Using AI in Excel

MGMT 675: Generative AI for Finance

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Background

AI Can Create Spreadsheets with Python

- Python libraries like `openpyxl` create/modify Excel files
- AI writes Python code that:
  - Inserts data values into cells
  - Writes Excel formulas (e.g., `=SUM(A1:A10)`)
  - Applies formatting (fonts, colors, borders)
  - Creates charts and pivot tables
- Result: fully functional spreadsheet with **live formulas**

Formulas vs. Hardcoded Values

Hardcoded (Bad)

```
sheet['B10'] = 1500
```

Cell shows 1500, but if inputs change, the total doesn't update.

Formula (Good)

```
sheet['B10'] = '=SUM(B2:B9)'
```

Cell contains a formula that recalculates when inputs change.

AI must be instructed to use formulas, not compute values in Python

Two Ways AI Interacts with Spreadsheets

Inside Excel (Add-ins)

- Sidebar panel in Excel
- Sees your current workbook
- Modifies cells directly
- Context-aware suggestions
- Examples: Claude for Excel, Microsoft Copilot, Google Sheets + Gemini

Outside Excel (Python)

- Runs in terminal or IDE
- Creates/modifies .xlsx files
- You open result in Excel
- Full programming power
- Examples: Claude Code, ChatGPT

Overview

What Is the Claude Excel Add-in?

- AI sidebar that lives inside Excel
- Reads your workbook—all tabs, formulas, and structure
- Modifies cells directly while preserving formula dependencies
- Powered by Claude Opus 4.6 (switchable to Sonnet 4.5)
- Works with local files—**no OneDrive required**

Plan Requirements

- Requires Claude Pro ($20/month), Max, Team, or Enterprise plan
- Shares your existing Claude usage pool
- Works with Excel 2016+ on Windows, Mac, and Excel for the web
- Supports `.xlsx` and `.xlsm` files

Installation

Installing the Add-in

1. Open Excel and go to the **Insert** tab in the ribbon
2. Click **Get Add-ins** (or **Add-ins** on some versions)
3. Search for **"Claude by Anthropic"**
4. Click **Get It Now** and accept the permissions prompt
5. The Claude icon appears in your ribbon

Microsoft Marketplace: Claude by Anthropic

Launching Claude in Excel

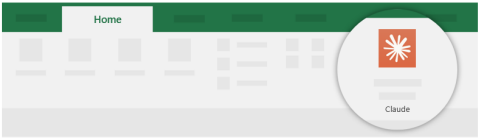
1. Click the **Claude icon** in the ribbon to open the sidebar
   - Windows: **Home** tab → Add-ins
   - Mac: **Tools** tab → Add-ins
2. Sign in with your Claude account credentials
3. The sidebar now sees your open workbook

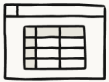
Launch and Log In

Launch the add-in

After you install the add-in, you can launch it by choosing the add-in button on the Home tab

On the Home tab





Claude, right in your workbooks

Analyze sheets, update assumptions, debug errors—with citations and transparency.

Log in

Key Features

What Claude Can Do in Excel

Analysis & Understanding

- Ask questions about workbook content
- Get answers with clickable cell references
- Navigate multi-tab spreadsheets
- Trace formulas and dependencies

Data Modification

- Update assumptions preserving formulas
- Highlighted changes with explanations
- Sort, filter, conditional formatting
- Create charts and pivot tables

Error Resolution

- Identify `#REF!`, `#VALUE!`, circular references
- Trace errors to their root cause
- Apply fixes preserving spreadsheet integrity

Model Building

- Build spreadsheets from scratch
- Populate templates with formulas
- Create financial models
- Add data validation and dropdowns

Tips and Limitations

Best Practices

- Always review changes before finalizing—Claude highlights what it modified
- Claude warns before overwriting existing data
- Optional: enable the **Claude Log** tab to track all actions in a session
- Long conversations are automatically compacted to maintain context
- Chat history does not persist between sessions

Limitations

- Does not support **macros or VBA**
- Does not support Excel **data tables** (What-If Analysis)
- Not recommended for audit-critical calculations without human review
- **Security:** only use with trusted spreadsheets—malicious content in cells could attempt to manipulate the AI

AI Spreadsheet Tools Compared

	Claude for Excel	**Microsoft Copilot**	**Google Sheets + Gemini**
Cost	Claude Pro ($20/mo)	M365 Copilot ($30/mo)	Google One AI Pro ($20/mo)
Platform	Excel (Win/Mac/Web)	Excel (Win/Mac/Web)	Google Sheets (Web)
OneDrive required	No	Yes (AutoSave on)	N/A (Google Drive)
Python execution	Server-side sandbox	Microsoft Cloud	Apps Script
Formula mode	Yes	Yes	Yes
VBA / macros	No	No	Apps Script only

▸ Microsoft Copilot details ▸ Gemini for Sheets details

Exercises

Exercises

1. Open a new workbook. Ask Claude to build a loan amortization table for a $200,000 mortgage at 6.5% for 30 years with monthly payments, and create a chart showing the principal vs. interest portions over time.
2. Open a new workbook. Ask Claude to create an example two-stage DCF analysis.

Exercise for Claude.ai or Claude Desktop

"Create an Excel workbook to illustrate two-stage DCF analysis."

Microsoft Copilot in Excel

What It Is

- AI assistant built into the Excel ribbon
- Powered by GPT-5.2 (switchable to Claude Opus 4.5)
- Included with M365 Copilot add-on ($30/user/mo on top of M365)
- Also available via Copilot Pro ($20/mo on top of M365 Personal)

Key Features

- Natural language formula generation
- Agent Mode: autonomous multi-step tasks (build models, reshape tables, create charts)
- `=COPILOT()` function: AI prompts directly in cells
- Python in Excel: generates and runs Python code for advanced analytics

◂ Back to comparison

Copilot: Strengths and Limitations

Strengths vs. Claude for Excel

- **Agent Mode**: plans and executes multi-step tasks autonomously
- `=COPILOT()` **function**: AI as a cell formula—results update when data changes
- **Python in Excel**: pandas, matplotlib, scikit-learn inside the spreadsheet
- **Formula completion**: real-time suggestions as you type
- **Web search**: pulls live data with source citations
- **Enterprise ecosystem**: integrates with SharePoint, Teams, Power BI

Limitations vs. Claude for Excel

- **Expensive**: $30/mo add-on on top of M365 ($66–87/user/mo total for enterprise)
- **OneDrive dependency**: historically required cloud storage; local file support still rolling out
- **Table format required**: data must be formatted as Excel tables
- **Multi-sheet weakness**: struggles with complex cross-tab formula tracing
- **No audit trail**: Claude logs all AI-assisted changes to a separate tab
- **Accuracy caveat**: Microsoft warns against using `=COPILOT()` for tasks "requiring accuracy or reproducibility"

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Gemini in Google Sheets

What It Is

- AI assistant built into Google Sheets (web only)
- Powered by Gemini 2.5 Pro (3.1 Pro rolling out)
- Included in Workspace Business Standard ($14/user/mo) and above
- Consumer: Google One AI Pro ($20/mo)

Key Features

- Natural language formula generation with explanations
- `=AI()` function: AI prompts directly in cells, with Google Search access
- "Help me organize": generate structured tables from a description
- Multi-step task execution from a single prompt (formatting, formulas, filters)

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Gemini for Sheets: Strengths and Limitations

Strengths vs. Claude for Excel

- **Cloud-native**: works entirely in the browser, accessible from any device
- **Real-time collaboration**: multiple users with simultaneous AI assistance
- `=AI()` **function**: AI as a cell formula—can also query Google Search for live data
- **Google ecosystem**: deep integration with Drive, Gmail, BigQuery
- **Lower entry price**: included in Workspace Business Standard ($14/user/mo)
- **Smart Fill**: auto-completes patterns as you type

Limitations vs. Claude for Excel

- **No desktop Excel**: Google Sheets only—Excel is the finance industry standard
- **Capacity limits**: Sheets caps at ∼10M cells; 200-cell AI analysis limit per request
- **Monthly cap**: 500 AI interactions/month
- **No VBA / Power Query**: uses Apps Script instead (different ecosystem)
- **Charts don't auto-update**: Gemini-generated charts are static snapshots
- **No offline access**: requires internet; Claude for Excel works in desktop Excel offline

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