**Formulas and Functions in Excel: Initial Analysis of Product Sales Data**

This time we shall do some exploratory data analysis of a dataset that includes information on product sales (for a fictional company).

**Sort and Filter**

**Sort the data by SalesAmount in descending order:**

1. Select the range of cells that includes the dataset (e.g., A1).
2. Go to the Data tab on the Excel ribbon.
3. In the Sort & Filter group, click on Sort.
4. In the Sort dialog box, choose SalesAmount from the Sort by dropdown.
5. Choose Largest to Smallest from the Order dropdown.
6. Click OK.

**Filter the data to show only sales from the Electronics category:**

1. Select the range of cells that includes the dataset (e.g., A1).
2. Go to the Data tab on the Excel ribbon.
3. In the Sort & Filter group, click on Filter.
4. Click the dropdown arrow in the Category column header.
5. Uncheck Select All and then check Electronics.
6. Click OK.

**Pivot Tables**

**Create a pivot table to summarize the total SalesAmount by Region:**

1. Click on the drop-down arrow for the Category column and clear the filter if you have not already done so.
2. Select the range of cells that includes the dataset (e.g., A1).
3. Go to the Insert tab on the Excel ribbon.
4. In the Tables group, click on PivotTable.
5. In the Create PivotTable dialog box, select where you want the PivotTable report to be placed (e.g., New Worksheet).
6. Click OK.
7. In the PivotTable Field List, drag Region to the Rows area.
8. Drag SalesAmount to the Values area.
9. Ensure the value field setting is Sum of SalesAmount.

**Create a pivot table to count the number of sales by ProductID and QuantitySold:**

1. Select the range of cells that includes the dataset (e.g., A1).
2. Go to the Insert tab on the Excel ribbon.
3. In the Tables group, click on PivotTable.
4. In the Create PivotTable dialog box, select where you want the PivotTable report to be placed (e.g., New Worksheet).
5. Click OK.
6. In the PivotTable Field List, drag ProductID to the Rows area.
7. Drag QuantitySold to the Columns area.
8. Drag SaleID to the Values area.
9. Ensure the value field setting is Count of SaleID.

**VLOOKUP**

**Use VLOOKUP to find the CustomerFeedback for SaleID 5:**

1. Click on the cell where you want to display the result (e.g., J2).
2. Enter the formula: =VLOOKUP(5, A2:I51, 9, FALSE).
3. Press Enter.

**Use VLOOKUP to find the SalesAmount for ProductID 207:**

1. Click on the cell where you want to display the result (e.g., J3).
2. Enter the formula: =VLOOKUP(207, C2:I51, 4, FALSE).
3. Press Enter.

**IF, SUMIFS, COUNTIFS**

**Use the IF function to create a column that labels sales amounts above 200 as "High" and others as "Low":**

1. Select the first cell of the new column where you want the results (e.g., J2).
2. Enter the formula: =IF(F2>200, "High", "Low").
3. Press Enter.
4. Copy the formula down to the other cells in the column.

**Use SUMIFS to calculate the total SalesAmount for sales in the South region:**

1. Click on the cell where you want to display the result (e.g., K2).
2. Enter the formula: =SUMIFS(F2:F51, H2:H51, "South").
3. Press Enter.

**Use COUNTIFS to count the number of sales with a QuantitySold of 3 or more:**

1. Click on the cell where you want to display the result (e.g., L2).
2. Enter the formula: =COUNTIFS(G2:G51, ">=3").
3. Press Enter.

**Descriptive Statistics Add-on**

**Install the Analysis ToolPak:**

1. Go to the File tab.
2. Select Options.
3. Choose Add-Ins.
4. In the Manage box, select Excel Add-ins and click Go.
5. Check the box for Analysis ToolPak and click OK.

**Use the Descriptive Statistics tool to calculate summary statistics for the SalesAmount column:**

1. Go to the Data tab.
2. In the Analysis group, click on Data Analysis.
3. In the Data Analysis dialog box, select Descriptive Statistics and click OK.
4. Select the range for the input data (e.g., F2).
5. Choose the output range where you want the analysis results (e.g., M1).
6. Check Summary statistics to include measures like mean, median, mode, standard deviation, etc.
7. Click OK.