**Resubmission –** **Phase 2 Data Understanding - Supplier Performance Analysis for Conagra Brands, Inc.**

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CS703-151W: Applied Data Science Project

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May 3, 2025

**2.0 Data Understanding**

**Task 2.1: Collect Initial Data**

Source: The dataset titled supplier\_performance\_cpg June 7 2025.csv contains supplier-level performance metrics from Conagra’s Consumer Packaged Goods (CPG) operations. The data spans multiple regions, countries, product categories, and supplier segments.

Initial Snapshot:

* Total rows: 15,750
* Data Type: Structured CSV file
* Target Units: Individual suppliers

**Key Fields**:

| **Column Name** | **Description** |
| --- | --- |
| SupplierID | Unique identifier for each supplier |
| Name | Supplier name |
| Region | Geographical sourcing region |
| Country | Supplier country of origin |
| ProductCategory | Broad product category supplied |
| Segment | Product segment (e.g., Primary, Secondary) |
| SegmentCriteria | Descriptive category explaining the segment assignment |
| OnTimeDeliveryRate (%) | Percentage of deliveries made on time |
| AvgLeadTime (days) | Average delivery time in days |
| FillRate (%) | % of order quantity delivered completely |
| LateShipmentCount | Count of delayed deliveries |
| PartialDeliveryCount | Count of incomplete shipments |
| DefectRate (%) | Rate of defective items delivered |
| FirstPassYield (%) | % of items passing quality inspection first try |
| IncomingRejectionPct (%) | % of items rejected upon receipt |
| QualityIncidentCount | Number of quality issues reported |
| CorrectiveActionCount | Number of corrective actions initiated |
| UnitCost (USD) | Average cost per unit supplied |

**Task 2.2: Describe Data**

**Data Types Overview:**

| **Field Type** | **Columns** |
| --- | --- |
| Categorical (Nominal) | SupplierID, Name, Region, Country, ProductCategory, Segment, SegmentCriteria |
| Numerical (Continuous) | OnTimeDeliveryRate, AvgLeadTime, FillRate, DefectRate, FirstPassYield, IncomingRejectionPct, UnitCost |
| Numerical (Discrete) | LateShipmentCount, PartialDeliveryCount, QualityIncidentCount, CorrectiveActionCount |

Example Data Records:

| **SupplierID** | **Region** | **OnTimeDeliveryRate** | **DefectRate** | **UnitCost** |
| --- | --- | --- | --- | --- |
| S001 | NA | 97.5 | 0.5 | 2.35 |
| S045 | EU | 88.0 | 2.1 | 1.98 |

**Task 2.3: Explore Data**

Initial Observations:

* Variation in On-Time Delivery: Ranges from ~60% to 100%. Performance varies by region and segment.
* Defect Rate & Rejection Rate: Skewed toward lower values, but some suppliers have outliers above 5%.
* Unit Cost vs. Quality: Preliminary correlation analysis needed to understand if higher unit cost implies better quality.
* Counts (LateShipmentCount): May need normalization due to supplier volume differences.

EDA Directions:

* Distribution plots for KPIs (histograms, boxplots).
* Correlation heatmap between metrics.
* Regional vs. global performance comparison.
* Outlier detection using z-score or IQR for defect and cost metrics.
* Missing/null value analysis.

**Task 2.4: Verify Data Quality**

Key Checks:

| **Check Type** | **Findings/Next Step** |
| --- | --- |
| Missing Values | Identify and quantify NA/null fields |
| Outliers | Investigate outliers in cost, lead time, defect % |
| Duplicate Records | Ensure SupplierID uniqueness |
| Consistency | Standardize categorical values (e.g., Region names) |
| Ranges/Thresholds | Validate KPIs are within logical bounds (0-100%) |

Anticipated Actions:

* Proceed with steps to clean and normalize dataset.

**References**

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