The workshop guide provides detailed instructions organized into seven main modules. This workshop guide will both technical Excel skills and practical applications specific to vendor management and contract analysis.

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**Module 1: Excel Foundations for Procurement**

**1.1 Setting Up Your Data Environment**

**Step 1: Import and Format the Dataset**

1. Open Excel and create a new workbook
2. Go to the Data tab → From Text/CSV
3. Navigate to the "Vendor\_Contract\_Performance.csv" file and click Import
4. In the preview window, verify data types are correctly identified
5. Click Load

**Step 2: Format the Data as a Table**

1. Select all data (Ctrl+A)
2. Press Ctrl+T or click Insert → Table
3. Check "My table has headers" and click OK
4. Select a professional table style from the Table Design tab (recommended: "Table Style Medium 9")

**Step 3: Format Date and Currency Columns**

1. Select the Contract Value column
2. Press Ctrl+1 to open Format Cells dialog
3. Select Currency with 0 decimal places
4. Select the Contract Start Date and Contract End Date columns
5. Press Ctrl+1 and select Date format: mm/dd/yyyy or create custom

**Step 4: Set Up Data Validation for Rating Columns**

1. Select the Performance Rating column
2. Go to Data → Data Validation

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1. Set validation criteria:
   * Allow: Whole number
   * Data: between 1 and 5
2. On the Error Alert tab, set a custom message: "Performance Rating must be between 1 and 5"
3. Repeat for Quality Rating column

**Practice Activity:** Apply conditional formatting to the Performance Rating column where:

* 4-5 ratings appear with green background
* 3 ratings appear with yellow background
* 1-2 ratings appear with red background

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Step 1: Sort Data by Color (Optional)

Step 2: Filter by Rating or Color

Step 3: Create a Pivot Table for Summarized Analysis

Step 4: Data Visualization  
Step 5: Document Insights and Take Action

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**Module 2: Essential Functions for Procurement Analysis**

**2.1 Contract Analysis Functions**

**Step 1: Calculate Contract Duration**

1. Create a new column called "Contract Duration (Days)"
2. Enter formula: =[@[Contract End Date]]-[@[Contract Start Date]]
3. Format as Number with 0 decimal places

**Step 2: Calculate Contract Duration (Months)**

1. Create another column called "Contract Duration (Months)"
2. Enter formula: =DATEDIF([@[Contract Start Date]],[@[Contract End Date]],"m")
3. Format as Number with 0 decimal places

Note: It calculates the number of complete months, ignoring partial months, which is why 364 days shows as only 11 months instead of 12.

**Step 3: Identify Contract Status**

1. Create a column called "Contract Status"
2. Enter formula: =IF(TODAY()>[@[Contract End Date]],"Completed",IF(TODAY()<[@[Contract Start Date]],"Pending","Active"))

**Step 4: Calculate Days Remaining**

1. Create a column called "Days Remaining"
2. Enter formula: =IF([@[Contract Status]]="Completed",0,IF([@[Contract Status]]="Pending",DATEDIF(TODAY(),[@[Contract End Date]],"d"),DATEDIF(TODAY(),[@[Contract End Date]],"d")))
3. Format with conditional formatting to highlight contracts with fewer than 30 days remaining

**Practice Activity:** Create a formula that calculates the average daily contract value by dividing the contract value by the contract duration in days.

**2.2 Vendor Performance Analysis**

**Step 1: Create Performance Index Column**

1. Add a column called "Performance Index"
2. Enter formula: =([@[Performance Rating]]\*0.4)+([@[On-Time Delivery (%)]]/20)+([@[Quality Rating]]\*0.4)
3. Format as Number with 1 decimal place
4. Apply conditional formatting with data bars

Why Use Data Bars?

* Provides a quick visual comparison of values within a column.
* Highlights magnitude differences at a glance.
* Great for metrics like contract value, performance index, or number of items.

**Step 2: Create a VLOOKUP Reference Table**

1. On a new sheet named "Lookup Tables"
2. Create a Performance Category table:
   * Column A (Index Rating): 1, 2, 3, 4, 5
   * Column B (Category): “Needs Improvement”, "Fair", "Good", “Very Good”, "Excellent"

**Step 3: Categorize Performance**

1. Return to your data sheet
2. Add a column called "Performance Category"
3. Enter formula: =VLOOKUP([@[Performance Rating (1-5)]],Lookup\_Tables!$A$2:$B$6,2,TRUE)

**Step 4: Apply Business Rule Tags**

1. Add a column called “Action Required”
2. Enter formula: =IF([@[Performance Category]]="Excellent", "Preferred Vendor",
3. IF([@[Performance Category]]="Very Good", "Preferred Vendor",

IF([@[Performance Category]]="Good", "Monitor Quarterly",

IF([@[Performance Category]]="Fair", "Monitor Monthly",

"Review Required"))))

Action Required Column Amplifies This Power

Your “Action Required” column serves as a call to action:

* Combine it with filters or visuals to quickly see:
  + Vendors to review
  + Vendors to reward
  + Vendors to monitor more closely

**Step 5: Apply Conditional Formatting to the “Performance Category” Column**

1. Select all cells in the **“Performance Category”** column.
2. Go to **Home → Conditional Formatting → New Rule**.
3. Choose **Format only cells that contain**.

Use these settings for each category:

| **Category** | **Fill Color** | **Text Color** |
| --- | --- | --- |
| Excellent | Green | White |
| Very Good | Light Green | Black |
| Good | Yellow | Black |
| Needs Improvement | Red | White |

**STEP 6. Filters and Segments for Deeper Insights**

* Segment vendors by category to analyze:
  + Contract value vs. performance category
  + Delivery times vs. performance category
  + Vendor category vs. compliance risk

This enhances your risk assessment and strategic sourcing decisions.

1. **Compare Contract Value vs. Performance Category**

How it helps:

* Identify vendors with high contract values but low performance.
* Highlight opportunities to renegotiate, review, or switch vendors.

Use a PivotTable:

* 1. Rows: Performance Category
  2. Values: Sum of Contract Amount

Add slicers to filter by department or year.

1. **Analyze Delivery Time vs. Performance Category**

How it helps:

* See whether vendors with higher performance are consistently delivering faster.
* Pinpoint inefficiencies with vendors rated “Fair” or “Needs Improvement.”

Create a box-and-whisker chart:

* 1. X-axis: Performance Category
  2. Y-axis: Average Delivery Time

Use color coding by category.

1. **Explore Vendor Category vs. Compliance Risk**

How it helps:

* Check if specific vendor categories (e.g., IT, Consulting, Hardware) are more prone to compliance issues.
* Prioritize compliance audits or enhanced monitoring.

Add a “Vendor Type” column (if not already present).

Use conditional formatting to flag high-risk combinations (e.g., “Needs Improvement” + Compliance Score < 5).

Filter or Pivot by:

* 1. Rows: Vendor Category
  2. Columns: Performance Category
  3. Values: Average Compliance Score or Count of "Review Required"

**Why This Is Powerful:**

* You move from raw data to action plans.
* Leadership and stakeholders can prioritize vendors for review, reward, or renegotiation.
* You ensure resources (like audits or reviews) are focused where the data shows risk or inefficiency.

**Step 7: Create Vendor Summary with AVERAGEIF**

1. Create a new sheet called "Vendor Summary"
2. Create columns: Vendor ID, Contracts Count, Avg Contract Value, Avg Performance Rating, Avg On-Time %, Avg Quality Rating
3. List unique vendor IDs (use Remove Duplicates on a copy of the Vendor ID column) =UNIQUE('vendor contracts'!A2:A146)
4. For Contracts Count: =COUNTIF(Table1[Vendor ID], 'Vendor Summary'!A2)
5. For Avg Contract Value:

=AVERAGEIFS(Table1[Contract Value ($)], Table1[Vendor ID], 'Vendor Summary'!A2)

1. For Avg Performance Rating:

=AVERAGEIF(Table1[Vendor ID], A2, Table1[[Performance Rating (1-5)]])

1. Continue with other metrics

* Avg% on time: =AVERAGEIF(Table1[Vendor ID], A2, Table1[On-Time Delivery (%)])
* Avg% quality time =AVERAGEIF(Table1[Vendor ID], A2, Table1[On-Time Delivery (%)])

**Practice Activity:** Use MAXIFS functions to identify the highest value contract for each vendor.

Enter formula: =MAXIFS(Table1[Contract Value ($)], Table1[Vendor ID], A2)

Use INDEX/MATCH :

Enter formula: =INDEX(Table1[Contract Number], MATCH(1, (Table1[Vendor ID]=A2)\*(Table1[Contract Value ($)]=MAXIFS(Table1[Contract Value ($)], Table1[Vendor ID], A2)), 0))

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**Module 3: Data Analysis with PivotTables**

**3.1 Basic Pivot Table Analysis**

**Step 1: Create Your First Pivot Table**

1. Select any cell in your data table
2. Go to Insert → PivotTable
3. Select "New Worksheet" and click OK
4. In the PivotTable Fields pane:
   * Drag "Vendor ID" to Rows
   * Drag "Contract Value ($)" to Values
   * Verify it shows Sum of Contract Value

**Step 2: Enhance Your Pivot Analysis**

1. Add "Performance Rating" to Columns
2. Add "Contract Value" to Values a second time
3. Right-click on the second "Sum of Contract Value"
4. Select "Value Field Settings" → "Average"
5. Rename to "Avg Contract Value"

**Step 3: Add Calculated Fields**

1. Right-click on the PivotTable → PivotTable Options
2. Go to the Calculations tab → Fields, Items, & Sets → Calculated Field
3. Create a field called "Value per Rating Point":
   * Formula: ='Contract Value'/'Performance Rating'
   * Click Add

Value per Rating Point helps you measure how much contract value you're getting per unit of quality or performance. It is useful because you can answer:

* Compares vendor efficiency: Are you paying more for higher-rated vendors?
* Normalizes cost across vendors with varying quality levels.
* Great for cost-performance analysis in procurement.

1. Create another field called "On-Time Value":
   * Formula: ='Contract Value'\*'On-Time Delivery (%)'

Add a Helper Column in Source Table (Recommended)

In your source data (Table1), Add a new column, “On-Time Value”

Formula = On-Time Value = [@[Contract Value]] \* [@[On-Time %]] / 100

Go back to your PivotTable:

* Drag Vendor ID or Vendor Name to Rows
* Drag On-Time Value to Values → keep it as Sum
* Drag Contract Value to Values if you also want the total

Examples:

* A $10M contract with 80% on-time → $8M "on-time value"
* A $5M contract with 100% on-time → $5M "on-time value"

Useful:

* + Reveals how much of your spend is effectively delivered on time.
  + Helps identify underperforming high-value vendors.
  + Informs risk-adjusted vendor rankings.

**Step 4: Format and Polish Your Pivot**

1. Apply a PivotTable Style (Design tab)
2. Format values as currency where appropriate
3. Expand/collapse levels to show/hide detail
4. Right-click on Grand Totals row → Remove Grand Totals
5. Add subtotals for key metrics

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**Practice Activity:** Create a pivot table that shows the average performance metrics (Performance Rating, On-Time Delivery %, Quality Rating) by payment terms. Use this to determine if vendors with shorter payment terms perform better.

Bonus: Add a **Power Pivot dashboard** for flexibility, performance, and advanced analytics for your procurement data.

# Question

1 Do vendors with shorter payment terms perform better across key metrics?

2 What is the average on-time delivery rate by vendor category?

3 Which vendors deliver the highest performance within specific categories?

4 What is the on-time value by vendor and by payment term?

5 Are larger contracts (by value) associated with higher or lower quality?

Compare average performance metrics across different payment terms. This allows procurement teams to see if vendors with Net 15, Net 30, etc., perform better on average.

* Compare averages across payment terms.
* Look for trends: Do shorter payment terms (e.g., Net 15) correlate with better performance?
* You might find that vendors with faster payment expectations:
  + Deliver on time more consistently
  + Maintain higher quality
  + Have higher performance scores

**Bonus: Add Conditional Formatting**

* Select the data values in the PivotTable (excluding row labels).
* Go to Home → Conditional Formatting:
  + Data Bars or Color Scales help quickly visualize best vs. worst performers.

**Final Tips for Dashboard**

* Use slicers to compare performance before and after Net 30.
* Use color scales or icons for performance metrics.
* Add a title and summary box with total vendors, average spend, and highest-rated vendor.

**3.2 Advanced Pivot Analysis**

**Step 1: Create a Date-Based Analysis**

1. Create a new pivot table
2. Add "Contract Start Date" to Rows
3. Right-click on any date → Group
4. Group by Quarters and Years
5. Add "Contract Value" to Values
6. Add a filter for Contract Status

**Step 2: Add Calculated Items**

1. Right-click on the Quarter row labels
2. Select Calculated Item
3. Create a fiscal year formula if needed

**Step 3: Create a Performance Heatmap**

1. Create a new pivot table
2. Add "Vendor ID" to Rows
3. Add "Contract Number" to Columns
4. Add "Performance Rating" to Values
5. Change the value field setting to "Average"
6. Apply conditional formatting → Color Scales
7. Choose a Blue-White-Red color scale

**Step 4: Create Top/Bottom Performance Views**

1. Right-click on Vendor ID field in pivot table
2. Select Filter → Value Filters → Top 10
3. Set to show top 5 vendors by average performance rating
4. Create a second pivot that shows bottom 5 vendors
5. Place these pivot tables side by side for comparison

**Practice Activity:** Create a comparative pivot table that shows year-over-year performance changes for vendors who have contracts in both 2023 and 2024.

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**Module 4: Advanced Analysis with Data Analysis ToolPak**

**4.1 Descriptive Statistics and Correlation**

**Step 1: Enable the Analysis ToolPak**

1. Go to File → Options → Add-ins
2. Select Analysis ToolPak → Go
3. Check "Analysis ToolPak" → OK

**Step 2: Generate Descriptive Statistics**

1. Go to Data tab → Data Analysis
2. Select "Descriptive Statistics"
3. Input Range: Select all numeric columns (Contract Value, Performance Rating, etc.)
4. Check "Labels in first row"
5. Check "Summary statistics"
6. Output Range: Select a cell in a new worksheet
7. Click OK

**Step 3: Run Correlation Analysis**

1. Go to Data tab → Data Analysis
2. Select "Correlation"
3. Input Range: Select Contract Value, Performance Rating, On-Time Delivery %, and Quality Rating columns
4. Check "Labels in first row"
5. Output Range: Select a cell below your descriptive statistics
6. Click OK

**Step 4: Interpret Results**

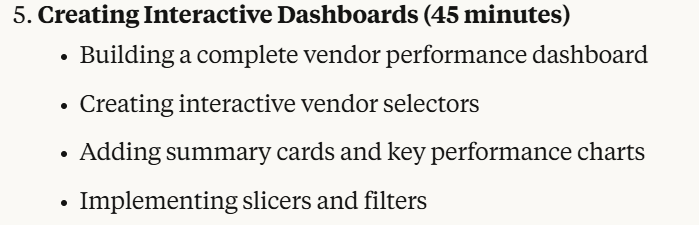
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1. Highlight strong correlations (>0.7 or <-0.7)
2. Create a summary of key statistical insights
3. Format the output tables for better readability

**Practice Activity:** Use the regression tool to determine if Contract Value can predict Performance Rating. Create a brief explanation of the results.



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**Module 5: Creating Interactive Dashboards**

**5.1 Building a Vendor Performance Dashboard**

**Step 1: Set Up Dashboard Framework**

1. Create a new worksheet named "Dashboard"
2. Add a title and subtitles
3. Insert a company logo (if available)
4. Create sections for:
   * Performance Summary
   * Vendor Analysis
   * Contract Timeline
   * Top/Bottom Performers

**Step 2: Create a Vendor Selector**

1. Use Data Validation to create a dropdown list of vendors
2. Formula: Source = unique list of vendor IDs

**Step 3: Create Summary Cards**

1. Create formulas that reference the selected vendor:
   * Total contract value
   * Average performance rating
   * Number of contracts
   * Average on-time delivery %

**Step 4: Add Key Charts**

1. Create a line chart showing performance trends
2. Create a bar chart comparing selected vendor to average
3. Create a doughnut chart showing contract value distribution
4. Add a contract timeline visualization

**Step 5: Add Interactivity**

1. Link all visuals to respond to the vendor selector
2. Add slicers for filtering by:
   * Contract date range
   * Performance category
   * Contract value range

**Step 6: Final Formatting**

1. Apply consistent colors and fonts
2. Resize and align all elements
3. Add instructions for users
4. Add timestamp and data refresh information

**Practice Activity:** Add a "Risk Assessment" section to the dashboard that automatically identifies vendors with declining performance trends.

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**Module 6: Exporting and Sharing Analysis**

**6.1 Creating Professional Reports**

**Step 1: Prepare for Export**

1. Review all worksheets for consistency
2. Check all formulas and calculations
3. Set up print areas and page breaks

**Step 2: Create PDF Reports**

1. Go to File → Export → Create PDF/XPS
2. Select sheets to include
3. Set document properties
4. Review and Save

**Step 3: Email Distribution Setup**

1. Set up a report distribution process
2. Create automated email from Excel (if applicable)
3. Ensure confidential information is properly handled

**Practice Activity:** Create a one-page executive summary that highlights the top 3 insights from your vendor analysis.

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**Module 7: Tableau for Procurement Analytics**

**7.1 Getting Started with Tableau**

**Step 1: Connecting to Vendor Contract Data**

1. From Tableau's start page, click "Connect to Data"
2. Select the file type (Excel or CSV)
3. Navigate to your vendor contract dataset and open it
4. Review fields to ensure correct data types:
5. Change date fields to Date format
6. Verify numeric fields are recognized as numbers
7. Confirm text fields are dimensions (blue pills)
8. Click "Sheet 1" tab at the bottom to begin analysis

The two primary categories are dimensions and measures:

**Dimensions**

* **Definition**: Categorical, qualitative data that segment and categorize your information
* **Behavior**: Dimensions create headers in your visualization
* **Examples**: Customer names, product categories, dates, regions, order IDs
* **Visualization role**: Define the structure and grouping of your data
* **Icon in Tableau**: Blue fields

**Measures**

* **Definition**: Numerical, quantitative data that can be measured, aggregated, and analyzed
* **Behavior**: Measures create the actual values being visualized
* **Examples**: Sales amount, profit, quantity, temperature readings, counts
* **Visualization role**: Provide the metrics being analyzed
* **Icon in Tableau**: Green fields

**Step 2: Creating Your First Contract Visualization**

1. Drag "Contract Value ($)" to Rows shelf
2. Drag "Vendor ID" to Columns shelf
3. Sort by Contract Value (click the sort button in toolbar)
4. Add color: Drag "Performance Category" to Color mark
5. Add labels: Click "Label" mark and check "Show mark labels"
6. Title the visualization: "Vendor Contract Values by Performance Category"
7. Save your workbook

**7.2 Key Contract Analytics Visualizations**

**Step 1. Vendor Performance Dashboard**

1. Create a new worksheet
2. Create a scatter plot:
   * Drag "On-Time Delivery (%)" to Columns
   * Drag "Quality Rating (1-5)" to Rows
   * Drag "Vendor ID" to Detail mark
   * Drag "Contract Value ($)" to Size mark
   * Drag "Performance Category" to Color mark
3. Add hover details:
   * Drag "Vendor ID", "Contract Number", "Performance Index" to Tooltip mark
4. Add a trend line:
   * Right-click in the view and select "Trend Lines" > "Show Trend Lines"
5. Title: "Vendor Performance Matrix"

**Step 2. Contract Timeline Visualization**

1. Create a new worksheet
2. Create a Gantt chart:
   1. Drag "Vendor ID" to Rows
   2. Drag "Contract Start Date" to Columns
3. Change the date aggregation to "Exact Date"
   1. Drag "Contract Duration (Days)" to Size mark
   2. Drag "Contract Status" to Color mark
4. Add reference line for today's date:
   1. Right-click the date axis
   2. Select "Add Reference Line"
   3. Choose "Today" for value
5. Sort by contract end date:
   1. Right-click "Vendor ID" axis and select "Sort"
   2. Sort by "Field" > "Contract End Date"
6. Title: "Contract Timeline and Expiration"

**Step 3. Payment Terms Analysis**

1. Create a new worksheet
2. Create a histogram:
   * Drag "Payment Terms (Net days)" to Columns
   * Change to dimension by right-clicking and selecting "Convert to Dimension"
   * Drag "Number of Records" (automatic measure) to Rows
3. Add average line:
   * Right-click in the view
   * Select "Add Reference Line"
   * Choose "Average" for Line Value
4. Add color by performance:
   * Drag "Performance Category" to Color mark
5. Title: "Payment Terms Distribution by Vendor Performance"

**Step 4. Contract Value Distribution**

1. Create a new worksheet
2. Create a box-and-whisker plot:
   * Drag "Performance Category" to Columns
   * Click "Show Me" and select Box Plot
   * Drag "Contract Value ($)" to Rows
3. Add details:
   * Drag "Vendor ID" to Detail mark
   * Drag "Performance Index" to Tooltip mark
4. Sort by median contract value:
   * Right-click "Performance Category" axis
   * Select "Sort" by "Field" > "Contract Value" > "Median"
5. Title: "Contract Value Distribution by Performance Category"
   1. **Interactive Analysis Techniques**

**Step 1. Creating an Interactive Dashboard**

1. Click "Dashboard" > "New Dashboard"
2. Set size: Select "Fixed Size" (1000 x 800)
3. Add visualizations:
   1. Drag each worksheet onto the dashboard
   2. Arrange in a logical flow
4. Add interactive filters:
   1. Select the Vendor Performance Matrix
   2. Click the filter icon in the upper right
   3. Choose "Use as Filter"
   4. Repeat for other relevant sheets
5. Add a global filter:
   1. Drag "Contract Status" to the Filters section
   2. Configure as a multiple select filter
   3. Apply to all worksheets
6. Add a date range filter:
   1. Drag "Contract Start Date" to Filters
   2. Configure as a range slider
   3. Apply to relevant worksheets

**Step 2: Adding Action Buttons and Parameters**

1. Create a parameter for value threshold:
   1. Right-click in Parameters pane, select "Create Parameter"
   2. Name: "Contract Value Threshold"
   3. Data type: Float
   4. Current value: 75000
   5. Display format: Currency
2. Create a calculated field:
   1. Right-click in Data pane, select "Create Calculated Field"
   2. Name: "High Value Contract"
   3. Formula: [Contract Value ($)] >= [Contract Value Threshold]
3. Add parameter control:
   1. Right-click the parameter, select "Show Parameter Control"
4. Create a highlight action:
   1. Dashboard > "Actions" > "Add Action" > "Highlight"
   2. Source: Select relevant sheets
   3. Target: Select relevant sheets
   4. Run action on: Hover or Select
5. Click OK
   1. **Sharing Insights**

**Step 1: Creating an Executive Summary Dashboard**

1. Create a new dashboard
2. Add text box with key insights:
   1. Top performing vendors
   2. Contracts requiring renewal
   3. Performance issues needing attention
3. Add KPI visualizations:
   1. Create calculated field for total active contract value
   2. Create calculated field for average performance rating
   3. Display as big number visualizations
4. Add action buttons to link to detailed dashboards

**Step 2: Publishing and Sharing Options**

1. Save your workbook
2. Publish to Tableau Server/Online (if available):
   1. Server > "Publish Workbook"
   2. Set permissions and scheduling
3. Export to PDF for stakeholders:
   1. File > "Export as PDF"
4. Set up subscriptions:
   1. Schedule automated email reports
   2. Configure for key stakeholders