# Quote Comparison Agent - Engineering Requirements

## 1. Overview

The Quote Comparison Agent is responsible for systematically comparing supplier quotes against existing procurement baselines (Purchase Orders, Invoices, Contracts, Benchmarks) to highlight cost-saving opportunities, discrepancies, and actionable insights. It integrates tightly with the Opportunity Agent, Supplier Ranking Agent, and Approvals Agent to support negotiation, sourcing, and decision workflows.

## 2. Functional Requirements

The Quote Comparison Agent must support:

- Quote ingestion from structured sources (already extracted by Document Processing Agent).

- Mapping of quote line items to Items, Categories, Supplier\_ID, and Contract baselines.

- Comparison logic across multiple dimensions: unit price, total cost, delivery terms, payment terms, warranty coverage.

- Automatic variance detection vs. PO, Invoice, and Contract baselines.

- Identification of cost-saving opportunities (≥10 per category minimum).

- Supplier ranking calculation (i.e. Weights: Price 70%, Terms 20%, Transactional Accuracy 10%).

- Triggering of opportunities for Approvals, Negotiation Packs, and Dashboards.

## 3. Data Model

Key entities and attributes include:

- Quote: Quote\_ID, Supplier\_ID, Category\_ID, Validity\_Date, Currency, Line\_Items.

- Line Item: Item\_ID, Unit\_Price, Quantity, Delivery\_Terms, Payment\_Terms, Warranty\_Terms.

- Mapping fields to link against: PO\_ID, Invoice\_ID, Contract\_ID, Benchmark\_ID.

- Variance flags: Price\_Variance, Term\_Variance, Total\_Variance.

- Calculated scores: Supplier\_Score, Opportunity\_Value.

## 4. Processing Flow

1. Receive supplier quotes (structured JSON/Excel from extraction agent).

2. Normalize quotes into unified schema and assign Supplier\_ID, Category\_ID.

3. Compare quote values against PO, Invoice, Contract, Benchmark baselines.

4. Detect discrepancies and calculate variances (% and absolute).

5. Rank suppliers and calculate opportunity values.

6. Push insights into UI, Approvals workflow, Negotiation Packs, and Dashboards.

## 5. Output Schema

Core fields in the output schema:

Quote\_ID, Supplier\_ID, Category\_ID, Item\_ID, Unit\_Price, Quantity, Currency, PO\_Reference, Invoice\_Reference, Contract\_Reference, Benchmark\_Reference, Price\_Variance, Term\_Variance, Total\_Cost\_Variance, Supplier\_Score, Opportunity\_Value.

## 6. UI & Platform Integration Requirements

### 6.1 Core UI Views

- Quote Comparison Table: side-by-side supplier view with variance highlighting (green/amber/red).

- Opportunity Insights Panel: dynamic panel with top 5 saving levers, linking to source data.

- Supplier Ranking Widget: embedded chart ranking suppliers with click-through to scoring rationale.

### 6.2 Workflow Integration

- Push to Approvals Agent: when exceptions are required (e.g., payment terms).

- Push to Negotiation Pack: generate one-click negotiation briefs (Excel/PDF).

- Push to Daily Manager Dashboard: highlight top 3 opportunities daily.

### 6.3 Interaction Features

- Filters: Supplier, Category, Currency, Term type.

- Sorting: By unit price, variance %, risk, or opportunity value.

- Export: Excel (full dataset with markers) and PDF (summary packs).

## 7. Non-Functional Requirements

- Performance: Must process ≥ 10,000 quote lines within 1 minute.

- Accuracy: ≥ 99.9% correct mapping of quote → PO/Invoice/Contract.

- Auditability: All variance detection must include source references and timestamps.

- Security: Data access aligned with procurement role-based access controls.

## 8. Acceptance Criteria

- For every sourcing category, the agent identifies ≥ 10 opportunities (cost or term based).

- Variance detection correctly highlights mismatches with PO, Invoice, and Contract baselines.

- Supplier rankings are calculated with weighted scores (70/20/10).

- Outputs render correctly in UI views (comparison table, insights panel, ranking widget).

- Opportunities successfully push into Approvals Agent, Negotiation Packs, and Dashboards.