Optimising the Procurement-to-Pay Process at Stalmor S.A.

Information Systems for international business module – 3rd year

BUT Techniques de Commercialisation – IUT Nord Franche-Comté

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Link to the project's GitHub repository

https://tinyurl.com/StalmorProject2025

1. Company Profile

Name: Stalmor S.A.

Headquarters: Gdańsk, Poland

Founded: 1994 during Poland's post-communism industrial revival. A group of former Gdańsk Shipyard engineers and local investors launched Stalmor to modernise Poland's heavy-steel fabrication capabilities and serve the emerging offshore and renewable-energy sectors. What began as a 40-person fabrication shop supplying shipyards has grown into a multinational industrial group with more than 4,200 employees and customers across Europe and North America.

Annual Revenue (FY2024): approx. €750 million

Primary Activity: Stalmor designs and manufactures high-strength steel structures, precision drive systems, and large-scale mechanical assemblies for demanding applications such as:

- **Renewable energy**: offshore wind-turbine towers, nacelle components, and gearbox housings.
- **Shipbuilding & marine infrastructure**: heavy-duty propulsion shafts, hull reinforcements, and port-handling equipment.
- **Heavy equipment & industrial plants**: custom steel frames, pressure-resistant piping, and advanced drivetrain components.

2. Industrial Footprint

Location	Key Role
Gdańsk (HQ)	Corporate management, R&D, advanced machining, final assembly
Katowice	Steel forging, heavy fabrication
Łódź	Gearbox and drivetrain assembly
Poznań	Component finishing, quality control
Hamburg, Germany	Logistics and Western-Europe distribution hub
Constanța, Romania	Service centre for Black Sea offshore projects

Stalmor exports over 65 % of production to EU countries, the UK, and North America. Major customers include wind-turbine OEMs, global shipyards, and heavy-equipment manufacturers.

3. Market & Business Challenges

Stalmor operates at the crossroads of **renewable energy, shipbuilding, and heavy industrial equipment**, sectors that are expanding but highly competitive. The company's location in the Baltic provides deep-water port access for export but also exposes it to operational risks. Key challenges include:

Global Commodity Volatility

- Prices for critical inputs such as steel, nickel, and rare-earth elements can rise sharply due to geopolitical tensions and shifting demand from EV and battery markets.
- Currency fluctuations between the Polish złoty (PLN) and the euro (EUR) add uncertainty to material costs, complicating budgeting and supplier contracts.

Supply-Chain Disruption & Logistics

- Periodic congestion in Baltic ports (Gdańsk, Gdynia) due to improved dynamism of Poland's industrial sector delays inbound raw materials and outbound finished goods.
- Global shipping constraints, including container shortages, disruption to major shipping routes and rising freight rates create unpredictability in delivery schedules and working-capital requirements.

Regulatory & Sustainability Pressures

- The **EU Green Deal** and Poland's own *Polityka Energetyczna* require detailed **CO_2 reporting** and lifecycle carbon accounting.
- Increasing expectations for **ISO 14001-certified suppliers** and traceable "green steel" sourcing raise procurement complexity.

Labour & Talent Market

- Skilled welders, machinists, and process engineers are in high demand across the *Trójmiasto* (Gdańsk–Gdynia–Sopot) area.

Competitive Landscape

- Aggressive pricing from Asian and Eastern-European competitors threatens Stalmor's margins.
- Customers, including major wind-turbine OEMs and global shipbuilders, demand **shorter lead times** and **greater cost transparency**, pressuring Stalmor to streamline its Procure-to-Pay process.

4. Project Mandate

Stalmor's CEO and CFO have commissioned an end-to-end analysis of the Procure-to-Pay (P2P) process, covering three full fiscal years (January 2022 – December 2024).

This analysis mainly aims to tackle recurring issues:

- **Spend visibility gaps:** Current ERP reports are fragmented by plant and currency, making it difficult for executives to see total spend, identify supplier concentration risks, or monitor commodity price trends.
- **Process inefficiencies:** Initial internal audits show that purchase-to-payment cycle times vary widely—some invoices are paid within 18 days, others take more than 60.
- **Supplier performance concerns:** On-Time-Delivery (OTD) delivery rates are inconsistent, affecting production schedules and customer commitments.
- **ESG reporting needs:** From 2025, Stalmor must provide reliable and verifiable emissions data to major customers and EU regulators; procurement data is a critical input.

As a team of junior data & process analysts, you have been engaged to deliver a fact-based assessment and practical recommendations.

Specifically, you will:

- Map and evaluate the current P2P process – from purchase requisition through supplier payment – using BPMN 2.0 to visualise responsibilities, gateways, and data flows.
- Consolidate and analyse three years of transactional data to provide data-driven insights on spend trends, supplier performance, and process efficiency across all Stalmor sites and currencies.
- Recommend concrete improvements that reduce costs, cut cycle times, and support Stalmor's sustainability commitments.

5. Key Business Questions

Your analysis should enable executives to answer and address questions on following points (non-exhaustive list):

Spend & Growth

- Total spend per year, by plant, category, and currency.
- Year-over-year growth and seasonal patterns.

Supplier Performance

- On-Time-Delivery (OTD) rate.
- Top 10 suppliers and their share of total procurement.
- Price variance compared to historical averages.

Process Efficiency

- Average cycle time from requisition to payment.
- % of invoices with price or quantity mismatches.
- Average Days Payable Outstanding (DPO) and missed early-payment discounts.

Sustainability & Compliance

- Share of spend with ISO 14001-certified suppliers.
- Estimated CO_2 footprint by category.

6. Data Provided

Three years of operational data (CSV format) extracted from Stalmor's ERP:

Table	Key Fields
Suppliers	SupplierID, Name, Country, Category, ISO14001Flag
Items	ItemID, Category, Subcategory, CO_2_Factor
PO_Details	POID, Plant, SupplierID, Buyer, PODate, Currency
Receipts	POID, Line, ReceiptDate, QtyReceived
Invoices_Payments	InvoiceID, SupplierID, POID, InvoiceDate, Amount, Status, PaymentID, PaymentDate, Amount

More information in the Appendix *Stalmor SA – P2P Data Dictionary*.

Plants purchase in PLN, EUR, and USD, but corporate reporting is in EUR.

7. Your Assignment

a. Process Modelling

Create a BPMN 2.0 diagram of the current P2P process, that includes:

- Swimlanes for Engineering, Procurement, Supplier, Goods Receiving, and Accounts Payable.
- Gateways for invoice match/exception handling.
- Data objects (Purchase Order, Goods Receipt, Invoice).
- Bonus: A sub-process for Supplier Onboarding.

Identify pain points (e.g., manual invoice checks, long approval chains) and propose at least three improvements (e.g., automated 3-way match, supplier portal, e-invoicing).

b. Data & Power BI

Import and clean the CSV files using Power Query.

Cleaning the data means that you must ensure that all your data will be in a suitable format for analysis:

- Having proper data types for all of your columns (numbers shall be numbers, date shall be dates, etc.)
- Check data format and locale settings (e.g. text “5.2” is not the same as number “5,2”)

You will also have to build your star schema data model that will link all your data tables together:

#	From	To	Cardinality	Cross-filter	Status
1	Receipts[POID_Line]	PO_Details[POID_Line]	1 – *	Both	Active
2	Items[ItemID]	PO_Details[ItemID]	1 – *	Single	Active
3	Invoices_Payments[POID]	PO_Details[POID]	1 – *	Both	Active
4	Suppliers[SupplierID]	PO_Details[SupplierID]	1 – *	Single	Active

Develop DAX measures, such as (non-exhaustive list):

Total Spend	Invoiced Amount	Paid Amount
Open invoiced amount	Count of PO	Count of Invoices
Count of Suppliers	Average PO Line Value	Invoice Coverage %
Payment Coverage %	OTD%	ISO14001 Spend%

c. Reporting & Storytelling

Design a Power BI report (you can use multiple pages) that includes:

- Executive Overview – headline KPIs and YoY trends.
- Supplier & Category Analysis – top suppliers, regional distribution, price variance.
- Process Efficiency & Exceptions – cycle times, invoice mismatches, late payments.

Add slicers for Year, Plant, Item category and supplier category. Don't forget to use a consistent color palette and adopt clear navigation between your pages. Again, the list of slicers is not exhaustive in any way!

d. Management Memo

Write a two-page memo summarizing:

- Key findings and root causes.
- Three prioritised actions with expected financial/operational impact.
- Implications for Stalmor's ESG reporting.

e. Deliverables & Schedule

You'll have to hand out by the end of the semester:

- A pdf report including your BPMN process diagram and the management memo (no minimum / maximum page count)
- A Power BI report (.pbix file) including all your analysis (b. and c. sections above)

8. Learnings

This project places you in the role of an analytics consultant in a real international industrial context. You'll learn to:

- Map and critique an end-to-end procurement process.
- Build a professional Power BI model and dashboard.
- Translate raw data into actionable insights for senior management.

By the end, you will have experienced the same challenges faced by analytics teams in leading manufacturing firms across Europe (and more generally, the world). Mastering these concepts and skills can really make you stand out throughout your professional career. Good luck!

9. Appendix : Stalmor SA – Procure-to-Pay (P2P) Data Dictionary

a. Suppliers

Supplier master data. Used to identify, classify, and evaluate all external providers of goods and services.

Field	Description
SupplierID	Unique supplier identifier.
Name	Official supplier name.
Country	Supplier's country of registration.
Category	Business domain or category (Steel, Machining, Logistics, etc.).
ISO14001Flag	Indicates ISO 14001 certification status for environmental management.

b. Items

Master list of purchased materials and components. Supports spend analysis and sustainability reporting.

Field	Description
ItemID	Unique item identifier.
Category	Main material group (Steel, Electrical, Fabrication, etc.).
Subcategory	Detailed classification within the main category.
CO2_Factor	Average carbon footprint per euro spent (kg CO2 / EUR).

c. PO_Details (Purchase Orders)

Records all purchase orders created by Stalmor plants. Provides visibility into procurement activity, spend, and sourcing behavior.

Field	Description
POID	Unique purchase order identifier.
Line	Purchase order line number.
Plant	Issuing plant (Gdańsk, Katowice, Łódź, Poznań).
SupplierID	Reference to the supplier providing the goods or services.
ItemID	Reference to the purchased item.
Buyer	Internal buyer responsible for the purchase order.
PODate	Date the purchase order was created.
DeliveryDueDate	Expected delivery date.
Currency	Currency used for the transaction.
Qty	Ordered quantity.
UnitPrice	Price per unit in local currency.
LineAmountNative	Line value in local currency.
FX_to_EUR	Exchange rate applied to convert local currency to EUR at order date.
LineAmountEUR	Line value converted to EUR.

d. Receipts

Logs goods receipts for ordered materials. Used to measure delivery performance and order fulfillment.

Field	Description
POID	Linked purchase order identifier.
Line	Corresponding purchase order line number.
ReceiptDate	Date when goods were physically received.
QtyReceived	Quantity received (may differ from quantity ordered).

5. Invoices & Payments

Consolidated record combining invoices with related payment information. Enables analysis of payment behavior, cash flow, and supplier performance.

Field	Description
InvoiceID	Unique invoice identifier.
SupplierID	Supplier issuing the invoice.
POID	Associated purchase order reference, if available.
InvoiceDate	Date when the invoice was issued.
Amount	Invoice amount in local currency.
AmountEUR	Invoice amount converted to EUR.
FX_to_EUR_Inv	Exchange rate applied for conversion to EUR.
Status	Invoice matching status (Matched, Pending, or Disputed).
PaymentID	Unique identifier of the payment transaction, if applicable.
PaymentDate	Date when payment was issued.
PaymentAmount	Paid amount in local currency.
PaymentAmountEUR	Paid amount in EUR.