**Coffee Sales**

**Analysis and Transformation of Raw Data for Dashboard Creation**

**Overview of Raw Data**

The raw data consisted of three distinct sheets:

1. **Orders Sheet** – This contained order transaction details, including:
   * Order ID
   * Customer ID
   * Product ID
   * Quantity ordered
   * Price per unit
   * Order date
2. **Customers Sheet** – Included customer-related details:
   * Customer ID
   * Customer name
   * Country
   * Contact details
3. **Products Sheet** – Contained product-related information:
   * Product ID
   * Product name
   * Product category
   * Price

**Data Cleaning and Preparation**

Before analysis, the raw data underwent a cleaning and transformation process, which included:

* **Handling Missing Values:** Any blank or null entries were either filled with appropriate values or removed to maintain data integrity.
* **Removing Duplicates:** Duplicate records in the orders and customers sheets were identified and eliminated.
* **Standardizing Formats:**
  + Dates were formatted correctly to ensure consistency.
  + Numerical values (such as price and quantity) were set to the proper data type to prevent calculation errors.
* **Creating New Calculated Fields:**
  + A "Total Sales" column was added by multiplying Quantity and Price in the Orders sheet.

**Data Modeling and Relationship Building**

To enable meaningful analysis, relationships were established among the three datasets:

* **Merging Customer Information:** Used VLOOKUP and INDEX-MATCH functions to bring customer details into the Orders dataset based on Customer ID.
* **Integrating Product Details:** Extracted product names and categories from the Products sheet using VLOOKUP and added them to the Orders sheet.

**Methods and Excel Functions Used**

Several Excel functions were utilized for data transformation and modeling:

* **Lookup Functions:**
  + VLOOKUP(Customer ID, Customers Table, Column Index, FALSE) – Fetches customer details.
  + INDEX(Product Name, MATCH(Product ID, Products Table, 0)) – Retrieves product information dynamically.
* **Aggregation and Conditional Functions:**
  + SUMIF(Order Date, Criteria, Sales) – Calculates total sales for a given period.
  + COUNTIF(Country, Criteria) – Counts orders from different countries.
* **Date and Text Functions:**
  + TEXT(Order Date, "YYYY-MM") – Converts dates into a monthly format for trend analysis.
  + LEFT, RIGHT, MID – Extracts portions of text for data structuring.

**Dashboard Creation and Visualization**

The cleaned and structured data was then used to create an interactive dashboard with key performance indicators, including:

* **Pivot Tables and Pivot Charts:**
  + A **Sales Summary** pivot table summarizing total revenue.
  + A **Top 5 Customers** ranking table based on purchase volume.
  + A **Sales by Country** pivot chart visualizing geographic distribution.
* **Slicers for Dynamic Filtering:**
  + Implemented slicers for customer, country, and product category to allow users to filter data interactively.
* **Visual Representations:**
  + Used bar charts, pie charts, and line graphs to illustrate trends and comparisons.

**Conclusion**

By applying data cleaning, transformation, and modeling techniques, the raw data was converted into a structured format suitable for analysis. The final dashboard provides a user-friendly, interactive platform to derive meaningful insights, such as sales trends, customer behavior, and product performance. The use of Excel functions such as VLOOKUP, INDEX-MATCH, SUMIF, and Pivot Tables played a crucial role in optimizing data analysis and visualization.