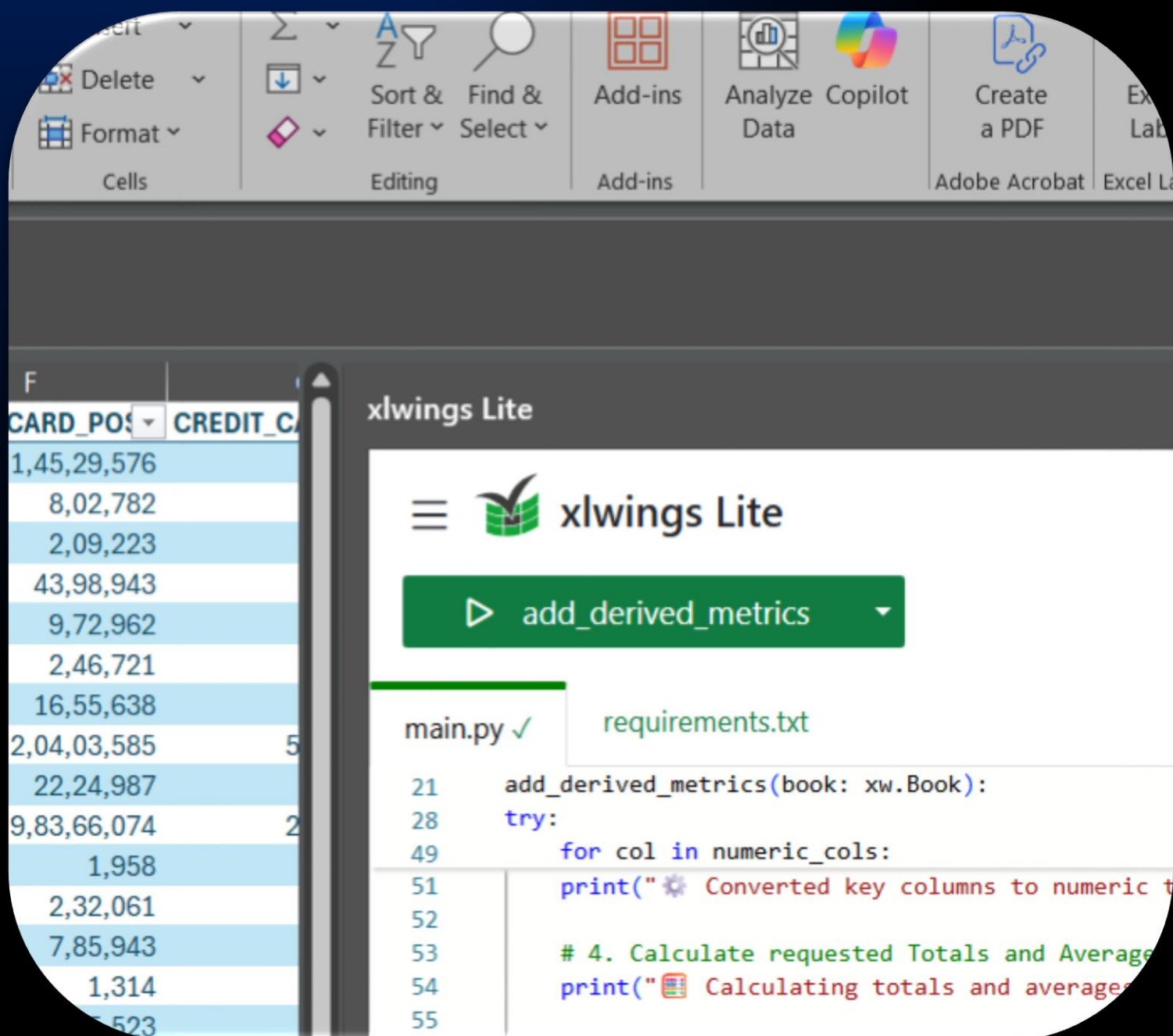


# xlwings Lite: The AI Way

Your Quick Start to Python In Excel  
Coding Experience not Required















# Module 01

## Data Transformations, Visualizations and AI Generated variables

# Download Starter Kit


# app.tigzig.com


 **TIGZIG: Co-Analyst**      




### xlwings Lite: Practice Lab

Learn xlwings Lite by practical examples


 **Quick Start Resources:** Download our AI-ready instructions, view guides, and get example workbooks to jumpstart your xlwings Lite journey!




#### AI Coder Instructions

 **Download Instructions**


Download these markdown instructions to upload to AI/LLM for automated code generation. Perfect for getting started with AI-powered Excel automation.




#### View Instructions



View the AI instructions in a human-readable, formatted examples for easy reference.



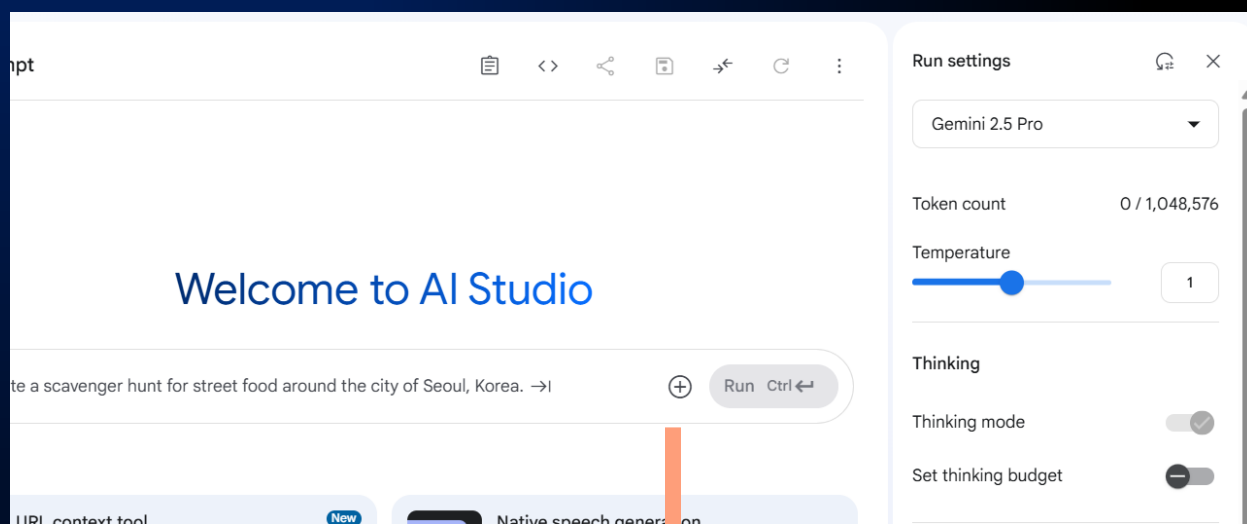
#### Example Workbooks & Guides

| Description   | Workbook   |
|---|--|
| Basic Data Manipulation: Creating derived variables, summary tables, and charts | <div> <b>Download</b></div> |

# Setup AI

Use Google AI Studio  
A powerhouse of AI Tools. Free.

 [aistudio.google.com](https://aistudio.google.com)



1

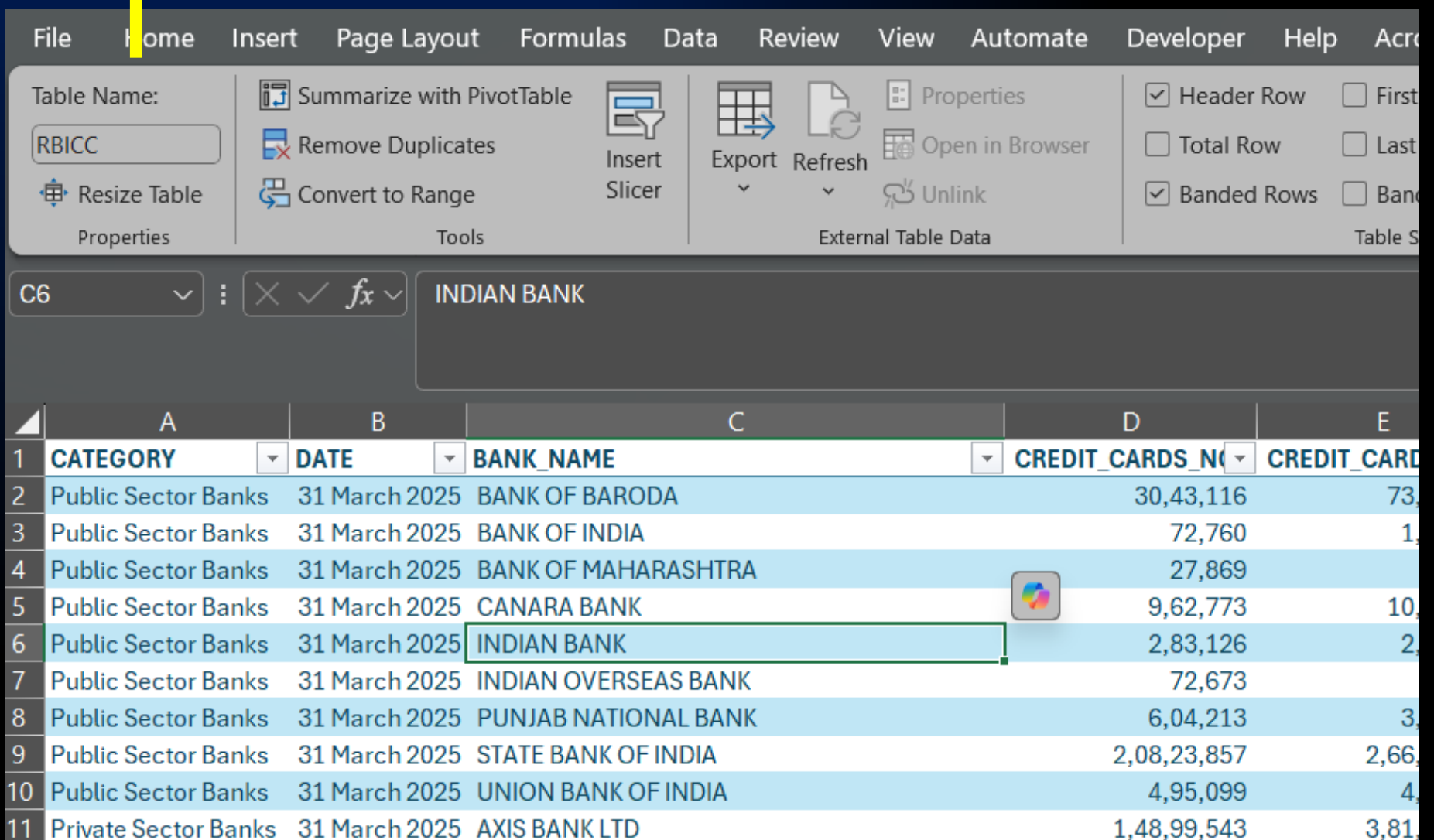
Upload  
AI\_CODER\_INSTRUCTIONS.md

2

Put Starter Prompt from example  
workbook and hit enter

# Prepare Your Data

Best Practice: Setup data as a 'Table'



The screenshot shows the Microsoft Excel interface with the 'Table Design' ribbon active. A yellow arrow points from the 'Best Practice: Setup data as a 'Table'' text to the 'Table Name' field in the ribbon, which contains 'RBICC'. The ribbon also shows various tools like 'Summarize with PivotTable', 'Remove Duplicates', 'Convert to Range', 'Insert Slicer', 'Export', 'Refresh', 'Properties', 'Open in Browser', 'Unlink', 'Header Row', 'First Row', 'Total Row', 'Last Row', 'Banded Rows', and 'Band Colors'. The formula bar shows 'INDIAN BANK'. The data table below has columns: CATEGORY, DATE, BANK\_NAME, CREDIT\_CARDS\_NO, and CREDIT\_CARD.

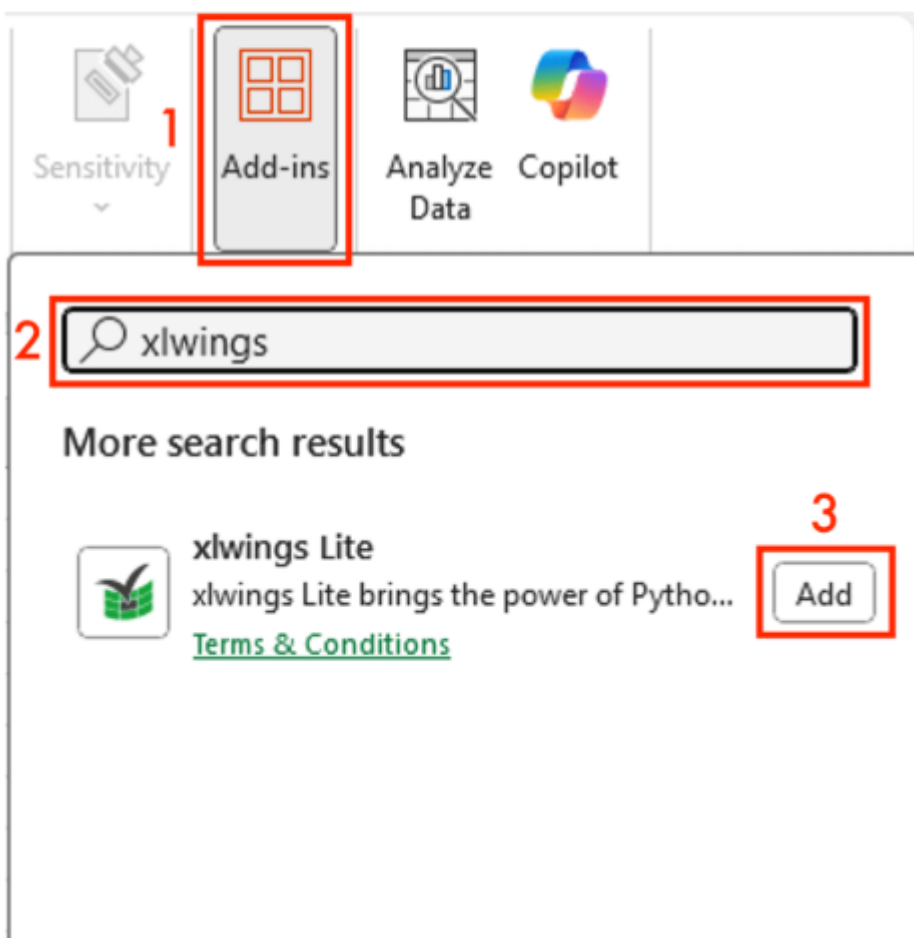
|    | A                    | B             | C                    | D               | E           |
|----|----------------------|---------------|----------------------|-----------------|-------------|
| 1  | CATEGORY             | DATE          | BANK_NAME            | CREDIT_CARDS_NO | CREDIT_CARD |
| 2  | Public Sector Banks  | 31 March 2025 | BANK OF BARODA       | 30,43,116       | 73,         |
| 3  | Public Sector Banks  | 31 March 2025 | BANK OF INDIA        | 72,760          | 1,          |
| 4  | Public Sector Banks  | 31 March 2025 | BANK OF MAHARASHTRA  | 27,869          |             |
| 5  | Public Sector Banks  | 31 March 2025 | CANARA BANK          | 9,62,773        | 10,         |
| 6  | Public Sector Banks  | 31 March 2025 | INDIAN BANK          | 2,83,126        | 2,          |
| 7  | Public Sector Banks  | 31 March 2025 | INDIAN OVERSEAS BANK | 72,673          |             |
| 8  | Public Sector Banks  | 31 March 2025 | PUNJAB NATIONAL BANK | 6,04,213        | 3,          |
| 9  | Public Sector Banks  | 31 March 2025 | STATE BANK OF INDIA  | 2,08,23,857     | 2,66,       |
| 10 | Public Sector Banks  | 31 March 2025 | UNION BANK OF INDIA  | 4,95,099        | 4,          |
| 11 | Private Sector Banks | 31 March 2025 | AXIS BANK LTD        | 1,48,99,543     | 3,81,       |

Sample data in Excel workbook

# Install xlwings Lite Add-in

## Installation

1. Click on the **Add-ins** button in Excel. Usually, it is located on the **Home** tab, but if you are using an older version of Excel, it could be on the **Insert** tab.
2. Search for **xlwings**
3. Click on **Add** to install.



*Image from [lite.xlwings.com](https://lite.xlwings.com)*

# Asking AI for Data Transformations

## Prompt 1

Instruct AI for metrics and calculations you need

### Prompt 1 : Creating Derived Variables

See attached few sample rows. Data is formatted as table name RBICC. Gimme code to add the following fields:

Totals for credit card value and volume  
Average per credit card for value and volume

Keep in mind that the volume is in actuals and value is in Rs. '000. I want the averages as actuals. In addition – I want to do profiling of the banks. So add additional derived variables that could be helpful and insightful – add between 5–10 additional variables based on your judgment.

| CATEGORY            | DATE          | BANK_NAME           | CREDIT_CARDS_NOS | CREDIT_CARD_POS_TXN_VOLUME_NOS | CREDIT_CARD_POS_TXN_VALUE_AMT | CREDIT_CARD_ECOM_VOLUME_NOS | CREDIT_CARD_ECOM_VALUE_AMT |
|---------------------|---------------|---------------------|------------------|--------------------------------|-------------------------------|-----------------------------|----------------------------|
| Public Sector Banks | 31 March 2025 | BANK OF BARODA      | 30,43,116        | 73,31,814                      | 1,45,29,576                   | 33,50,020                   | 1,76,45,596                |
| Public Sector Banks | 31 March 2025 | BANK OF INDIA       | 72,760           | 1,79,338                       | 8,02,762                      | 64,587                      | 3,23,581                   |
| Public Sector Banks | 31 March 2025 | BANK OF MAHARASHTRA | 27,869           | 43,827                         | 2,09,223                      | 19,575                      | 1,10,022                   |
| Public Sector Banks | 31 March 2025 | CANARA BANK         | 10,84,539        | 43,98,943                      | 4,91,612                      | 29,71,536                   | 9,62,773                   |

Describe new fields in natural language

Specify data gotchas

ALWAYS show AI the data in the very first prompt

Ask AI to create insightful variables, if required

*All Prompts in Example Workbook*



# Run the AI Generated Code

AI will give you a code – paste that into main.py and run it (it will show up the name of function created)

## Python Script for xlwings Lite

### Generated python

```
import pandas as pd
import numpy as np
import xlwings as xw
from xlwings import script
```

# Golden Rule 1: ALWAYS use this helper function to locate tables robustly

xlwings Lite

create\_visualizations


main.py ✓ requirements.txt

```
1 import pandas as pd
2 import numpy as np
3 import xlwings as xw
4 from xlwings import script
5 import matplotlib.pyplot as plt
6 import seaborn as sns
7 import os
8 import tempfile
9 from matplotlib.ticker import FuncFormatter
10
11 # --- Mandatory Helper Function (as per guidelines) ---
12 def find_table_in_workbook(book: xw.Book, table_name: str)
13     """Searches all sheets for a table with the given name
14     for sheet in book.sheets:
15         if table_name in sheet.tables:
16             return sheet.tables[table_name]
17     return None
```

Python 3.12.7 | Pyodide 0.27.5 | xlwings 0.33.14


# Validate Outputs

The calculations we specifically requested



|    | H                          | I                       | J                          | K                  |
|----|----------------------------|-------------------------|----------------------------|--------------------|
|    | CREDIT_CARD_ECOM_VALUE_AMT | TOTAL_CC_TXN_VOLUME_NOS | TOTAL_CC_TXN_VALUE_AMT_000 | AVG_TXN_VOLUME_PER |
| 20 | 1,76,45,596                | 1,06,81,834             | 3,21,75,172                |                    |
| 87 | 3,23,581                   | 2,43,925                | 11,26,363                  |                    |
| 75 | 1,10,022                   | 63,402                  | 3,19,245                   |                    |
| 12 | 29,71,536                  | 15,76,151               | 73,70,479                  |                    |
| 73 | 13,71,482                  | 5,13,202                | 23,44,445                  |                    |
| 44 | 1,18,178                   | 1,88,951                | 8,88,888                   |                    |

8 Extra variables from AI based on its judgment

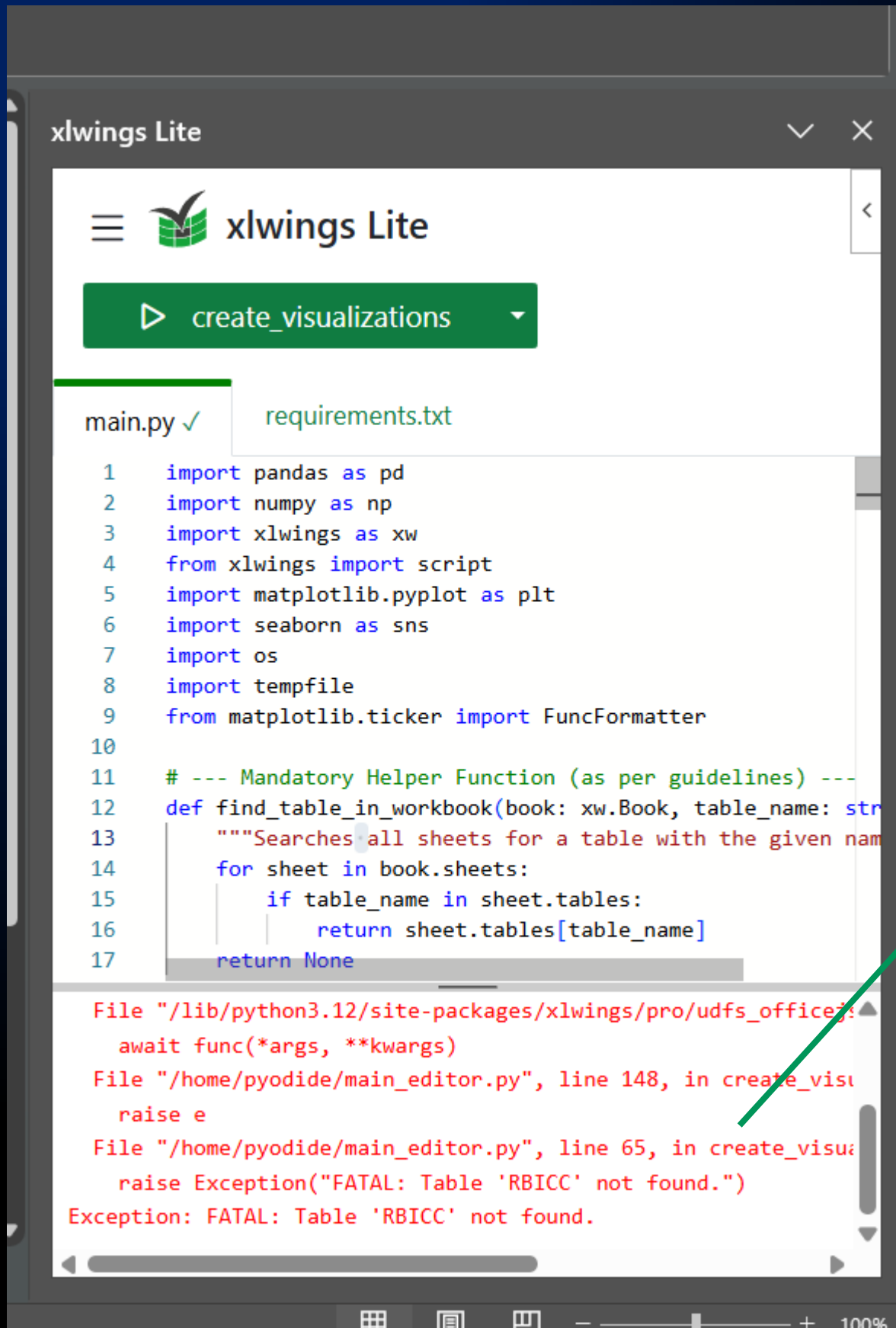


| M                          | N                           | O                              | P                    |  |
|----------------------------|-----------------------------|--------------------------------|----------------------|--|
| AVG_POS_TICKET_SIZE_ACTUAL | AVG_ECOM_TICKET_SIZE_ACTUAL | AVG_OVERALL_TICKET_SIZE_ACTUAL | POS_VOLUME_SHARE_PCT |  |
| 1,982                      | 5,267                       | 3,012                          | 69                   |  |
| 4,476                      | 5,010                       | 4,618                          | 74                   |  |
| 4,774                      | 5,621                       | 5,035                          | 69                   |  |
| 4,056                      | 6,044                       | 4,676                          | 69                   |  |
| 4,608                      | 4,540                       | 4,568                          | 41                   |  |
| 3,285                      | 4,218                       | 3,535                          | 73                   |  |

Tip: For AI-derived variables, you can push the boundaries by increasing the variable count, or focus on a particular type of metric—e.g., % compositions, market share, etc.



# What if you get an error?



The screenshot shows the xlwings Lite application window. At the top, there's a header with the xlwings Lite logo and a green button labeled 'create\_visualizations'. Below the header, there are two tabs: 'main.py ✓' and 'requirements.txt'. The 'main.py' tab is active, displaying a Python script. The script includes imports for pandas, numpy, xlwings, matplotlib, and seaborn, followed by a function 'find\_table\_in\_workbook'. The error message at the bottom of the window reads: 'File "/lib/python3.12/site-packages/xlwings/pro/udfs\_office... await func(\*args, \*\*kwargs) File "/home/pyodide/main\_editor.py", line 148, in create\_visu raise e File "/home/pyodide/main\_editor.py", line 65, in create\_visu raise Exception("FATAL: Table 'RBICC' not found.") Exception: FATAL: Table 'RBICC' not found.'

```
1 import pandas as pd
2 import numpy as np
3 import xlwings as xw
4 from xlwings import script
5 import matplotlib.pyplot as plt
6 import seaborn as sns
7 import os
8 import tempfile
9 from matplotlib.ticker import FuncFormatter
10
11 # --- Mandatory Helper Function (as per guidelines) ---
12 def find_table_in_workbook(book: xw.Book, table_name: str)
13     """Searches all sheets for a table with the given name"""
14     for sheet in book.sheets:
15         if table_name in sheet.tables:
16             return sheet.tables[table_name]
17     return None
```

File "/lib/python3.12/site-packages/xlwings/pro/udfs\_office...  
await func(\*args, \*\*kwargs)  
File "/home/pyodide/main\_editor.py", line 148, in create\_visu  
raise e  
File "/home/pyodide/main\_editor.py", line 65, in create\_visu  
raise Exception("FATAL: Table 'RBICC' not found.")  
Exception: FATAL: Table 'RBICC' not found.

Copy the error,  
paste it into the  
AI, and ask it to  
fix it.

AI will share  
back the revised  
code or let you  
know if  
something  
required from  
your end

# Creating Profile Summary

## Prompt 2

Describe one or more summarizations – across any level and the KPI's required

### Prompt 2 : Creating Profile Summary

Now give me a nicely formatted summary showing all the profiling variables grouped by category. Use the profiling variables I had asked for, plus the ones you had created. Put that in a new sheet called RBI\_SUMM. Delete any existing sheet if it exists.

But keep in mind - you can't just do the average of the average by using the earlier derived variables. You'd need to recompute them at the grouped level.

AI remembers past codes and conversations. You don't need to specify all the variables one by one.

But validate output- once in a while it 'forgets'

Specify data gotchas

*All Prompts in Example Workbook*

# Profile Summary

Profile Summary output in a new sheet titled RBI\_SUMM



|    | A  | B                                | C                              | D                           |                  |
|----|--|----------------------------------|--------------------------------|-----------------------------|------------------|
| 1  | <b>Credit Card Profiling Summary by Category</b> |                                  |                                |                             |                  |
| 2  |  |                                  |                                |                             |                  |
| 3  | <b>Category</b>                                  | <b>Avg Transactions per Card</b> | <b>Avg Spend per Card (Rs)</b> | <b>Avg Ticket Size (Rs)</b> | <b>Avg POS T</b> |
| 4  | Foreign Banks                                    | 2.7                              | 21,984.2                       | 8,008.0                     |                  |
| 5  | Private Sector Banks                             | 4.5                              | 19,624.3                       | 4,407.8                     |                  |
| 6  | Public Sector Banks                              | 3.6                              | 14,291.9                       | 3,934.8                     |                  |
| 7  | Small Finance Banks                              | 2.8                              | 9,066.9                        | 3,257.8                     |                  |
| 8  |  |                                  |                                |                             |                  |
| 9  |  |                                  |                                |                             |                  |
| 10 |  |                                  |                                |                             |                  |

Tip: Ask AI to create as many cuts as you need and have it place the tables one below the others.

*All Prompts in Example Workbook*

# Creating Charts

## Prompt 3

### Prompt 3 : Creating Charts

Gimme the following charts, all nicely formatted and all. Paste them one below the other into a new sheet called charts.

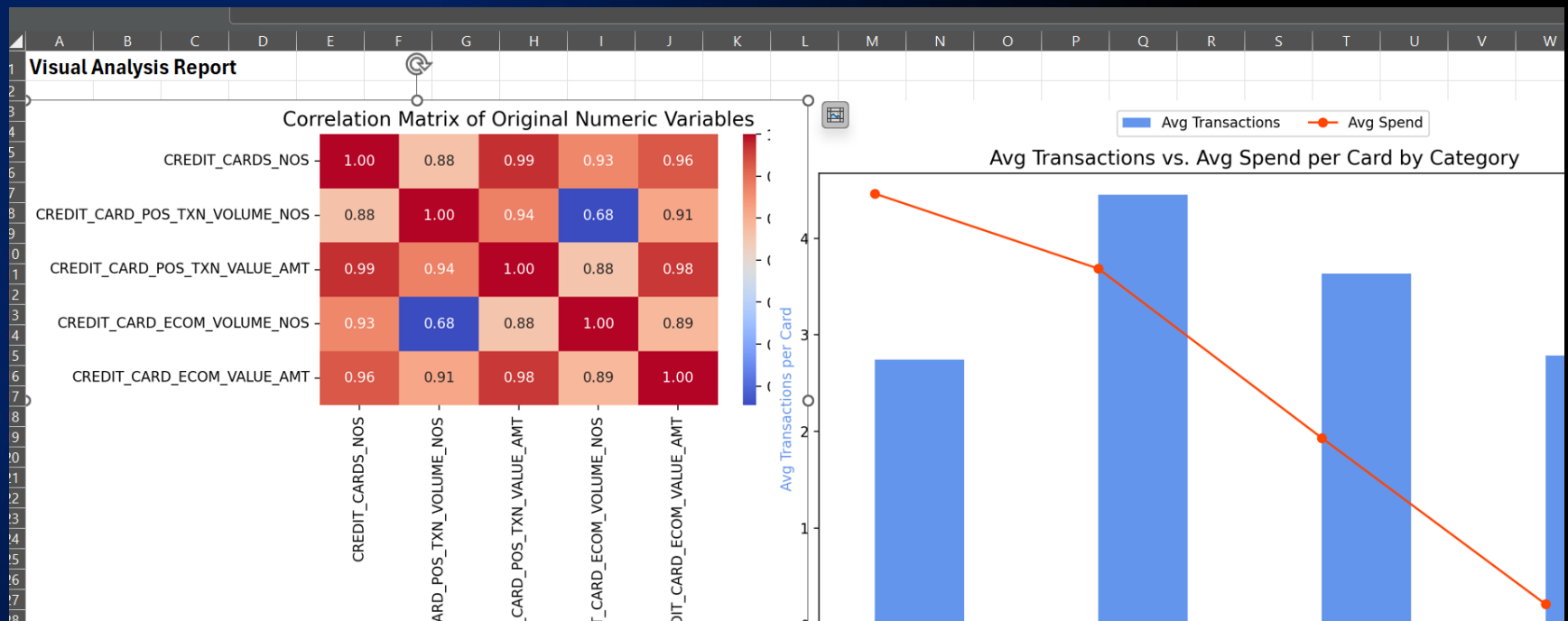
1. Correlation matrix for all the numeric variables (take only the original variables)
2. Bar chart of top 10 banks by average credit card value
3. Combo bar chart – 2 axis – from the profiling table you created for average volume and value per card
4. Box plots for all the original numeric variables

Tip: Get the basic charts out, and then go for formatting – label fonts, title placement, axis etc

Tip: To get multi-panel chart ask AI to e.g. keep the bar chart as the main chart and add the line chart as a subplot

*All Prompts in Example Workbook*

# Refine Charts



It did not place the charts one below the others. Share the image and ask it to fix it.

Tip: Get the basic chart out and share instruction to refine the visuals. E.g

*Reduce correlation matrix size by ~50%*  
*Increase chart title size and place it top right*  
*Remove Y-axis line and ticker*  
*Reduce legend size and keep it on top right*

*All Prompts in Example Workbook*

# Validate Always

! Validations are sacrosanct – AI or no AI

AI's make mistakes – from formulas to logic.  
Far less than humans – but it happens  
Always validate output

```
52
53 # 4. Calculate requested Totals and Averages
54 print("📊 Calculating totals and averages...")
55
56 # --- Totals ---
57 df['TOTAL_CC_TXN_VOLUME_NOS'] = df['CREDIT_CARD_POS_TXN_VOLUME_NOS'] + df['CREDIT_CARD_ECOM_VOLUME_NOS']
58
59 # Value is in '000s, so we calculate total in '000s first
60 df['TOTAL_CC_TXN_VALUE_AMT_000'] = df['CREDIT_CARD_POS_TXN_VALUE_AMT'] + df['CREDIT_CARD_ECOM_VALUE_AMT']
61
62 # --- Averages (in actuals) ---
63 # Convert total value to actuals for average calculation
64 total_value_actual = df['TOTAL_CC_TXN_VALUE_AMT_000'] * 1000
65
66 df['AVG_TXN_VOLUME_PER_CARD'] = df['TOTAL_CC_TXN_VOLUME_NOS'] / df['CREDIT_CARDS_NOS']
67 df['AVG_TXN_VALUE_PER_CARD_ACTUAL'] = total_value_actual / df['CREDIT_CARDS_NOS']
68
```

Best Practice: Review the core parts of the code e.g formulas – they will look just like excel formulas and intuitive to understand

Tip: For complex logic and formulas, ask AI to walk you through it step by step

# Working with AI

## Top 4 Tips

### Show what you see

Share sample records and screen shots of what you see

### One Step at a Time

Avoid too many things in one instruction.

### Break the App

Run stress tests to identify scenarios that could mess up your automation

### Run AI Audit

Ask AI to identify problems with code and logic



# Power User Tip

## Dictate Your Prompts

Typing long, detailed instructions is slow. Use your operating system's built-in dictation to work faster.



On Windows: Press Win + H to start Voice Typing.

On macOS: Press the Microphone key (F5) or press the Fn key twice.

# Ask AI to be Your Guide

Don't hesitate to ask the simple questions. The AI's only job is to help

*"What are these df and def things in the code?"*

*"I don't get it. Can you explain in a different way "*

It will not judge you

It will be patient

It will not give up till you get it

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Open Source

Amar Harolika

*Specialist – Decision Sciences & Applied Gen AI*

*Building Practical AI Tools for Analytics & Data Science*