CONCEPT

AI in Procurement and Supply Chain: Spend Analytics, Sourcing and Supplier Risk



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Technical depth: Practitioner · **Practical mode:** Lab

Introduction

Procurement functions hold years of spend, supplier and contract data, yet most sourcing decisions still rely on manual analysis and incomplete classification. Vendors promise AI-driven savings, while buyers experiment with generative AI without controls on accuracy, confidentiality or accountability. This Core Concept course equips procurement and supply chain managers to apply machine learning and generative AI across the source-to-pay cycle, from spend classification to supplier risk sensing, under recognised AI governance standards. Participants work hands on with datasets from several sectors and leave with an AI Procurement Use Case Roadmap for their own function.

Course Objectives

- Map machine learning and generative AI use cases onto the procurement and supply cycle and assess the data each one needs
- Classify and analyse spend with machine learning against a UNSPSC taxonomy
- Use generative AI assistants to draft specifications and RFx documents and to compare bids, with verification steps
- Detect supplier risk, price anomalies and fraud indicators through AI-driven monitoring
- Apply ISO/IEC 42001 and NIST AI RMF controls, including human oversight, to procurement AI
- Produce an AI Procurement Use Case Roadmap for the participant's own procurement function

Target Audience

- Procurement and category managers responsible for sourcing strategies and savings delivery
- Supply chain managers accountable for supplier performance and continuity
- Procurement excellence and systems managers leading source-to-pay digitalisation
- Supplier risk and supplier relationship managers
- Purchasing and contracts managers in public and private organisations

Course Outline

Day 1: AI in the Procurement and Supply Landscape

- AI Use Case Map Across the CIPS Procurement and Supply Cycle
- SCOR Digital Standard Processes and AI Touchpoints
- Procurement Data Sources: ERP, Purchase-to-Pay, Supplier Master and Contract Repositories
- Procurement AI Maturity and Data Quality Assessment
- AI Value Case Metrics: Savings, Cycle Time and Risk Exposure

Day 2: AI Methods, Models and Standards

- Machine Learning Essentials for Buyers: Classification, Regression and Clustering
- Large Language Models, Retrieval-Augmented Generation and Agentic AI in Sourcing
- UNSPSC Spend Taxonomy for Automated Classification
- Kraljic Portfolio Matrix Enriched with AI Market Intelligence
- ISO/IEC 42001:2023 and NIST AI RMF Requirements for Procurement AI

Day 3: Applying AI Across Source-to-Pay

- Spend Cube Build and Machine Learning Spend Classification Lab
- Generative AI Drafting of Specifications, RFx Documents and Evaluation Criteria
- Supplier Discovery and Bid Comparison with AI Assistants
- Should-Cost and Price Variance Analysis with Regression Models
- Invoice Matching and Purchase-to-Pay Exception Automation

Day 4: Supplier Risk, Integrity and AI Governance

- Supplier Risk Sensing from News, Financial and Logistics Signals
- Supply Disruption Scenario Analysis and Lead-Time Prediction
- Procurement Fraud and Collusion Red Flags with Anomaly Detection and ISO 37001 Controls
- ESG Supplier Screening Aligned to ISO 20400 Sustainable Procurement Guidance
- Bias, Explainability and Human Oversight Controls Under ISO/IEC 23894:2023

Day 5: Lab Case Work and the AI Procurement Roadmap

- Facilities Services Category Lab: From Spend Analysis to Sourcing Strategy with AI
- Manufacturing Supplier Base Case: Risk Scoring and Mitigation Plan
- AI Use Case Prioritisation Matrix for an Own Procurement Function
- AI Procurement Use Case Roadmap Drafting
- Peer Challenge Panel and Roadmap Defence

Skills You Will Gain

- Spend Analytics
- AI Use Case Prioritisation
- Prompt Engineering for Sourcing
- Supplier Risk Monitoring
- Procurement Data Governance
- Procurement Fraud Analytics
- Human-in-the-Loop Decision Design

Why Attend This Course

- Return with an AI Procurement Use Case Roadmap that ranks use cases by value, data readiness and risk
- Judge vendor claims about procurement AI against what the data and models can actually deliver
- Cut drafting and analysis time with generative AI while keeping sourcing decisions defensible to auditors
- Compare adoption experience with procurement leaders from manufacturing, services and public organisations in several countries

Conclusion

AI changes procurement only when it is applied to clean data, targeted at real decisions and kept under human control. This course moves from the AI use case map and data readiness, through machine learning, generative AI and governance standards, to hands-on spend, sourcing and payment analysis, and then to supplier risk, fraud detection and oversight controls. The final day turns that work into an AI Procurement Use Case Roadmap, giving each participant a prioritised and governed path to the first pilots.