ACCESS ANALYTIC

Financial Modelling Best Practice Guidelines

White Paper

Introduction

The purpose of these guidelines is to provide an overview of some of the best practices that should be considered when building spreadsheets so as to minimise the risk of errors occurring and improve reliability, usability, robustness and accuracy.

Not all guidelines will be applicable to all spreadsheets, and the guidelines will not necessarily be applied in all circumstances.

However, by knowing the guidelines and the purpose of each, the financial modeller will also know when to depart from the guidelines.

The most important thing is to adopt a **consistent** approach, ideally one that is shared amongst all those doing financial modelling in your organisation.

This white paper sets out some guidelines we've found useful in our business when building financial models.

About the Author

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Qualifications and Background

B.Comm (Accounting & Information Systems), CISA, AFin, AIMM, Excel Expert

Jeff Robson is the Principal Consultant of Access Analytic Solutions, a Perth-based consulting company that provides financial modelling services in model development, audit/review, and training.

Jeff holds a Certified Information Systems Auditor from the Information Systems Audit and Control Association. He has 15 years experience with Microsoft Excel, 6 years experience in Information Systems Audit, and worked for 4 years in external audit.

He has been involved in many Excel development projects for clients around the world including sophisticated financial modelling, auditing and review, and advanced macro programming.

Access Analytic is the Information Systems audit partner for a number of chartered accounting firms in Perth and performs IT system reviews, Information Systems audit and control reviews, and systems selection and implementation for a wide variety of clients.

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Guidelines

SPREADSHEET DESIGN

- Use modular spreadsheet blocks so that one part of the file can be changed independently and without necessarily affecting the other areas. A modular design also allows individual components to be used as building blocks for future extensions.
- Separate data inputs, calculations, and outputs and clearly identify each to make them easier to recognise and utilise.
- Where there are many similar sheets, design a template that can be applied to all sheets. This makes it far easier to maintain than having to edit multiple sheets individually.
- Ideally, information and headings should be entered once then these will flow through the file to wherever they are required. This makes the file far easier to maintain and reduces the opportunity for error.
- Label sheets, columns and rows with their applicable headings to make files easy to follow. The sheet name and/or subheading should provide an indication of the sheet's function. Column and row headings should include units and currencies where relevant. Columns and rows should only contain data in one unit and/or currency.
- Consider the use of sheet and workbook protection to reduce the occurrence of unauthorised changes.
- When linking multiple files together, ensure dependency information (eg "must have X, Y, and Z files open when making changes to this file") is provided in the file to assist with future maintenance.
- Consider using dynamic ranges for chart data and named ranges to ensure these always cover all your data.
- Don't use the same field name in a database table more than once as this causes readability issues when using pivot tables or filters.
- Minimise the use of blank lines in data/calculation blocks as these cause problems with formatting and manipulation.

TEMPLATES

- Use separate sheets for Setup (all standing data for the file), Workings (reference and lookup tables, data storage, and calculations that are not relevant to the user), and About (details regarding the file's overall purpose, spreadsheet owner, version, changes, etc). Workings should be well-documented to assist with maintainability.
- Named ranges should be named consistently throughout the file as SourcesheetTypeName eg workingsTblMonth (or just wTblMonth) or setupStrFilename.
- Establish templates to be used by spreadsheet builders when constructing new models. These should include all the basic formatting styles, key sheets, and documentation templates required for constructing a model in accordance with company policy.

FORMATTING

- Data input areas should be easily recognisable eg different background colour. Data inputs should not be mixed with calculations and inputs should not be hard-coded into calculations.
- Use sheet tab colours to assist with visually identifying sheets with a similar function.
- Consider using "Center Across Selection" rather than "Merge Cells" – merged cells cause problems in many situations.

FORMULAS & FUNCTIONS

- Design formulas that can be easily applied in blocks rather than using spaghetti links to individual cells. Use data tables and lookups to pull data out and place it where it needs to go.
- Split long formulas into smaller chunks to aid readability. Document longer formulas in English (eg via cell note) to assist yourself and other users.
- Consider using user-defined functions where long, complex formulas are required. This simplifies readability and maintainability of formulas and allows better documentation, portability, and re-use.
- Spreadsheets will generally be read from left to right and top to bottom. As such, formulas should refer to cells to the left and above.
- Use range names to aid formula readability.
- Calculate results using different cells and/or methods to detect potential errors. Use Conditional Formatting to provide a visual indication of any errors that exist.
- Use COLUMN() or ROW() to automatically calculate the offset required for VLOOKUP, HLOOKUP, and other reference functions. This ensures the offset will be correct even if new columns or rows are inserted.
- Never clear a cell using the space bar, use the Delete key instead. This will prevent errors from occurring when a formula includes a cell that contains a space character.
- Ensure formulas can handle unusual situations such as zero, negative values or text values in cells (particularly where formulas use division) eg via data validation, error messages, or by handling the error in a formula.
- Calculate subtotals using SUBTOTAL rather than SUM to allow easier maintenance.
- Avoid copying a formula that includes a named range from one spreadsheet to the other as this creates a hidden link between the workbooks.

CHARTS

- Limit the number of data series on a chart to 5 or less, otherwise it becomes too cluttered and cannot be easily understood.
- Ensure chart axes scale and titles are correct. Consider linking them to a cell.
- When using a chart type such as “line”, ensure there is a logical relationship between the data.

VBA MACROS

- Establish a VBA Style Guide that contains rules and details about coding standards.
- If the same code is written more than once, it may be better to place this into a separate function that can be called with parameters.
- Use named ranges in macros rather than absolute cell references so that the file can be amended (eg new row/column inserted or deleted) without requiring amendment to macro code.
- VBA code should always be well-documented with proper indentation according to the style manual.
- Use the macro recorder sparingly. The code it produces is lengthy, inefficient, and hard-coded.

Access Analytic Overview

OVERVIEW

Established in 2000 (originally under the name "Mailbarrow"), Access Analytic Solutions is a leading provider of services in financial modelling, management reporting, data analysis and financial model auditing.

We are based in Perth, Western Australia and provide financial modelling, management reporting and data analysis services to businesses so they can make decisions with confidence.

We specialise in financial modelling and have developed, re-developed, and audited financial Excel models for a wide variety of medium and large organisations around the world.

We also provide training in financial modelling, company valuations and advanced Excel for finance and accounting professionals.

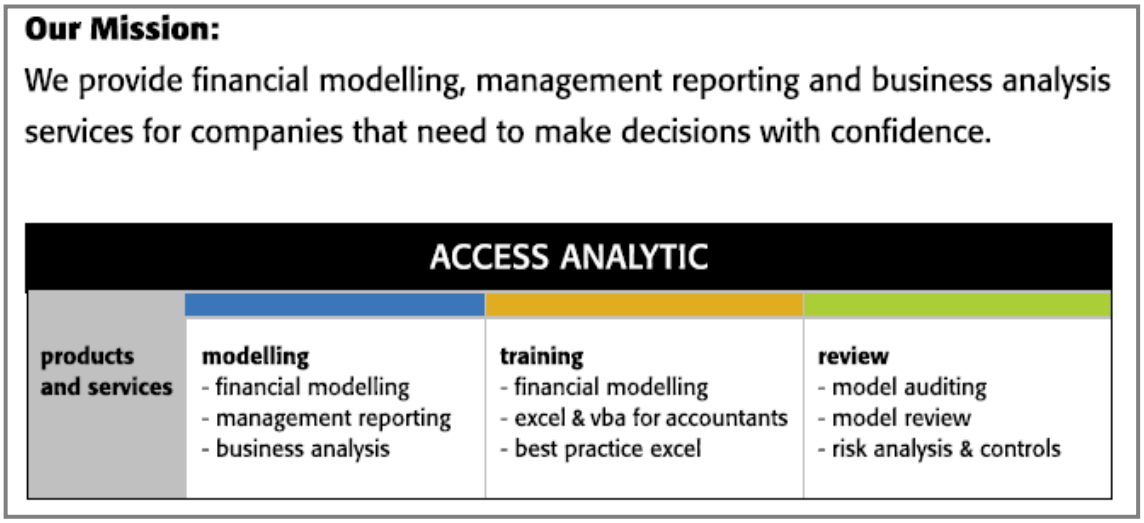

Figure 1: Access Analytic Solutions Overview

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Additional resources

Here is some additional information that you may find useful regarding financial modelling.

Area	Suggested Resources
Financial Modelling and Management Reporting	To see how we could help with your project or issue, call us on +61 8 6210 8500, e-mail consulting@accessanalytic.com.au or visit http://www.accessanalytic.com.au/services_excel_web.php
Financial model audit and review	We provide an independent model audit service to highlight any potential errors or inconsistencies. If you'd like to sleep better knowing that your key Excel models are giving you the right answer, call us on +61 8 6210 8500, e-mail consulting@accessanalytic.com.au or visit http://www.accessanalytic.com.au/services_excel_audit.php
Automated Spreadsheet Auditing Tools	We use and highly recommend Spreadsheet Professional as a great tool to use in-house if you are going to be reviewing spreadsheets on a regular basis. For more information, call us on +61 8 6210 8500, e-mail consulting@accessanalytic.com.au or visit http://www.accessanalytic.com.au/services_spro.php
Training	We provide high-powered training in Financial Modelling, VBA and advanced Excel for accounting and finance professionals throughout the Asia-Pacific region. For more information, visit http://www.accessanalytic.com.au/training
Excel Mentoring	Personalised mentoring in your office, using your files, solving your issues. http://www.accessanalytic.com.au/services_mentor.php

Further Reading

Additional information on spreadsheet modelling best practices:

Best Practice Modelling Standards, Spreadsheet Standards Review Board
http://www.ssrb.org/

Spreadsheet Modelling Best Practice, IBM & PwC
http://www.eusprig.org/smbp.pdf

How do you know your Spreadsheet is Right
http://www.eusprig.org/hdykysir.pdf