vendor Managed Inventory (VMI) or supplier capacity risk assessments flow into master data models. In the Sales and Operations Planning process too, consistent material master data are a prerequisite for reliable demand planning and stock provisioning.

Typical metrics

Metric	Typical value
Mandatory field completeness	> 95 % *A common target in practice; 98 per cent also targeted depending on the data domain.*
Error rate for new records	< 2 % *Share of new records requiring rework; depends on the intensity of checking.*
Duplicate share in supplier master data	< 1 % *To be monitored continuously after a one-off cleanse.*
Lead time for record creation	1–3 working days *Depending on depth of review and system support; critical changes faster.*

Practical example

A mid-sized mechanical engineering company with around 300 employees discovered during a process review that roughly one in ten purchase orders triggered follow-up queries due to unclear master data – outdated prices, duplicates in the supplier master and missing material short texts. The company defined a new master data process with a clear allocation of roles between Procurement, Quality Management and Accounts Payable, and added rule-based checks in the ERP system.

- Introduction of a request form with mandatory fields and the four-eyes principle for supplier creation and bank detail changes
- Duplicate cleansing and uniform commodity group classification as the basis for bundling analyses
- Automatic check of price validities from framework orders when creating purchase requisitions
- Monthly data quality dashboard with completeness and error rates as a fixed element of procurement reporting

Conclusion

The master data process is an seemingly unglamorous but economically highly relevant building block of procurement. It determines whether ordering processes run smoothly, metrics are reliable and fraud attempts are detected early. Companies should explicitly document responsibilities, review rules and change processes – in the procurement manual or a dedicated data policy. Investments in data quality typically pay for themselves through reduced rework and a better basis for decision-making. Those who regard master data as a strategic asset create the foundation for automation, compliance and robust procurement steering.

Frequently asked questions

? What is included in procurement master data?

Typically supplier master data with address, bank details and terms, material master with purchasing and valuation views, purchasing info records, and service master data. Classifications, delivery instructions and qualification data also belong to this. All are used on a recurring basis and change only rarely.

? Who is responsible for master data within the company?

A role model is common, with a Data Owner holding functional responsibility, a Data Steward handling operational maintenance, and requesters in the business departments. In procurement, functional responsibility for supplier master data and the purchasing views of the material master typically lies with Procurement or the Technical Procurement Office. The exact allocation should be documented in the procurement manual.

? How frequently should master data be reviewed?

Critical fields such as bank details should be verified on every change and at regular intervals –

annually, for example. Material and terms data should be checked for validity and completeness at fixed intervals, often quarterly or semi-annually. Many companies combine random-sample audits with automated rule-based checks in the system.

? Which metrics measure the quality of master data?

Proven KPIs include completeness of mandatory fields, error rate for new records, share of duplicates, lead time from creation to release, and data currency. In practice, values above 95 per cent mandatory-field completeness are considered a good benchmark. Continuous improvement of the metrics matters more than absolute values.

? How can fraud be prevented when supplier master data is changed?

Key measures are the four-eyes principle for changes and independent verification, for example a call-back to the supplier via a previously known contact source. All changes should be logged and traceable. In addition, regular staff awareness-raising and clear internal rules for processing change requests are recommended.

? What is the difference between Master Data Management and the master data process?

The master data process describes the organisational procedure – who creates, who checks, who releases. Master Data Management (MDM) is the systems approach that manages master data centrally, distributes it and automatically enforces quality rules. The two belong together: without a clear process, an MDM system does not deliver its full benefit.

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