

The Overlooked Audit

An Approach To Auditing Spreadsheets

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The Risk and Impacts of Spreadsheet Errors and Fraud

Spreadsheets are one of the most pervasive business tools which is a blessing and a curse all at the same time. Spreadsheets are ripe ground for errors and fraud for many reasons including:

- *Comfort* – No one notices the risk of spreadsheets as almost any computer user has gained comfort with their use in the business environment.
- *Security* – There is virtually no security in a spreadsheet which is normally controlled by network access rights, if they exist at the company.
- *Lack of Development Process* – While Software Development Lifecycles (“SDLC”) have become more commonplace, they are generally not applied to spreadsheets. This is the case considering spreadsheets are normally considered by Information Technology Departments as the “business users” domain while they focus their SDLC on developing more enterprise applications. For example, a KPMG study in 1997 found that of 21 major UK banking and financial organizations, over 70% had no formal quality assurance systems in place. Spreadsheets are therefore often developed by people who are very skilled in their main job function, be it finance, procurement, or production but often have had no formal training in spreadsheet use and development.
- *No Built In Controls* – Entry errors and copy/paste errors are common in spreadsheets given there are generally no controls to prevent such occurrences. For example, when Excel copies a formula it automatically increments/decrements the columns or rows in any cell references within the formula. If, the formula contained cell references with absolute values, for example \$A\$10, rather than using A10, then Excel will not increment the row or column.
- *Hidden References / External Links* - Formulas that reference hidden rows, columns or worksheets are commonly used but can cause major problems especially if the current user is unfamiliar with the structure of the spreadsheet. Subsequent users of the document may not be aware of their existence, or a hidden cell may be accidentally copied as part of a larger selection from another document. Similarly, external links can be made to other spreadsheets for information which is an extremely powerful feature of Excel, but errors can easily occur if not all workbooks are open at the same time.

Spreadsheets therefore become the least expected link in the chain for committing financial statement fraud. Aside from fraud, given their open nature for change, they are also ripe grounds for errors. Examples of such errors and fraud are rampant and have been summarized by the European Spreadsheet Risks Interest Group at the following link: <http://www.eusprig.org/stories.htm>. Some highlights that speak to the above inherent risks include:

- *HealthSouth* - Two ex-HealthSouth executives admitted preparing a false spreadsheet for auditors that inflated HealthSouth's assets and made the company appear to be worth more than it was.

- *CFX* – “The adjustments are done on an Excel spreadsheet and they are adjusted backwards from the management accounts back to the Equation system, ie the management accounts showing desired results are prepared first, then adjustments to tie up to Equation are made” per the internal audit department investigating the fraud.
- *NASA* - "NASA's fiscal year 1999 SBR was misstated by a reported \$644 million due, in part, to a misinterpretation of guidance and errors in NASA's ad hoc process for generating budgetary information. As a result, the NASA locations used various methods to extract the data for this line item from their separate systems and entered the data on spreadsheets, which were then compiled by NASA headquarters. ... NASA officials have indicated that undetected errors in this spreadsheet process- in addition to the inclusion of the erroneous category of transactions-were also responsible for a portion of the SBR misstatement.

Auditing Spreadsheets To Detect Errors and Fraud

Auditing a spreadsheet (which we will assume to be Microsoft Excel for this article) follows the same process as any audit which starts with a risk assessment, leads to engagement planning, fieldwork, and then completing a resulting report. Let's group these steps and explain them more fully while also introducing EXChecker[™], a software tool that automates the auditing of Excel spreadsheets. Please note that this software is available for a free 30-day free demo at the following link: <http://www.spreadsheetauditing.com/exchecker/auditsoftware.shtml>

1. Risk Assessment / Engagement Planning

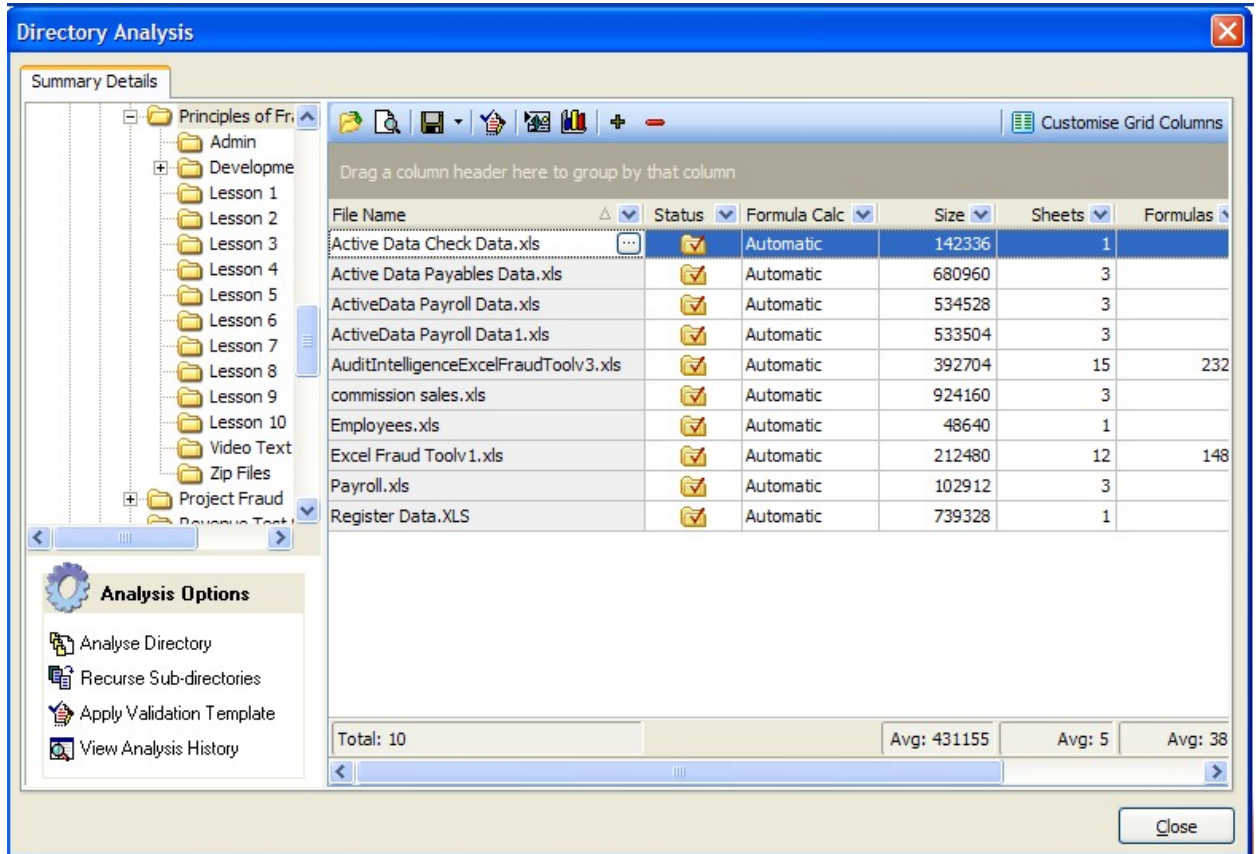
Spreadsheets used as the basis of financial reporting or for operational management should be holistically assessed for the likelihood of error/fraud, as well as, their impact on the company. Obviously, a simple spreadsheet with no formulas that is used to track the daily lunch menu at the cafeteria would not have a major impact on company operations. However, one that is used to post wire transfer journal entries could have a major impact to financial reporting and cash management to the company.

While the impact of the spreadsheet may be relatively straight-forward, the likelihood of errors/fraud is more difficult to assess. Some common risk factors to consider when reviewing spreadsheets include:

- Number of formulas
- Number of nested IF formulas
- Number of populated cells
- Number of labels
- Number of blank cells
- Number of cells with formula errors
- Number of text fields that should be numeric formatted
- Number of hidden worksheets and cells
- Number of external links

So an auditor looking to assess the likelihood of issues would generally need to open each spreadsheet deemed to have a major impact to operations and count the number of incidences above. This is a tedious task and one that is generally deemed to be non-cost/beneficial. Another approach is to use EXChecker to analyze all Excel files in a directory. EXChecker can

be pointed at an entire directory to tabulate the Excel version, the number of formulas, worksheets, hidden worksheets, arrays, errors, validations and the contents of up to 4 user-defined cells – all of which combine to indicate the potential complexity of an individual spreadsheet. This can be done to complete a quick risk assessment of an entire set of company spreadsheets:



EXChecker goes one step further in its ability to validate workbooks against user-defined rule-based templates. For example, certain formulas or conditions could be established as business rules in a template and then tested against all spreadsheets in a company directory. By doing so, company administrators can ensure that high complexity formulas are not being used or at least are identified for further quality assurance prior to use in production.

Regardless of whether templates are used, EXCecker can speed the risk assessment process by quickly identifying spreadsheets that have a higher likelihood for error/fraud. When this likelihood score is combined with the potential impact rating, the auditor is presented with an overall risk score for each spreadsheet. The highest scores would be prioritized for additional fieldwork as part of the audit.

2. Fieldwork

While there are numerous types of issues that can be identified in fieldwork testing, the focus of this review will normally be to determine (1) Incorrect or improper data entry and (2) Formulative errors or improper formula design. Once a set of spreadsheets have been identified for testing, they can be manually reviewed with some testing features native in Excel. These include:

- *Find/Replace* - By selecting *Edit > Find* in Excel, a “+” symbol could be entered to find all occurrence where an amount was added to a formula:

| | A | B | C | D | E |
|---|-------|--------------|--------------|--------------|---------------|
| 1 | | | | | |
| 2 | | A | B | C | A+B+C |
| 3 | | Revenue Jan. | Revenue Feb. | Revenue Mar. | Total Revenue |
| 4 | Div 1 | 1 | 1 | 1 | 3 |
| 5 | Div 2 | 2 | 2 | 2 | 9 |
| 6 | Div 3 | 3 | 3 | 3 | 9 |
| 7 | Div 4 | 4 | 4 | 4 | 17 |
| 8 | Div 5 | 5 | 5 | 5 | 15 |
| 9 | Total | 15 | 19 | 19 | 53 |

This test could be completed for all other mathematical operators to identify potential formula issues.

- *Trace Precedents / Dependents* - By selecting cell E4 in the above spreadsheet, we can then select *Tools > Auditing > Trace Precedents* to show the cell values that are in the =Sum() function.

| | A | B | C | D | E |
|---|-------|--------------|--------------|--------------|---------------|
| 1 | | | | | |
| 2 | | A | B | C | A+B+C |
| 3 | | Revenue Jan. | Revenue Feb. | Revenue Mar. | Total Revenue |
| 4 | Div 1 | 1 | 1 | 1 | 3 |
| 5 | Div 2 | 2 | 2 | 2 | 9 |
| 6 | Div 3 | 3 | 3 | 3 | 9 |
| 7 | Div 4 | 4 | 4 | 4 | 17 |
| 8 | Div 5 | 5 | 5 | 5 | 15 |
| 9 | Total | 15 | 19 | 19 | 53 |

This can be done for every formula in the spreadsheet which is easier to accomplish by opening the Auditing Toolbar by selecting *Tools > Auditing > Show Auditing Toolbar* and then quickly selecting the *Trace Precedents* button as one moves from cell to cell. While a useful tool, this can be a very tedious task.

- *Manual Review* – While it can be time-consuming, manually walking through a spreadsheet to review each key cell and formula is an approach to testing the spreadsheet at hand.

With EXChecker, the testing of all formulas and cells is automated, saving the auditor time, with some examples shown below:

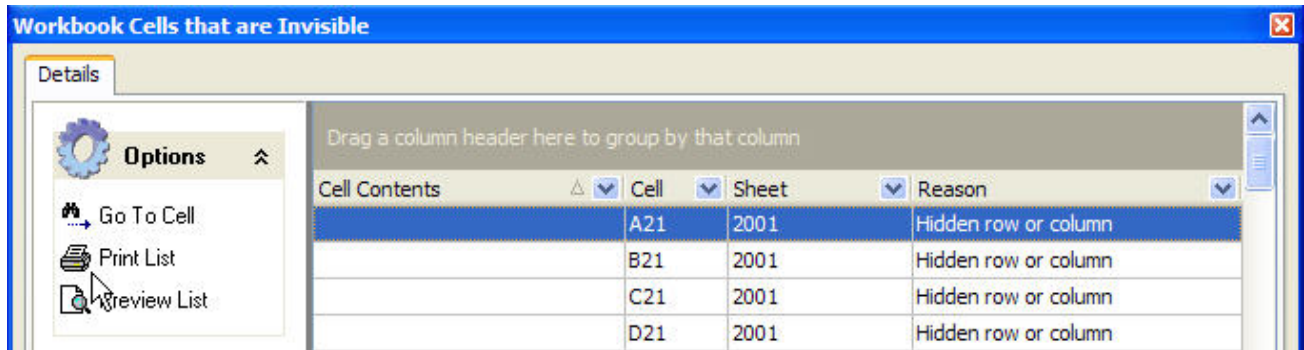
- *Cells that reference text* – This feature identifies cells that are used in formulas but are not properly formatted for mathematical operations.

| Formula | Cell | Sheet Name | Col | Row |
|----------------|------|------------|-----|-----|
| =SUM(B1:B6) | N2 | 2001 | N | 2 |
| =SUM(G1:G9) | G10 | 2001 | G | 10 |
| =testsheet!A2 | L9 | 2003 | L | 9 |
| =testsheet2!A2 | L10 | 2003 | L | 10 |

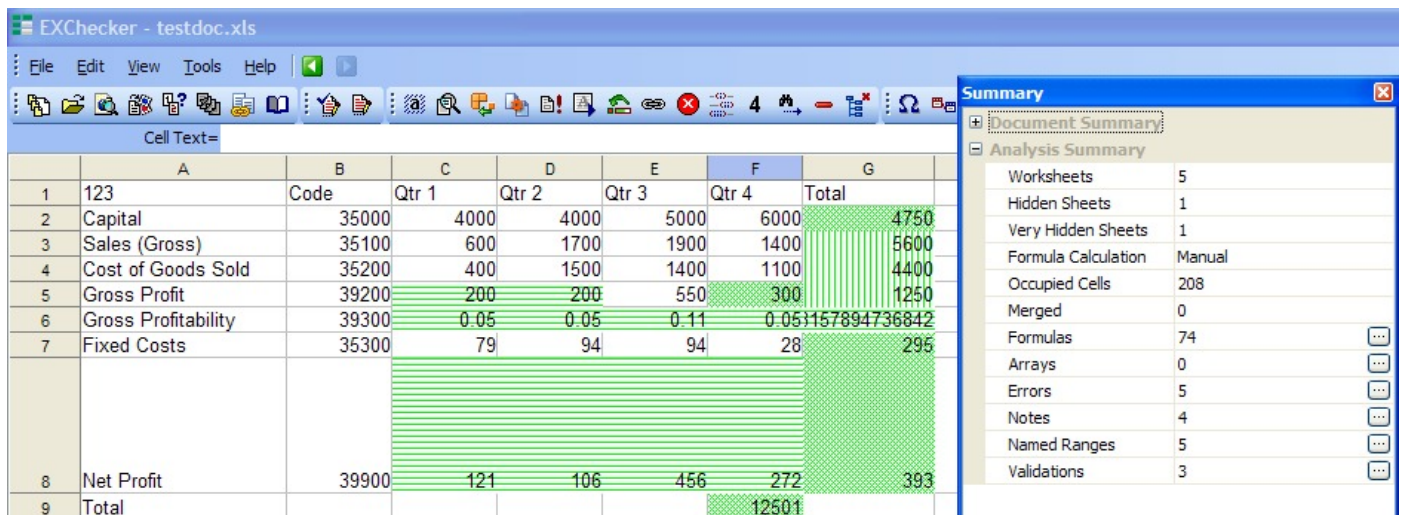
- *Empty reference cells* – Cells generally should not be empty and this test immediately shows formulas dependent on empty cells.

| Formula | Cell | Sheet | Col | Row |
|--------------------|------|-------|-----|-----|
| =2001!IM2+2001!IM4 | L1 | 2003 | L | 1 |
| =SUM(C2:C14) | C16 | 2001 | C | 16 |
| =SUM(G1:G9) | G10 | 2001 | G | 10 |

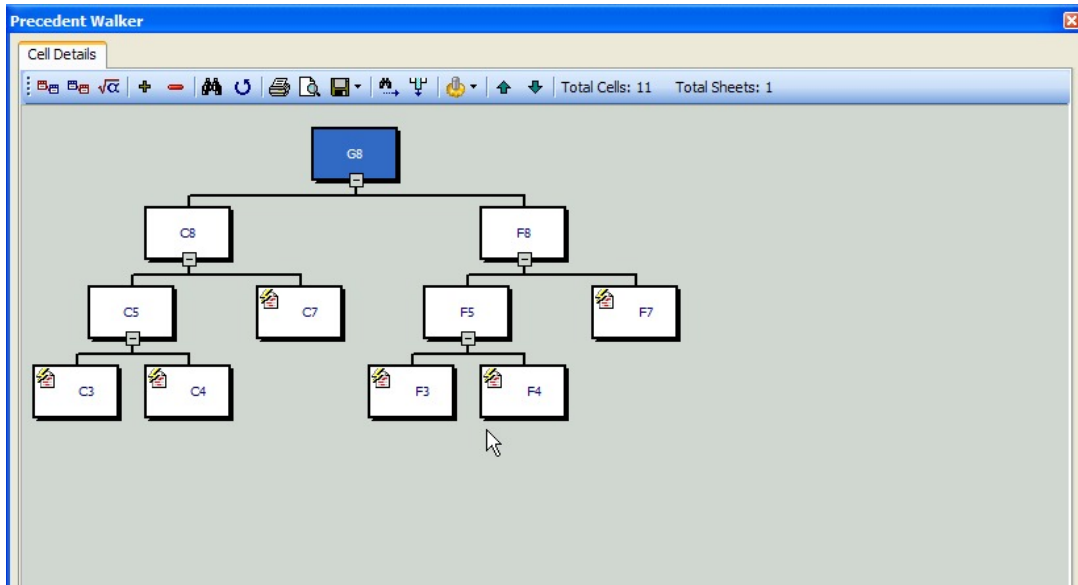
- *Hidden worksheets and cells* – While hiding worksheets, columns, etc. can be useful for those viewing large Excel workbooks, it makes it difficult to know where the data is coming from when auditing. EXChecker automatically identifies all of these occurrences, even ones that are password protected.



- *Easy summary and formula analysis viewing* – EXChecker provides a summary analysis of the entire spreadsheet including hidden sheets, number of formulas, errors, and notes. It then color codes the formulas so that a user can easily see inconsistencies in the spreadsheet or copy/paste errors. In the below example, cells C5 and D5 suggest that a formula is being copied across the row yet cell E5 is a fixed number that was entered (and incorrect when one looks more closely at the spreadsheet).



- *Improved precedent and dependent viewing* – Unlike the rudimentary tracing features in Excel, EXChecker provides a robust graph of all precedents leading up to a final formula value. This could be used to select a critical field (i.e., Net Profit) and then tracing all of the precedents to this figure. Please note that EXChecker not only traces the initial precedent but all precedents in the chain which can be drilled into for more details or collapsed to show more of a summary, if needed.



3. Resulting Report

An essential part of the auditing and compliancy process is documentation. Excel allows simple comments to be assigned to a cell, but EXChecker has taken this much further. Essentially, whole documentation can now be assigned to a single cell, worksheet or overall spreadsheet. Its integrated and feature-rich word processor (complete with spell checker and thesaurus) allows the insertion of cell summary information, overall document summary and cell precedent and dependency details into the document at the click of a button. It neatly divides the documentation by using the worksheet names as chapters, and individual cells are assigned topics within the chapters. The documentation can include hyperlinks, graphics, headers and footers, tables and can even be exported to another format such as Word if necessary.

Benefits of an Automated Tool

EXChecker provides some compelling reasons for making the switch from Excel's rudimentary audit features, some of which include:

- *Excel is not compromised* – EXChecker is a separate software from Microsoft Excel and as such, does not allow any editing to the Excel spreadsheet to ensure the underlying spreadsheet is not compromised in any way in an examination.
- *Saves time in assessing risk and performing the audit* – By automating most of the effort, the auditor can spend more time analyzing rather than tabulating the results.
- *Gets auditors up to speed fast with reviewing spreadsheets* – By working off the many best practices in the field, EXChecker provides a quick way for an auditor to start

reviewing spreadsheets for errors and fraud. With its formula and cell analysis, drill down formula walker, and summary statistics, the auditor immediately can add value on the engagement. Users will also appreciate EXChecker's cell translation tool which, as the mouse cursor is placed over a cell, a hint appears that contains an English representation of the current cell contents. This is an excellent method of allowing auditors to gain understanding of the document. For instance, rather than seeing =SUM(C5:F5) the hint displays [Total][Gross Profit].

- *Encapsulated documentation* – By providing robust documentation tools, EXChecker allows for an entire spreadsheet audit to be completed and documented within the software package which aids in locating the current year work but also for reference in future audits.

In summary, Microsoft Excel is such an easy tool that everyone uses it for efficiently recording accounting information. While this is a major benefit to business, such ease opens the door for poorly controlled spreadsheets that have a tendency towards errors and fraud. While auditors tend to focus on the robust accounting systems for controls, many times the simple spreadsheet is the area that should deserve the most focus. Through a combination of Excel features and complimentary products, auditors should be completing more diligent analysis of spreadsheets. For more information on EXChecker and to obtain the free 30-day demo, please see the following link: <http://www.spreadsheetauditing.com/exchecker/auditsoftware.shtml>

Rich Lanza (CPA, CFE, PMP) - Enables organizations in the use of technology to (1) generate cash recoveries, (2) stop profit leaks, (3) move away from control issues, and (4) work towards process improvements. With automated report systems and personalized coaching, Rich helps companies get quality results in minutes. This is done by maximizing the technology companies already have and showing professionals how to become “info magicians”. He is the author of 12 publications and training courses in ACL, IDEA, Access, ActiveData, and Excel and has over 50 articles for major audit publications including being a column editor for the ACFE's Fraud Magazine. While he has over 13 years of experience and is a recognized leader in the use of technology, Rich also founded of www.AuditSoftware.Net, a free website devoted to using technology for generating bottom line results. His company's website with free resources and a listing of services is at www.cashrecoverypartners.com.