How to review a spreadsheet

Practical tips for the auditor's review of management's spreadsheets

John Tennent & Jason Partington

4 July 2024

1

Practical tips for the auditor's review of management's spreadsheets

What we will cover:

- Spreadsheet risk research
- ICAEW Publication – ***How to Review a Spreadsheet***
- Excel Tools to inspect an Excel Workbook
- Questions

John Tennent

Jason Partington

2

Research

Ray Panko (from the University of Hawaii) researched error rates in spreadsheets:

- As many as 90% contain a mistake.
- A spreadsheet review should be carried out by a third party. Self-review only identifies 34% to 69% of errors.

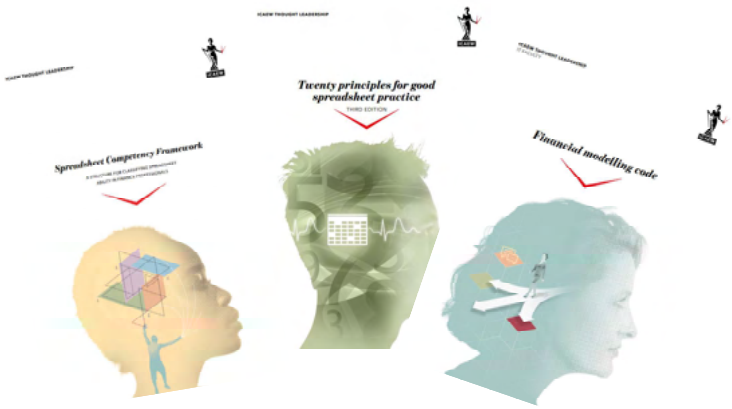
Error avoidance starts by building it correctly, by following best practice and by engaging people with appropriate skills

We can only reduce the risk of error, never eliminate it completely

3

www.icaew.com/spreadsheetreview

The publication was originated in response to the challenge we all face in making business decisions that reply upon calculations from spreadsheets. **How confident are we that the vital numbers are correct?**



4

The sections of the publication

Initial Review	This is a big picture review covering the spreadsheet purpose, risk, author competence, controls etc.
Structural Review	There are 11 areas to review in gauging confidence in the structure and logic. Areas such as logic flow, separation of data (inputs), calculations and outputs etc.
Data Review	This is the process of ensuring the validity of the inputs to the spreadsheet. There are five areas of consideration
Analytical Review	A sense check that the numbers 'look right'. A process of using charts (including sparklines) and ratios
Detailed Review	Excel tools and functions covering Design principles, The Formula Auditing Group, Watch Window, Hidden spreadsheet attributes, Inspecting the workbook etc.
Post Review	Once a review has been completed the findings need to be documented and any changes implemented

5

Initial review

- Look at the big picture:
  - What is its purpose?
  - What is the level of risk in the spreadsheet output
  - Who made it?
- Have any previous reviews been carried out?

6

Structural review

- How is the spreadsheet put together and linked?
- Is the layout logical and clear to follow?
- Consider the Twenty Principles for Good Spreadsheet Practice – for example, consider the separation of inputs, workings and outputs
- Has any complex functionality been employed?

7

Data review

- Where has the input data in the spreadsheet come from?
- How is data validated?
- Perform some simple checks to spot common errors – e.g. a zero inputs test

8

Analytical review

- Without examining the details, assess the reasonableness of its outputs
- For anything with a time series element, consider trend analysis
- Financial ratios can help identify unusual trends and target further investigation

9

Post review

- A copy of the spreadsheet that was reviewed with details of findings & corrections
- Lifecycle – Decision support or regular reporting?
- Protection of reviewed logic
- Managing updates

10

Some Useful Excel Functions – 2 Types

Prevention is better than cure

Hunting for errors

Data Review

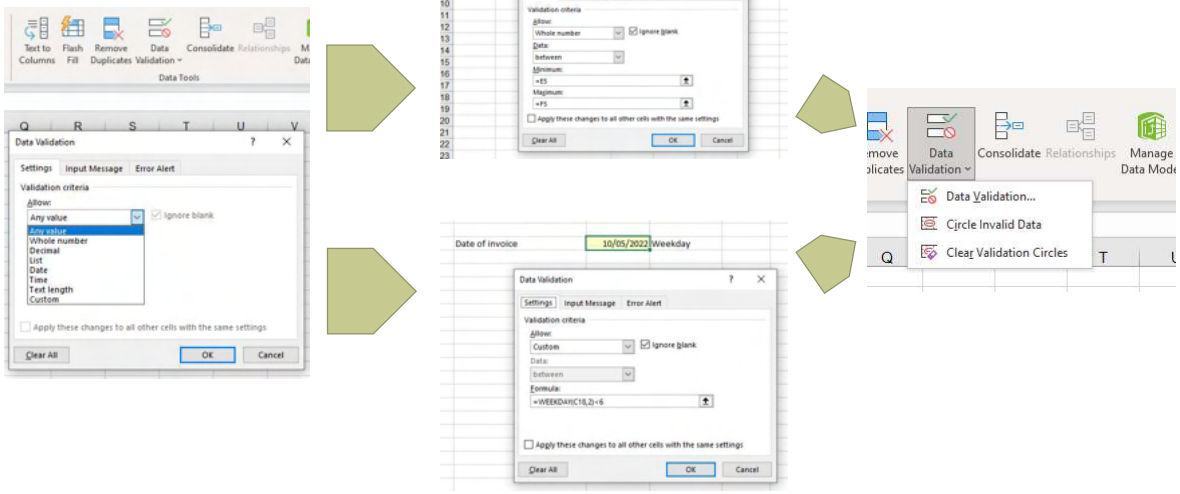
- Sign
- Currency
- Scale (absolute, thousands, millions)

- Data Validation

- Test Data
- Zero Inputs
- Stress Testing
- Delta Testing

			Unit
Revenue			
	Customers per day	350	No.
	Average consumption of drink per person	2.0	No. per person
	Average drink price	3.0	£
	Average consumption of food per person	50%	%
	Average food price	8.0	£
Costs			
	Average drink margin	30%	%
	Average food margin	50%	%
	Staff - Customers per employee	25.0	No.
	Minimum staff	10.0	No.
	Average employment cost	15,000	£ per year
	Rent	55,000	£ per year
	Rent review period	5	Years
	Utilities	18,000	£ per year
	Other	25,000	£ per year

Data Review



13

Analytical Review - Charts

Sparklines : A visual audit of time series – **Insert** → **Line Sparkline**

Sparkline	0	1	2	3	4	5
	1,300,000	1,315,825	1,355,300	1,395,959	1,995,864	1,480,973

- Flags – An If statement to test validity

Balance Sheet balances	All balance	0		0	0	0	0	0	0
Balance Sheet balances	Error in sheet	7		0	0	0	0	1	1

– In each cell of the balance sheet : =**IF(K47=K58,0,1)**

– At end of row **: =IF(SUM(H65:R65)=0,"All balance","Error in sheet")**

– Conditional format the answer to highlight any errors

14

Analytical Review - Ratios

Ratios : Expected ranges

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
11					**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
15																
16		Margin			17%	18%	18%	19%	18%	17%	19%	24%	18%	18%	16%	18%
17		Flag in range 16% - 20%			Valid	Valid	Valid	Valid	Valid	Valid	Valid	Invalid	Valid	Valid	Valid	Valid

- In each cell : =**IF(AND(L16>=16%,L16<=20%),"Valid","Invalid")**

  NB the 16% and 20% would be linked to input cells, they are typed here for clarity

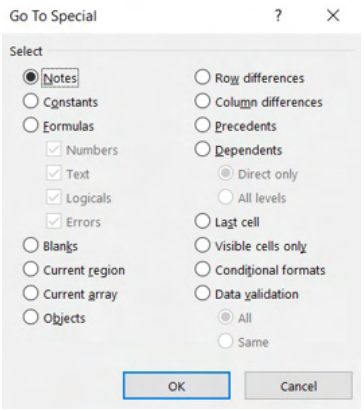
- Conditional format the answer to highlight any potential errors

15

Detailed Review - Hunting for Errors

Inspecting the formulas – **Formulas** → **Show Formulas** or **CTRL`**

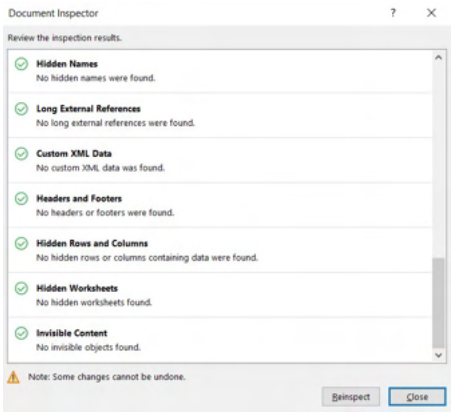
Highlighting attributes – **F5** (Go To) → **Special**



16

Detailed Review – Inspecting the workbook

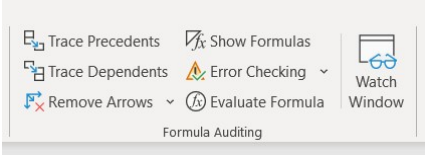
Inspecting the Workbook – File → Info → Inspect Workbook

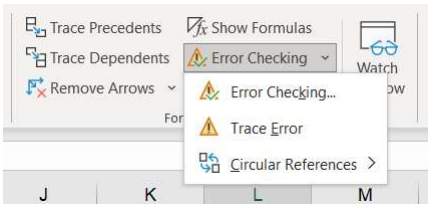


17

Detailed Review – Formula Auditing

Formula Audit Group – **Formulas Ribbon**





18

Detailed Review – Watch Window

Watch Window – **Formulas Ribbon**

Allows you to see the results of selected cells as the spreadsheet changes. Especially useful to monitor outputs as inputs are flexed.

Revenue			
	Customers per day	350	No.
	Average consumption of drink per person	2.0	No. per person
	Average drink price	3.0	£
	Average consumption of food per person	50%	%
	Average food price	8.0	£
Costs			
	Average drink margin	30%	%
	Average food margin	50%	%

Questions


ICAEW
icaew.com