

SAP PROCUREMENT

Qlik Application Documentation

Space: Demo_AI_Shared

Owner: Jandre Killian

Data Source: SAP BW System

Last Reload: 12 October 2020

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1. Application Overview

The SAP Procurement application is a Qlik Cloud analytics solution built on transactional data extracted from a SAP BW system. It serves a global holding company whose subsidiary companies operate across diverse industries including electronic products, automotive, chemicals and pharmaceuticals.

The application provides end-to-end visibility into procurement activities, enabling business users to monitor key performance indicators, identify trends, analyse vendor performance, and detect quality issues such as defective product deliveries.

1.1 Application Details

Property	Value
Application Name	SAP Procurement
Application ID	e2a87618-a993-4116-9539-f634940cb40b
Space	Demo_AI_Shared (Shared)
Owner	Jandre Killian
Data Source	SAP BW System
Last Reload	12 October 2020
Created	27 February 2026
Total Fields	41 Fields
Total Records	~505,352 fact rows
Total Sheets	7 Sheets
Master Measures	28 Master Measures
Master Dimensions	17 Master Dimensions

2. Sheets & Visualisation Objects

The application contains 7 published sheets. Each sheet is focused on a specific analytical topic. The table below lists all objects on each sheet.

2.1 Dashboard

Executive overview of the 4 main KPIs — Amount, Cost of Goods, Quantity and Defects. Contains top-5 bar charts per KPI alongside KPI tiles for quick at-a-glance monitoring.

Object Type	Title	Description
KPI	Total Amount KPI	Total procurement amount spend.
KPI	Total Cost of Goods KPI	Aggregate cost of goods across all orders.
KPI	Total Quantity KPI	Total units procured.
KPI	Total Defects KPI	Total defective units received.
Bar Chart	Top 5 by Amount	Top 5 vendors/materials ranked by procurement amount.
Bar Chart	Top 5 by Cost of Goods	Top 5 ranked by cost of goods.
Bar Chart	Top 5 by Quantity	Top 5 ranked by quantity ordered.
Bar Chart	Top 5 by Defects	Top 5 ranked by number of defective products received.
Filter Pane	Global Filters	Filters for Company Code, Vendor, Plant, Material and dates.

2.2 Detail Overview

Granular table listing all purchase orders with full transactional detail. Intended for drill-down and data validation by procurement analysts.

Object Type	Title	Description
Table	Purchase Order Detail Table	Full line-item table of all purchase orders including document number, vendor, material, plant, amounts, quantities and dates.
Filter Pane	Detail Filters	Field-level filters to narrow the order listing.

2.3 Defective Products

Detailed quality analysis sheet focused on defective product receipts. Supports root-cause analysis by vendor, plant and material.

Object Type	Title	Description
KPI	Total Defects	Sum of all defective units.
KPI	Defect Rate	Percentage of defective units vs total quantity.
KPI	Cost of Defective Products	Estimated financial impact of defects.
KPI	Avg Defect Amount	Average defect count per transaction.

Bar Chart	Top 10 Most Defects	Top 10 vendors or materials with the highest defect count.
Bar Chart	Top 10 Most Costly Defects	Top 10 by financial cost of defective products.
Combo Chart	Defect & Amount Trend	Combined trend of defect volume against procurement amount over time.
Line Chart	Defect Trend	Time-series view of defect volumes.
Map	Plant Defect Map	Geographic bubble map showing which plants received the most defective products. Bubble size = defects; colour = order volume.
Scatter Plot	Amounts vs Defects Plot	Scatter plot comparing order amounts against defect counts. Bubble size represents Cost of Goods.
Filter Pane	Defect Filters	Contextual filters for this sheet.

2.4 Cost of Goods

Detailed cost analysis sheet exploring the relationship between procurement spend, cost of goods and quality outcomes.

Object Type	Title	Description
KPI	Cost of Goods YTD CY	Year-to-date cost of goods for the current year.
KPI	Cost of Goods YTD PY	Prior year comparison of cost of goods.
KPI	Avg Price CY	Average price per unit for current year.
KPI	Avg Price PY	Average price per unit for prior year.
KPI	Overall Avg Price	Overall blended average price across all periods.
Combo Chart	What is the Cost Trend?	Time-series combo chart overlaying cost of goods and amounts.
Combo Chart	Cost Overview	Combined bar/line overview of cost structure.
Bar Chart	Top 10 Highest Cost of Goods	Top 10 materials or vendors by total cost of goods.
Scatter Plot	Are Expensive Products Less Likely to be Defective?	Analysis of price vs defect rate. Bubble size = total cost spend on material.
Filter Pane	Cost Filters	Date and dimension filters for cost analysis.

2.5 Quantity Analysis

Geographic and trend analysis of procurement quantities by plant, vendor and country.

Object Type	Title	Description
Line Chart	Quantity Trend	Time-series line chart of total procurement quantities over time.
Map	Quantity by Plant	Geographic map showing quantity distribution across plant locations.

Map	Quantity by Vendor	Geographic map showing quantity supplied by vendor location.
Treemap	Quantity by Vendor Country and City	Hierarchical treemap breaking down quantities by country then city.
Filter Pane	Quantity Filters	Dimension and date filters for quantity analysis.

2.6 Order Amount

Analysis of order amounts by business area, plant and time. Highlights trends and geographic distribution of order values.

Object Type	Title	Description
KPI	Amount YTD CY	Year-to-date order amount for current year.
KPI	Amount YTD PY	Prior year order amount for comparison.
KPI	Avg Order Amount	Average order value per document.
Combo Chart	What is the Order Amount Trend?	Trend of order amounts over time using bar and line combination.
Bar Chart	What Business Area is Up and Coming?	Business areas with growing order amounts.
Distribution Plot	What Business Area is the Focus of Each Plant?	Distribution of business area spend per plant.
Map	Where are the Largest Order Amounts by Plant?	Geographic map with plants sized by order amount; coloured by average order size.
Treemap	What Sales Unit is Responsible for the Most Orders?	Treemap breakdown of order count by sales unit / cost centre.
Filter Pane	Order Amount Filters	Contextual filters for this sheet.

2.7 Dynamic Report

User-configurable self-service report. Users choose the Dimension and Metric they wish to analyse, and the table adjusts dynamically. Enables ad-hoc analysis without requiring new sheets.

Object Type	Title	Description
Table	Dynamic Analysis Table	Configurable table driven by dimension and metric selections.
Filter Pane	Dimension Selector	Select the dimension axis (e.g., Vendor, Plant, Material, Company Code, Business Area).
Filter Pane	Metric Selector	Select the metric to display (e.g., Amount, Cost of Goods, Quantity).

3. Data Fields

The application data model contains 41 fields organised across 6 logical table contexts: Facts (transactional data), Business Area, Company Code, Material, Plant, Vendor, Dimensions, and KPIs. The fields table below documents each field's purpose, data type and cardinality.

Field Name	Table Context	Type	Distinct Values	Description
RowNoNew	Facts	Integer	505,352	Unique sequential row identifier for each transaction record.
RowNum	Facts	Integer	505,352	Alternative row number used for distinct defect counting.
0CHNGID	Facts	Text	1	Change ID flag from SAP BW (single value).
0RECORDTP	Facts	Text	1	Record type indicator from SAP BW.
CO_AREA	Facts	Text	13	Controlling area code. Groups company codes under a common accounting framework.
0CO_DOC_NO	Facts	Text	71,848	Controlling document number — the primary purchase order identifier.
0CO_ITEM_NO	Facts	Text	617	Line item number within a controlling document.
0FISCVARNT	Facts	Text	1	Fiscal year variant (single value — K4 standard calendar).
0CURRENCY	Facts	Text	10	Transaction currency code (ISO format, e.g., EUR, USD, ZAR).
BUS_AREA	Facts / Business Area	Text	17	Business area code. Links to BUS_AREA_TEXT for the descriptive label.
0CHRT_ACCTS	Facts	Text	7	Chart of accounts identifier used across company codes.
COMP_CODE	Facts / Company Code	Text	18	Company code. Links to COMP_CODE_TEXT. Core organisational unit.
COSTCENTER	Facts	Text	265	Cost centre code used for internal cost allocation.
0COSTELMNT	Facts	Text	160	Cost element (G/L account grouping) for the transaction.
0DB_CR_IND	Facts	Text	2	Debit / credit indicator (D = debit, C = credit).
0DOC_DATE	Facts	Date	581	Document date — the date the purchase document was created in SAP.
0EMPLOYEE	Facts	Text	15	Employee ID associated with the procurement document.
0FISCPER	Facts	Text	48	Fiscal period in YYYYPPP format (e.g., 2020001 = Jan 2020).
POSTING_DATE	Facts	Date	608	Goods receipt / posting date. Primary date field used for time intelligence and calendar auto-calculations.

Quantity	Facts	Numeric	1,001	Number of units procured per line item.
Amount	Facts	Numeric	481	Procurement order amount in the transaction currency.
Cost of Goods	Facts	Numeric	128,684	Cost of goods associated with the procurement transaction. Used to calculate average price and cost impact of defects.
Defects	Facts	Integer	51	Number of defective units identified for the order line item. Zero indicates no defects.
MATERIAL	Facts / Material	Text	15,195	SAP material number. Links to MATERIAL_TEXT.
PLANT	Facts / Plant	Text	68	SAP plant code. Links to PLANT_TEXT.
VENDOR	Facts / Vendor	Text	1,766	SAP vendor number. Links to VENDOR_TEXT and other vendor attributes.
GL_ACCOUNT	Facts	Text	55	General ledger account number for the transaction.
BUS_AREA_TEXT	Business Area	Text	16	Business area description corresponding to BUS_AREA code.
COMP_CODE_TEXT	Company Code	Text	18	Company code description corresponding to COMP_CODE.
MATERIAL_TEXT	Material	Text	6,039	Material description text corresponding to MATERIAL code.
PLANT_TEXT	Plant	Text	51	Plant description text corresponding to PLANT code.
VENDOR_TEXT	Vendor	Text	1,713	Vendor name text corresponding to VENDOR code.
VENDOR_ZIP	Vendor	Text	964	Vendor postal / ZIP code. Used for geographic mapping.
VENDOR_CITY	Vendor	Text	676	Vendor city. Used in geographic and treemap visualisations.
VENDOR_COUNTRY_ISO	Vendor	Text	23	Vendor country in ISO 2-letter format. Used for map and geographic analysis.
Dimension	Dimensions	Text	5	Dynamic dimension selector label used on the Dynamic Report sheet. Values: Vendor, Plant, Material, Company Code, Business Area.
Description	Dimensions	Text	5	Description of the selected dynamic dimension.
DimensionNo	Dimensions	Integer	5	Numeric key for the selected dimension, used internally for set analysis.
Metric	KPIs	Text	3	Dynamic KPI metric label. Values: Amount, Cost of Goods, Quantity.
MetricNo	KPIs	Integer	3	Numeric key for the selected KPI metric.
MetricFormula	KPIs	Text	3	Qlik expression formula for the selected KPI metric, evaluated at runtime.

4. Master Measures

The application defines 28 master measures covering base aggregations, year-to-date comparisons (current year vs prior year), quality metrics and calculated ratios. All YTD measures use the POSTING_DATE auto-calendar for dynamic year resolution.

Measure Name	Expression	Description
Amount	sum([Amount])	Total procurement order amount.
# Orders	count(distinct [OCO_DOC_NO])	Count of unique purchase order documents.
# Vendors	Count(distinct VENDOR)	Count of distinct vendors.
# Defects	count(distinct {<Defects=-{0}>}RowNum)	Count of transactions with at least one defective unit.
Quantity	sum([Quantity])	Total procured quantity across all line items.
Cost of Goods	sum([Cost of Goods])	Total cost of goods.
Defects	sum(Defects)	Total sum of defective units.
Avg Order Amount	sum(Amount) / count(distinct [OCO_DOC_NO])	Average order value per unique document.
Avg Cost of Goods	sum([Cost of Goods]) / count(distinct [OCO_DOC_NO])	Average cost of goods per order document.
Avg Price	sum([Cost of Goods]) / sum(Amount)	Blended average price ratio (Cost of Goods / Amount).
Overall Avg Price	sum(Total [Cost of Goods]) / sum(Total Amount)	Overall average price ignoring all dimension context.
Avg Defect Amount	avg(Defects)	Average number of defects per transaction.
Cost Defective Products	sum(Defects) * (sum([Cost of Goods]) / sum(Amount))	Estimated cost of defective products (proportional).
Total Spend	Sum(Amount)	Total spend — governed master measure equivalent of Amount.
Total Defects	Sum(Defects)	Total defective units — governed master measure.
Total Quantity	Sum(Quantity)	Total quantity — governed master measure.
Defect Rate	Sum(Defects) / Sum(Quantity)	Defect rate as a proportion of total quantity.
Cost of Defective Products	Sum(Defects) * (Sum([Cost of Goods]) / Sum(Amount))	Financial impact of defective products.
Amount YTD CY	Sum({<[POSTING_DATE.autoCalendar.Year]={...CY}>}[Amount])	Year-to-date amount for the current (most recent) year.
Amount YTD PY	Sum({<[POSTING_DATE.autoCalendar.Year]={...PY}>}[Amount])	Year-to-date amount for the prior year.

Cost of Goods YTD CY	Sum({<..CY..>} [Cost of Goods])	Year-to-date cost of goods for the current year.
Cost of Goods YTD PY	Sum({<..PY..>} [Cost of Goods])	Year-to-date cost of goods for the prior year.
Quantity YTD CY	Sum({<..CY..>} [Quantity])	Year-to-date quantity for the current year.
Quantity YTD PY	Sum({<..PY..>} [Quantity])	Year-to-date quantity for the prior year.
Defects YTD CY	Sum({<..CY..>} [Defects])	Year-to-date defects for the current year.
Defects YTD PY	Sum({<..PY..>} [Defects])	Year-to-date defects for the prior year.
Avg Price CY	sum({..CY..} [Cost of Goods]) / sum({..CY..} Amount)	Average price ratio for the current year.
Avg Price PY	sum({..PY..} [Cost of Goods]) / sum({..PY..} Amount)	Average price ratio for the prior year.

5. Master Dimensions

17 master dimensions are defined in the application library. Several include calculated expressions for time intelligence and dynamic reporting. Drill-capable dimensions (TimeDrill, MaterialDrill) support interactive drill-down in compatible chart types.

Dimension Name	Field / Expression	Description
Company Code	COMP_CODE_TEXT	Company code description. Top-level organisational grouping.
Vendor	VENDOR_TEXT	Vendor name for supplier-level analysis.
Vendor Country	VENDOR_COUNTRY_ISO	Vendor country ISO code for geographic grouping.
Vendor Country ISO	VENDOR_COUNTRY_ISO	Alternate master dimension for ISO country code.
Vendor City	VENDOR_CITY	Vendor city for city-level geographic analysis.
Plant	PLANT_TEXT	Plant description for receiving location analysis.
Material	MATERIAL_TEXT	Material description for product-level analysis.
Business Area	BUS_AREA_TEXT	Business area description for organisational segment analysis.
Order Document	OCO_DOC_NO	Purchase order document number for order-level drill-down.
Order Posting Date	POSTING_DATE	Transaction posting date for time-based analysis.
Year	POSTING_DATE.autoCalendar.Year	Calendar year derived from POSTING_DATE via auto-calendar.
Month	=month(POSTING_DATE)	Calendar month derived from POSTING_DATE.
YearQuarter	=year(POSTING_DATE)&'-Q'&Ceil(Month(POSTING_DATE)/3)	Year-quarter label (e.g., 2020-Q1) for quarterly trending.
TimeDrill	=year(POSTING_DATE)	Drill-capable time dimension starting at year level.
MaterialDrill	MATERIAL_TEXT	Drill-capable material dimension.
Dimension	Dimension	Dynamic dimension selector for the Dynamic Report sheet.
Metric	Metric	Dynamic KPI metric selector for the Dynamic Report sheet.

6. Data Model & Architecture Notes

6.1 Source System

All data originates from a SAP BW (Business Warehouse) system. The extraction includes transactional procurement postings from multiple controlling areas and company codes across the global holding group.

6.2 Table Structure

The data model follows a star-schema pattern with one central fact table and several lookup (dimension) tables:

- **Facts** — Core transactional table with 505,352 rows containing all procurement postings, quantities, amounts, cost of goods and defect counts.
- **Business Area** — Lookup table mapping BUS_AREA codes to BUS_AREA_TEXT descriptions (17 distinct codes).
- **Company Code** — Lookup table mapping COMP_CODE to COMP_CODE_TEXT (18 company codes spanning multiple countries).
- **Material** — Lookup mapping MATERIAL to MATERIAL_TEXT with 6,039 unique material descriptions.
- **Plant** — Lookup mapping PLANT to PLANT_TEXT (51 plant descriptions across 68 plant codes).
- **Vendor** — Extended lookup table mapping VENDOR to VENDOR_TEXT plus geographic attributes: VENDOR_ZIP, VENDOR_CITY, VENDOR_COUNTRY_ISO. Contains 1,766 unique vendors across 23 countries.
- **Dimensions** — Small metadata table (5 rows) driving the dynamic dimension selector on the Dynamic Report sheet.
- **KPIs** — Small metadata table (3 rows) driving the dynamic metric selector on the Dynamic Report sheet.

6.3 Time Intelligence

POSTING_DATE is the primary date field and is configured with Qlik's auto-calendar. This generates derived calendar fields (Year, Month, Quarter, YearMonth, Week etc.) enabling the YTD current year / prior year measures to dynamically resolve based on the most recent year present in the data.

6.4 Dynamic Reporting

The Dynamic Report sheet uses a parameterised approach where two inline tables (Dimensions and KPIs) act as selectors. Users filter on the Dimension field to switch the analysis axis, and filter on the Metric field to switch the measure being displayed. The MetricFormula field holds the Qlik expression evaluated at runtime, allowing a single table object to serve as a flexible self-service report without hard-coding dimensions or measures.

6.5 Key Relationships

Fact Field	Lookup Table	Linked Field
BUS_AREA	Business Area	BUS_AREA_TEXT
COMP_CODE	Company Code	COMP_CODE_TEXT
MATERIAL	Material	MATERIAL_TEXT
PLANT	Plant	PLANT_TEXT

VENDOR	Vendor	VENDOR_TEXT / VENDOR_CITY / VENDOR_ZIP / VENDOR_COUNTRY_ISO
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7. KPI Glossary

The four primary KPIs used throughout the application are defined as follows:

KPI	Formula	Business Meaning
Order Amount	Sum(Amount)	Total monetary value of procurement orders placed. Reflects overall procurement spend in the transaction currency.
Cost of Goods	Sum(Cost of Goods)	Total cost of goods associated with procured items. Represents the actual goods value as opposed to the order amount, used for margin and pricing analysis.
Quantity	Sum(Quantity)	Total number of units procured across all line items. Used to analyse purchasing volumes and geographic distribution.
Defects	Sum(Defects)	Total number of defective units identified at goods receipt. Drives quality KPIs including Defect Rate and Cost of Defective Products.