Common Errors and Best Practices on Excel

Meritus™

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Common Errors when working on Excel

- **Cell referencing issues**:
  - Cells ranges not fixed
  - Formula ranges refer to entire columns/rows or larger ranges
- **VLOOKUP/HLOOKUP/MATCH:**
  - Column index not given as formula: (column (x) – column (Y) +1)
  - Range look up parameter not given (should be 0/false for exact match)
- **AVERAGEIF/SUMIFS/COUNTIFS:**
  - Not accounting for 0s, “na”s and errors in the data
  - Inconsistent Ranges in the formulae
- **Formula linking to the same sheet**: When copy pasting the formulae from one tab to another, original formula has the tab name of the current tab and not just the cell references.
- **Excess Formatting**: Formats applied to the last row of columns leading to file size bloating up.
- **Formula dragging**: Formula correct in the first row or column but not dragged to the last cell
- **Visible cells**: Operations performed only on visible cells
- **Inserting/Deleting rows/columns:** Deleting rows/columns without checking dependencies leading to #REF errors or screwing up lookups
- **Data sorting**: When sorting data table with formulae, the formula linking gets messed up because of reshuffling in rows
- **Refreshing the pivot table**: Forgetting to refresh pivot table before sending outputs to the client
- **Hard coded numbers instead of formulae**
- **Static values in formulae**
- **Number formats**: Date format, number vs. text
- **External linking**
- **Version control issues**: Inconsistent naming and usage of wrong version

Excel Best Practices – Process related

- **DO NOT TOUCH MOUSE**. Use Keyboard as much as possible while working on Excel
- **Keep row #1 and Column A blank!**
- **Follow a consistent structure and format** when working on complex analyses/models (standard font colour coding below)
    - BLUE = inputs (historical inputs, assumptions, drivers)
    - BLACK = cells with calculations
    - RED = warnings/notes
- Always follow 'OCR' structure in any analyses/models:
    - **Output**: Outputs, Cover tabs, Legends, Definitions
    - **Calculations**: Calculations, Intermediate outputs
    - **Raw Data**: Raw data, List tabs
- Make sure to **include legend and Instructions tab** in any complex analyses/models
- **Always SAVE your work** – Avoid losing data and crashing files
    - Save (Ctrl+S) or (Alt, F, S) and save As (Alt, F, A)
    - Beware of using Auto save – it prevents you from undoing a series of recent mistakes using (Ctrl+Z) command
    - Always **save as (Alt, F, A)** separate versions with version # and date when working on iterative analyses/models

Excel Best Practices – Formula related

- **Never include numbers in formulae:** Always enter the variable in a cell and refer to the cell in the formula. This makes the spreadsheet easy to follow and to update when variables change.
- **Don't fiddle with the raw data:** When using data from another source, don't edit it, report on it in other sheets. This minimises errors and increases efficiency.
- **Use data validation where possible**, to minimise data entry errors, and to make it easier to analyse and report on the data.
- **Get used to using the dollar signs when you refer to cells**. Used well, you can write a formula once and copy it everywhere - Saving time and reducing errors.
- **Protect cells with formulae in them:** It can be very difficult to find an incorrect (or missing) formula caused by accidental typing.
- **Use colour and formatting (as well as descriptions)** to make it obvious where data entry is required.
- **Avoid merging cells unless absolutely necessary:** Merged cells make a spreadsheet far harder to edit.

Excel Best Practices – Formula related

- **Avoid External Linking**: Ensure that your file does not have any external links. Check for the links by searching for "[' character in the entire work book
- **Break down any Complex formulae**: Rather than writing 1 big complex formula, break it down into different cells
- **Check dependencies** before deleting any rows/columns
- **Check formulae in middle and last cells rather than checking 1st cell**
- **Avoid Volatile formulae** such as Array formulae, OFFSET, INDIRECT, SUMPRODUCT
- **File size check**: Constantly check for file size. An abnormal increase in file size means that something went wrong.
    - CTRL + SHIFT + END takes you to the last row of the tab
- **Use Multiple windows** to toggle between tabs
- **Use Named ranges in formulae** instead of cell references
- **Do not refer to the entire columns or large cell references** in formulae
- **Put the formula in the first data row, and make sure it's working** before copying it to the rest of the cells in the column

Excel Best Practices – Final outputs

- **In all final versions and client ready outputs, please ensure that:**
  - File is named appropriately
  - Tab names are intuitive
  - Tabs are structured appropriately
  - Active cell is A1 on all tabs
  - Back up or List tabs are hidden and tabs are separated with tab partitions (Inputs, Calculations, Outputs, Backups etc.)
  - All calculations on Output tabs (except for actual output tables) are greyed out
  - All outputs have a clear and intuitive headings and sub headings (if required)
  - All output tabs and calculation tabs should be structured and formatted consistently. Naming conventions used should also be consistent across the file.
  - None of the cells should have errors (#N/A, #VALUE etc.)

Tips on how to make your Excel faster

- **Work from left to right:** Structure independent values in the top-left portion of your sheet and enter dependent cells to the right or below those values
- **Save file in Excel Binary format (".xlsb"):** For large models, this helps reduce the size, reduces the opening and closing time and increases processing speed
- **Avoid off sheet cell references and same sheet reference**. For instance sheet name is 'Sheet 1' and the formula in the A1 of the 'sheet 1' is "SUM(Sheet1!B1:D1)".
- **Avoid multiple volatile functions:** A volatile function recalculates every time there's a change in the worksheet, and that slows things down. Examples of volatile functions are RAND(), RANDBETWEEN(), NOW(), TODAY(), OFFSET(), CELL(), and INDIRECT().
- **Convert unused formulas to static values**
- **Avoid array formulas**
- **Avoid monster formulas:** Use simple formulae in multiple cells rather than a complicated formula in a single cell
- **Limit conditional formats**
- **Isolate repeated formulae and move them to single cells**
- **Sort Final and Static Data**
- **Keep the total area under reference to a minimum**
- **Reduce Used Range by going to last cell of each sheet and deleting all the unused rows and columns**