# Proactively Detecting Occupational Fraud Using Computer Audit Reports

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**The IIA Research Foundation**

## Disclosure

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# Foreword

The current spate of accounting frauds—as gargantuan as they have been—relied on tried and true techniques to accomplish their evil outcomes. Enron, WorldCom, Adelphia, and the rest of a rogue's gallery did not invent financial fraud; they simply brought the problem to the forefront.

Cooking the books is only one method by which organizations are victimized from within. So-called "loyal and trustworthy" workers—from the mailroom to the boardroom—have historically engaged in various forms of cheating and stealing. Knowing the methods they use and how these misdeeds affect books of account is a key element in detecting the conduct of dishonest employees, managers and executives.

Fraud, according to *Black's Law Directory*, consists of "all multifarious means which human ingenuity can devise, and which are resorted to by one individual to get an advantage over another by false suggestions or suppression of the truth. It includes all surprise, trick, cunning, or dissembling, and any unfair way which another is cheated."

In an occupational fraud setting, however, the ways organizations can be victimized from inside are limited to three principle methods: asset misappropriations, corruption, and fraudulent statements.

While each of these methods takes various forms, the result is always the same: The numbers generated by fraud cannot hold up to the unfailing logic of the accounting equation. If executives add false sales and accounts receivable to increase the company's revenue, profits and cash will be out of kilter. Should employees embezzle money, take bribes, or steal merchandise, the organization's expenses will be higher than ordinary.

As a result of these rather obvious accounting clues, one could wonder why auditors don't detect more fraud. There are several reasons, starting with the most difficult: Unlike other crimes, the clues to fraud are not unique. Lower profits or higher expenses could easily be the result of inefficiency, market downturns, higher costs of production---the list goes on. So even when accounting clues exist, the auditor doesn't know if he has uncovered a red flag or a red herring.

Another reason auditors don't detect more fraud is that they sometimes see clues which are explained away. As humans, we don't want to think that the person looking us in the eye is lying. That often causes auditors to abandon their most formidable weapon: an attitude of professional skepticism. To put it succinctly, if auditors take at face value everything they see or hear, they are not doing their jobs.

A final reason auditors don't uncover fraud is because they frequently don't use the analytical tools that are available to them. In times past, when analysis was difficult and time-consuming, perhaps auditors could not justify the additional effort.

But in the 21st Century, with the aid of inexpensive and readily available software, using computers to generate accounting fraud clues not only makes sense—it is an absolute necessity if the auditor is to help fulfill a duty as the public's watchdog.

Richard B. Lanza's *Proactively Detecting Occupational Fraud Using Computer Audit Reports* belongs in every auditor's arsenal of anti-fraud weapons. In addition to other analytical tools, Mr. Lanza has developed specific audit tests for the major occupational fraud schemes (15 of them) that he has summarized from the ACFE's uniform occupational fraud classification system.

I encourage you to consider adding these tests to your audit where appropriate. Indeed, the routine application of Mr. Lanza's procedures can easily be justified on a routine basis.

Let's face the facts. There is no foolproof method to detect fraud. No amount of computer analysis---even the ones recommended in this publication---can guarantee that fraud will be uncovered. That's because of the dichotomy of the offense: fraud and business both depend on trust.

And even though not all fraud can be detected through the application of analytical tools, auditors can improve their ability to discharge their fraud-related responsibilities. Rich Lanza's *Proactively Detecting Occupational Fraud Using Computer Audit Reports* will help immensely.

Joseph T. Wells, CFE, CPA
Founder and Chairman,
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## About the Author

Rich Lanza (CPA, PMP) is a Manager of Internal Audit at a Fortune 200 retailer, where he focuses mainly on using computer assisted audit tools to improve business intelligence, increase efficiencies, and identify bottom-line savings.

Rich is also a leading authority on the use of data extraction/analysis technology and a frequent speaker on data analysis/project management. Rich has written books, software, and numerous articles on the application of audit software. He is also the founder of www.auditsoftware.net/community that works to increase organizational benefits from the use of audit software. The site provides free tools, case studies, a newsletter, and a discussion area to visitors.

Rich headed the Program Management Office, reporting to the Chief Operating Officer at the American Institute of Certified Public Accountants, where he sewed a culture of project management into the fabric of the organization. On his last major project, Rich worked to coordinate various fraud-reduction initiatives to maximize their benefit for the AICPA and financial markets. Rich has drafted many of the project standards being used at the AICPA to manage projects and has implemented a project portfolio management process. He has also established a six-month intense training program for project managers. Prior to his program management work, Rich was a program/project manager in many Web and technology projects including leading the Y2K project.

Prior to joining the AICPA, Rich served as a Vice President-Audit Technology at AuditWatch where he was an *ACL*® and IDEA™ trainer. He has also been an Internal Audit Manager for Lafarge and Disclosure and has served in the audit department at KPMG Peat Marwick. Rich received his undergraduate degree in public accounting from Pace University. He is a past President of the Northern Virginia Chapter of The Institute of Internal Auditors, and is a certified member of both the AICPA and PMI. He currently also maintains the New York/New Jersey Program Management Office Special Interest Group for PMI. His interests include magic, and collecting gadgets.

The author's opinions expressed in this publication are his own and do not necessarily represent the policies or positions of Toys "R" Us.

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# Chapter 1
# Introduction and Definitions

The purpose of this document is to assist auditors, fraud examiners, and management in implementing data analysis routines for improved fraud prevention and detection. To that end, this report provides:

- General guidance in the implementation of audit software.
- A comprehensive checklist of data analysis reports that are associated with each occupational fraud category per the Association of Certified Fraud Examiner's classification system.
- A report description and data file(s) needed to effectuate each identified report.

However, because data analysis is not the only way to prevent and detect fraud, a company needs an overall program of prevention, proactive detection, and deterrence to minimize fraud. Also, while this report provides the general syntax needed for programming data analyses, it does not explain how to execute each analysis. Finally, this report focuses on occupational fraud, which for the most part, is internal to the organization. Other external fraud (i.e., Internet fraud) is not specifically covered but many of the tests could also be used to proactively detect such instances of fraud.

**Assess Fraud Risk**

Risk is the chance of two factors:

- Likelihood which can be calculated based on an assessment of:
  - Threats – internal and external events.
  - Vulnerabilities – weaknesses within the system.

- Impact – the adverse consequences resulting from threats and vulnerabilities, which should be expressed in monetary terms whenever possible.

One useful way to assess fraud risk is to take each fraud type as discussed in Chapter 3 of this publication and assign a likelihood/impact to each type of fraud. This assessment will be different for each organization, depending on the industry, control environment, economy, and many other factors specific to that organization.

**Score and Prioritize Risks**

Mathematically, the factors identified in the risk assessment process can be expressed in the following equation:

$$Risk = Impact \times Likelihood$$

The above equation should be applied to each fraud type. To ease this process, and avoid minutia, it may be useful to set general parameters for impact (i.e., up to $500,000, $500,001 to $1,000,000, and over $1,000,000) and likelihood (10%, 50%, 75%, and 90%). After each fraud type is scored, they can be prioritized from highest to lowest fraud risk score.

**Develop Appropriate Risk Responses**

Once the top areas for fraud risk are identified, the following responses can be determined:

- **Prevent or avoid the risk.** Develop responses that prevent the threat from occurring. Audit software reports (identified in Chapter 3) may be run and reviewed prior to certain transaction types occurring.
- **Mitigate the risk**. Develop responses that reduce the fraud risk to a more manageable level. Audit software reports (identified in Chapter 3) may be run and reviewed on a periodic basis to monitor fraud threats/vulnerabilities.
- **Transfer the risk**. The risk could be transferred to a third party such as an insurance carrier.

**Occupational Fraud Defined**

Occupational Fraud is defined per the Association of Certified Fraud Examiners as "*The use of one's occupation for personal enrichment through the deliberate misuse or misapplication of the employing organization's resources or assets."*

This definition encompasses a wide range of misconduct by employees, managers, and executives. Regardless, all occupational fraud schemes have four key elements in common. The activity:

- Is clandestine.
- Violates the perpetrator's fiduciary duties to the victim organization.
- Is committed for the purpose of direct or indirect financial benefit to the perpetrator.
- Costs the employing organization assets, revenue, or reserves.

**Benefits of Reducing Fraud**

The following are key benefits for reducing organizational fraud through prevention and proactive detection:

- **Save 2% to 3% of revenues normally lost to fraud.** Per the *2002 Report to the Nation on Occupational Fraud and Abuse* (Association of Certified Fraud Examiners), companies lose 6% of revenue to fraud. Fraud prevention was found to reduce that figure by between 30% and 48%. Therefore, fraud prevention measures could save organizations 2-3% of revenues. Note that these estimates show only a portion of the true picture, as most fraud is never reported.
- **Enhance market value.** A 2002 McKinsey & Company survey[1] indicated that by moving from worst to best in corporate governance, companies could expect to see a 10-12% increase in their market values.
- **Reduce federal penalties.** Under the Federal Sentencing Guidelines, there is a 40% reduction in penalties for companies using due diligence in implementing programs to detect and prevent violations of law.
- **Reduce audit fees.** The additional audit work, now required under *Statement of Auditing Standard (SAS) 99*, generally translates into higher fees. Organizations looking to reduce, or at least hold the line on audit fees should focus on establishing and managing strong anti-fraud programs and controls to mitigate fraud risks and provide external auditors a foundation of existing controls for audit planning reliance.
- **Prevent civil lawsuits.** Many times employees who experience issues in the workplace first try to resolve these issues internally. If their complaints are ignored, employees feel compelled to go to an outside advocate. That could be a private attorney, government

[1] McKinsey Quarterly, "A premium for good governance," 2002 Number 3.

regulator, or news agency. Giving employees an internal outlet can solve problems without the event becoming public knowledge or an issue for the courts.

- **Recover more of the loss.** According to a recent study, only 60% of organizations carry necessary fraud insurance and for those that did, 49% of them recovered only 0-25% of the original loss[2]. Prevention, by its nature, would have saved the entire loss.
- **Maintain a positive brand image.** Recent events illustrate the devastating effects to an organization of even the hint of fraudulent financial statement reporting. Through appropriate prevention measures, an organization's image can remain intact.

**Fraud Classification System For Use in This Publication**

Fraud, at the highest level, can be categorized into the following three areas:

1. Asset misappropriations – involving the theft or misuse of an organization's assets.
2. Corruption – when fraudsters wrongfully use their influence in a business transaction in order to procure some benefit for themselves or another person, contrary to their duty to their employer or the rights of another.
3. Fraudulent statements – involving the falsification of an organization's financial statements.

Within the above three global categories, the Association of Certified Fraud Examiners identifies over 70 areas of fraud (see **Figure 1**). For purposes of this report, organizational fraud is classified using the below, more condensed, fifteen (15) categories:

1. Bribery / Illegal Gratuities / Economic Extortion
2. Conflicts of Interest
3. Fictitious Revenues / Timing Differences
4. Understated Liabilities and Expenses
5. Overstated Assets/Valuation
6. Improper Disclosures
7. Non-Financial Fraudulent Statements
8. Cash Larceny
9. Skimming
10. Inventory Misuse / Larceny
11. Billing Schemes
12. Payroll Schemes
13. Expenses Reimbursement Schemes
14. Check Tampering
15. Register Disbursements

For more information on the fraud categories and their relative organizational cost, please see the *2002 Report to the Nation: Occupational Fraud and Abuse* available from the Association of Certified Fraud Examiners (www.cfenet.com).

**Role of Data Analysis Software in Fraud Prevention and Detection**

In a 2002 Report to the Nation study conducted by the Association of Certified Fraud Examiners, a strong system of internal controls was viewed as the most effective anti-fraud measure by a wide margin. Detailed background checks on new employees were thought to be the next most important measure, followed by regular fraud audits. Therefore, if you combine regular fraud

[2] 2002 Report to the Nation on Occupational Fraud and Abuse (Association of Certified Fraud Examiners).

audits and strong internal controls (which is what computer audit reports represent), they are the convincing leader in the prevention of fraud. Further, if it is known to employees that computer audit reports are being run, it creates a strong deterrent to anyone afraid of being caught in the act.

When it comes to actually detecting fraud, tips from employees and external parties was still the number one detection measure (56%) per the recent fraud study. Right after that came the combination of internal controls and regular audits.

**Using Audit Software To Step Up Proactive Detection Efforts**

Although not specifically considered as a detection control in the above study, proactive detection computer reports would most appropriately fit within the internal control and regular audits category. Unfortunately, such reports are not currently in widespread use. Supporting this statement, in a recent software survey[3] by The IIA, 65% of respondents noted that they do not use any continuous monitoring software. Although auditors may be using computer audit reports in an ad-hoc fashion as part of their periodic audits (i.e., once a year), it is probably not effective as a proactive detection control.

*Do we need to continuously audit in real-time, thereby preventing fraud?*

Probably not as this may not be cost beneficial to not only run the reports but also have people review the associated results. We need to keep in mind that, for the most part, there is no "preventing" fraud using computer audit reports but there can be proactive detection which attempts to identify fraudulent transactions as close to the origination time as possible. What is needed is to move towards a monthly or weekly reporting for key risks and daily reporting for high risks. Once again, the current trend in the marketplace is that close to three-quarters of auditors complete no continuous monitoring.

*Why should we use audit software? Can't I just use my ERP's report writer?*

With a sea of information at our fingertips, the computer's processing power at fast levels, and easy-to-use audit software in the marketplace, we can now utilize computers to complete detailed and analytical tests with little effort. While an ERP or a generic report writer can provide beneficial reports, audit software provides many additional benefits as follows:

- Is independent of the system being run and will use a read-only copy of the file to avoid any corruption of the data.
- Provides one tool to use across multiple data sets, since most system report writers are only developed for the system at hand. For example, a business intelligence solution for supplier management will not be able to transfer itself easily to analyze customer trends.
- Uses many audit specific routines such as sampling.
- Provides documentation of each test performed in the software that can be used as documentation in the auditor's workpapers.

*Shouldn't management complete this monitoring?*

In a word, yes, but auditors need to present themselves as the key liaison to developing these systems as they can apply their expertise of business, risk, and technology. Some considerations for auditors include:

[3] Power Tools – 2002 Audit Software Usage Survey – Internal Auditor magazine- August 2002

- Auditors should help management design these systems given their varied knowledge base.
- Auditors should not be the report writers forever – the information technology department should integrate their findings into the current system architectures.
- Auditors can test using their independent software that the reports are accurately and completely presenting issues.
- Auditors should then ensure that report results are being acted upon.

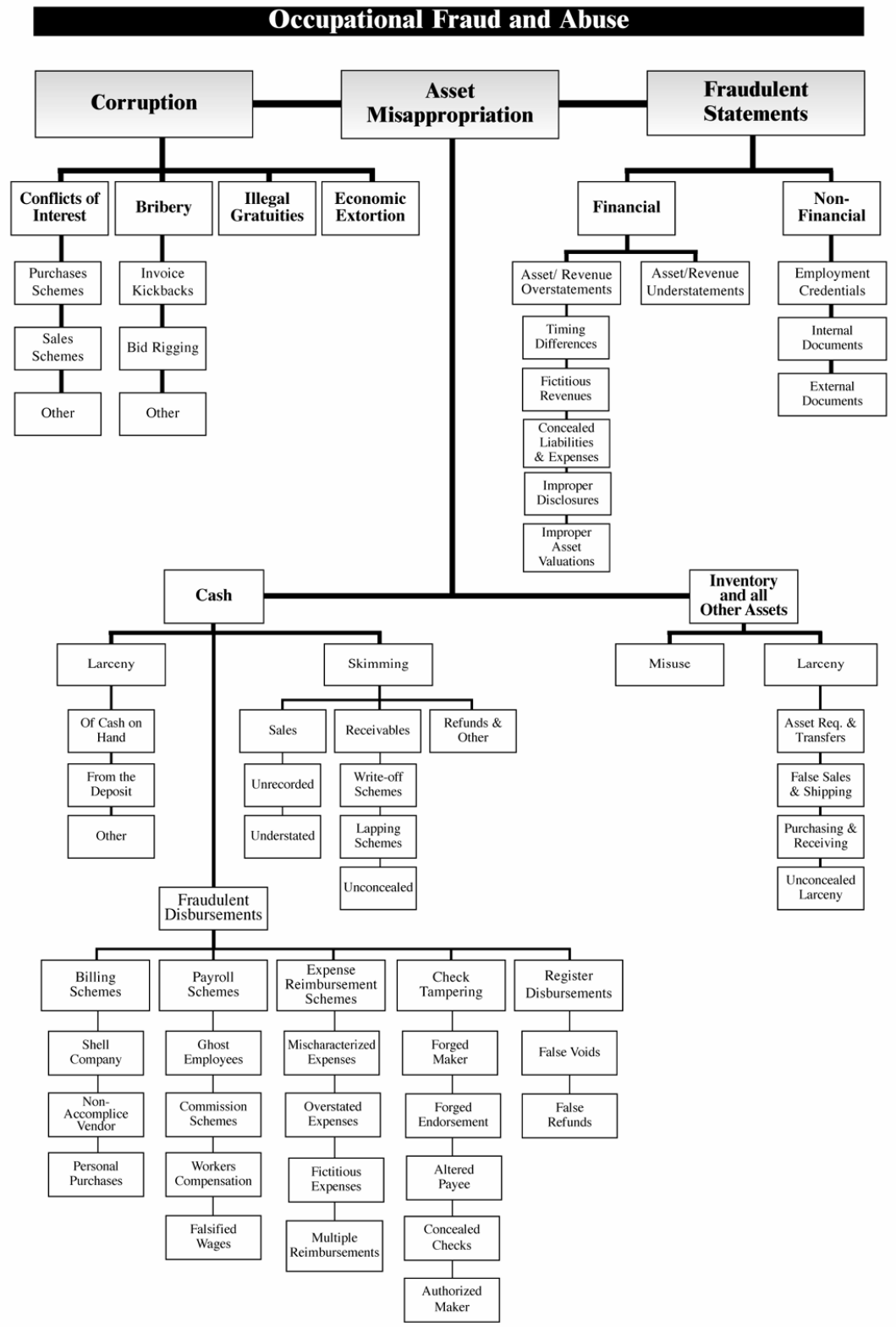
**Call for Feedback**

There are many publications that discuss auditing for fraud using a computer but there has been no attempt at a comprehensive resource for the types of audit reports that are needed for each fraud type…until now. Please note that this report is a living one and will improve over time with reader and audit software user feedback.

It is hoped that through the dissemination of this new information that more consideration and analysis will be done using audit software to prevent and proactively detect organizational fraud.

Your feedback is needed to ensure this report is up-to-date. Please provide your feedback via E-mail at questions@auditsoftware.net or research@theiia.org.

**Figure 1**
**Fraud Classification System**
Association of Certified Fraud Examiners



# Chapter 2
# Types of Audit Software Tests

While Chapter 3 will list the specific computer audit reports to execute by type of fraud, this chapter will provide more details around the analytical tests, as well as, more simplified explanations for the various audit software commands. Therefore, computer audit reports can be presented in the two below categories:

- **Analytical Tests** – evaluations of financial information made by a study of plausible relationships among both financial and non-financial data to assess whether account balances appear reasonable (AICPA, SAS 56).
- **Data Analysis Exception Reports** – reports produced using basic data management and other audit specific commands.

**Analytical Tests**

The following ten types of analytical tests are the most common. Along with a description of each test, key considerations and a process to implement the test are provided.

1. **Horizontal Analysis**
   Analyzes the increases and decreases in a given balance, normally financial statement items, over two or more periods. This can be completed for the following information:
   - Balance sheet
   - Income statement
   - Budget to actual

2. **Vertical Analysis**
   Examines the elements of a financial statement for a single period whereby each balance sheet item is shown as a percentage of the total assets and every income statement item is shown as a percentage of the net sales. For example:

| Asset Description | Asset Balance | % of Balance |
|---|---|---|
| Cash | $1,000 | 10% |
| Accounts Receivable | 1,000 | 10% |
| Fixed Assets | 8,000 | 80% |
| Total Assets | **$10,000** | **100%** |

3. **Ratios**
   One or more balances are compared with one or more other balances such as the relation of total assets to the net sales of an organization. Ratios can be organized into broad categories of "Liquidity/Debt" and "Profitability". A list of common ratio tests are listed below:

- Liquidity/Debt – used to measure a company's ability to pay its vendors or debt obligations in a timely manner.

| Name | Description |
|---|---|
| Working Capital | Current Assets - Current Liabilities |
| Working capital index | Current year WC - Prior year WC |
| Current Ratio | Current Assets / Current Liabilities |
| Days Payable Outstanding | 365 / (Sales / ((Beginning Accounts Payable + Ending Accounts Payable)/2)) |
| Days Sales Outstanding | 365 / (Sales / ((Beginning Accounts Receivable + Ending Accounts Receivable)/2)) |
| Inventory turnover | Cost of Goods Sold / ((Beginning Inventory + Ending Inventory)/2) |
| Debt to Equity | Total Debt / Total Stockholders Equity |
| Operating Cash Flow | Cash Flow From Operations / Current Liabilities |
| Cash Flow Interest Coverage | (Cash Flow From Operations + Interest Paid + Taxes Paid) / Interest Paid |
| Cash Flow to Capital Expenses | Cash Flow From Operations / Capital Expenses |
| Cash Flow to Debt | Cash Flow From Operations / Total Debt |
| Obsolete Inventory Ratio | Obsolete Inventory / Ending Inventory |

- Profitability – indicate the success of the organization in earning a net return on sales or on an investment.

| Name | Description |
|---|---|
| Sales growth index | Current Year Sales / Prior Year Sales |
| Gross profit | Sales – Cost of Goods Sold |
| Gross margin | (Sales – Cost of Goods Sold) / Sales |
| Gross margin index | Current year Gross Margin / Prior year Gross Margin |
| Stock sales | Ending Inventory / Sales |
| Return on Equity | Net Income / ((Beginning Stockholders Equity +Ending Stockholders Equity)/2) |

4. **Trend analysis**
   Comparing any of the analytical tests (horizontal, vertical, ratio, etc.) described above over two or more periods. Please note that the use of trend analysis is practically a given in doing any fraud work as fraud tends to create variances over time which would go undetected if only the single year was being analyzed.

5. **Performance Measures**
   The identification of critical success factors that lead to measures that can be tracked over time to assess progress made in achieving specific targets linked to an entity's vision. For example, the below represent a sampling of performance measures that could be used for accounts payable processing:
   - Number of invoices processed
   - Number of open invoices at period end
   - Average invoice dollar amount
   - Average number of invoices per day
   - Average invoice dollar amount per vendor
   - Top 100 vendors purchases

- Average of top 25 max to min payments by vendor ratio
- % of adjustments to invoices processed
- Number of hours overtime worked by staff

6. **Stratifications**
   Counts the number and dollar value of records of a population falling within specified intervals. Stratifications also provide a useful view into the largest, smallest, and average dollar transactions. An example stratification report by dollar amount is shown below:

| Strata | Count | Count % | Dollars | Dollars % |
|---|---|---|---|---|
| $0 to $100 | 20 | 27% | $ 250 | 1% |
| $101 to $1,000 | 10 | 13% | $ 1,500 | 5% |
| Over $1,000 | 45 | 60% | $30,000 | 94% |
| **Total** | **75** | **100%** | **$31,750** | **100%** |

7. **Aging**
   Produces aged summaries of data based on established cutoff dates. An example aging report by dollar amount is shown below:

| Strata | Count | Count % | Dollars | Dollars % |
|---|---|---|---|---|
| 0-30 days | 20 | 27% | $ 250 | 1% |
| 31-60 days | 10 | 13% | $ 1,500 | 5% |
| Over 60 days | 45 | 60% | $30,000 | 94% |
| **Total** | **75** | **100%** | **$31,750** | **100%** |

8. **Digital Analysis/Benford's Law**
   Audit technology designed to find abnormal duplications of specific digits, digit combinations, specific numbers, and round numbers in corporate data. Since the objective is to find abnormal duplications, auditors need a benchmark that indicates a normal level of duplication. Benford's Law gives auditors the expected frequencies of the digits in tabulated data. The premise is that we would expect authentic and unmanipulated data to exhibit these patterns. If a data set does not follow these patterns, this may be a cause for auditor concern and review. The expected frequencies of Benford's Law for the first and second digits are:

| Digit | First Digit Frequency | Second Digit Frequency |
|---|---|---|
| 0 | - | 0.11968 |
| 1 | 0.30103 | 0.11389 |
| 2 | 0.17609 | 0.10882 |
| 3 | 0.12494 | 0.10433 |
| 4 | 0.09691 | 0.10031 |
| 5 | 0.07918 | 0.09668 |
| 6 | 0.06695 | 0.09337 |
| 7 | 0.05799 | 0.09035 |
| 8 | 0.05115 | 0.08757 |
| 9 | 0.04576 | 0.08500 |

For more information on digital analysis, please see the following article on ITAudit.org: http://www.theiia.org/itaudit/index.cfm?fuseaction=forum&fid=95

9. **Regression**
   Regression analysis calculates a dependent variable balance (i.e., net sales) based on various independent variables (i.e., product purchases, inventory levels, number of customers, etc.). Please note that this test generally provides the greatest level of precision because an explicit expectation is formed using all relevant data is incorporated into the model. It also provides a specific precision percentage for each test so that the auditor can assess the reliability of the test.

   For more information on regression analysis, please see the following article: http://www.auditsoftware.net/community/how/tool/tools/regexce.doc

10. **Monte Carlo Simulation**
    Monte Carlo allows for the simulation of a balance (i.e., net sales) using estimates where probabilities are given for each estimate. Please note that Monte Carlo simulates the balance estimate thousands of times to arrive at a final estimate with associated precision levels. To understand what Monte Carlo simulation does, think of flipping a coin one hundred times. More than likely, there will be close to 50 heads and 50 tails. Now, consider a revenue estimate model where there are best case, worst case, and most likely case scenarios given to the perceived market, the number of competitors, the price the market will bear, etc. In contrast with the simple coin flip, a highly advanced probability model can be developed in Monte Carlo tools. In other words, this allows you to flip ten differently weighted coins thousands of times to arrive at a final solution.

    For more information on Monte Carlo analysis, please see the following article: http://www.auditsoftware.net/community/how/tool/tools/Monte%20Carlo%20Article-Auditors.doc

**Process to Implement Analytical Tests**
Analytical tests are normally completed using a three-step process as follows:

1. **Develop an expectation.** An expected value for each analytical should be estimated which may be based on the historical figure or, more appropriately, should take into consideration current business climate. Some factors when setting expectations include:
   - Industry factors
   - Economic factors
   - History of organization
   - Current operations
   - Legal proceedings
   - Internal Control Environment
   - Business strategy
   - Complexity of business and transactions
   - Competition
   - Technology advances (which would be advantages or disadvantages to the organization)
   - Corporate Officer Makeup (i.e., recent resignations, additions, or long standing positions)

The more reliable the source of the data is, the more precise the expectation. The following are factors related to the reliability of data that the auditor may consider in forming the expectation:

- *Strength of the company's internal control* – The stronger the internal control over financial reporting (which includes controls over the accounting system), the more reliable the data generated from the company's accounting system.
- *Outside versus internal data, and degree of independence* – Data from more objective or independent sources are more reliable (for example, third-party generated versus management generated).
- *Nonfinancial versus financial data* – The use of reliable nonfinancial data (for example, store square footage or occupancy rates) is normally very useful in increasing the reliability of an analytical test.
- *Data that has been subject to auditing procedures versus data that has not been subject to auditing procedures* – The use of data that has been subjected to auditing procedures improves the precision of the expectation given its increased reliability.

2. **Calculate the independent results using one of the analytical tests**.

3. **Investigate differences and obtain additional corroborating evidence**. When differences between the expectation and the analytical arise, they should receive increased audit attention to rectify the discrepancy. Please note that no single ratio should be taken in isolation but rather an assessment of the pattern among the ratios.

   To corroborate an explanation, or to just obtain more comfort on any analytical test, one or more of the following techniques may be used:

   - Inquiries of persons outside the client's organization.
   - Inquiries of independent persons inside the client's organization.
   - Evidence obtained from other auditing procedures. Sometimes the results of other auditing procedures (particularly those performed on the data used to develop an expectation) are sufficient to corroborate an explanation.
   - Examination of supporting evidence. The auditor may examine supporting documentary evidence of transactions to corroborate explanations. For example, if an increase in cost of sales in one month was attributed to an unusually large sales contract, the auditor might examine supporting documentation, such as the sales contract.
   - Relation of results to prior year results and/or industry benchmarks.
   - Relation of results of one test to another. For example, if sales are increasing yet accounts payable turnover stays the same, this would not be expected as improved cash flow should translate into more cash/faster payments. It may be that the industry standard is to pay at a certain date but it also may be worthy of investigation.

**Data Management/Analysis Exception Reports**

These reports are further clarified with specific tests as explained in Chapter 3 of this document. Each type of report is briefly explained below:

| Data Analysis Type | Description |
|---|---|
| **Append / Merge** | Combines two files with identical fields into a single file. An example would be to merge two years worth of accounts payable history into one file. |
| **Calculated Field/ Functions** | Created a calculated field (which can use a function such as ABS for the absolute value of the field) using data within the file. For example, the net payroll pay to an employee could be recalculated using the gross pay field and deducting any withholding/taxes. |
| **Cross Tabulate** | Cross Tabulate lets you analyze character fields by setting them in rows and columns. By cross tabulating character fields, you can produce various summaries, explore areas of interest, and accumulate numeric fields. |
| **Duplicates** | Identifies duplicate items within a specified field in a file. For example, this report could be used to identify duplicate billings of invoices within the sales file. |
| **Extract/Filter** | Extracts specified items from one file and copies them to another file, normally using an "if" or "where" statement. Examples include extracting all balances over a predefined limit. |
| **Export** | Creates a file in another software format (e.g., Excel, Word) for testing. An example would be to export customer address information to Word for "Mail Merge"ing to customer confirmation letters. |
| **Gaps** | Identifies gaps within a specified field in a file. For example, identify any gaps in check sequence. |
| **Index / Sort** | Sorts a file in ascending or descending order. An example would be sorting a file on social security number to see if any blank or "999999999" numbers exist. |
| **Join / Relate** | Combines specified fields from two different files into a single file using key fields. This function is used to create relational databases on key fields. For example, the vendor masterfile could be related to the invoice file to obtain address information for each invoice. |
| **Sample** | Creates random or monetary unit samples from a specified population. |
| **Summarize** | Accumulates numerical values based on a specified key field. An example would be summarizing travel and entertainment expense amounts by employee to identify unusually high payment amounts. |
| **Verify Field Type** | Checks for data validity errors in fields. For example, if a numeric field (payment amount) has dates in the field, it signals data integrity issues with the file. |

# Chapter 3
# Data Analysis Reports for Each Major Fraud Area

## General Overview of Data Analysis Reports

This section provides the correlation between the types of fraud and data analysis reports as originally presented in Chapter 2. Please note that each type of fraud below reconciles to the over seventy types of fraud as promulgated by the Association of Certified Fraud Examiners (Chapter 1, Figure 1).

| | Fraud Type | Brief Description[4] |
|---|---|---|
| **1.** | ·Bribery<br>·Illegal Gratuities<br>·Economic Extortion | (Bribery) The offering, giving, receiving, or soliciting any thing of value to influence an official act. (Illegal Gratuities) Similar to bribery except that there is not necessarily intent to influence a particular business decision. (Economic Extortion) The flip side of a bribery scheme where an employee demands a payment to influence a decision. |
| **2.** | ·Conflicts of Interest | Employee, manager, or executive has an undisclosed economic or personal interest in a transaction that adversely affects the company. |
| **3.** | ·Fictitious Revenues<br>·Revenue Timing Differences | Financial statement fraud where revenues are inflated through fictitious entries for sales that never occurred or improper realizations in the inappropriate period. |
| **4.** | ·Understated Liabilities and Expenses | Financial statement fraud where liabilities or expenses are excluded in the financial statements. |
| **5.** | ·Overstated Assets<br>·Valuation | Fictitious inflation of asset values or other improper valuations, generally to enhance the appearance of financial statements. |
| **6.** | ·Improper Disclosures | Improper disclosures in the notes of financial statements such as omission of loan covenants, significant negative effects, related party transactions, or outright fraud committed. |
| **7.** | ·Non-Financial Fraudulent Statements | Fraudulent statements made by employees that have no direct financial statement impact such as employee credentials or other internal/external documents. |
| **8.** | ·Cash Larceny | Intentional taking away of an employer's cash without the consent and against the will of the employer. |
| **9.** | ·Skimming | Removal of cash from a victim entity prior to its entry in the accounting system. |
| **10.** | ·Inventory Misuse<br>·Larceny | The borrowing or stealing of inventory from an employer by a perpetrator (internal or external to the organization). |
| **11.** | ·Billing Schemes | Perpetrator (internal or external to the organization) submits or alters an invoice, which causes the employer to willingly issue a check. |
| **12.** | ·Payroll Schemes | Perpetrator (internal or external to the organization) produces false documents (sales order, time cards, false employee hiring records), which cause the company to unknowingly issue a check. |
| **13.** | ·Expenses Reimbursement Schemes | Perpetrator (internal or external to the organization) produces false documents (expense reimbursement forms), which cause the company to unknowingly issue a check. |
| **14.** | ·Check Tampering | Perpetrator (internal or external to the organization) causes the company to issue a check through a fraudulent check. |
| **15.** | ·Register Disbursements | Money is taken from the register and concealed through a false transaction to justify the removal of money. |

[4] Occupational Fraud & Abuse – Joseph T. Wells - ACFE

The lists of reports below have a Sub-category and Type associated, as follows:

- **Sub-category** - This column will have the word "All" as a default. When there are sub-categories within the fraud, the sub-category will be noted in this column. For example, in Bribery / Illegal Gratuities / Economic Extortion section of the document, each of these types of fraud (Bribery, Illegal Gratuities, and Economic Extortion) would be listed next to the associated reports.

- **Type** - An "E" in this column refers to a Data Analysis Exception Report as explained in Chapter 2 while an "A" refers to an Analytical Test in Chapter 2.

**Bribery / Illegal Gratuities / Economic Extortion**

The above type of fraud generally will result in the following effects to the organization:

- Review of a few number of vendors, not providing an opportunity to identify the best vendor for the task at hand.
- Kickbacks to the employee.
- Fraudulent charging of higher prices.
- Phony invoices charged by the vendor, which will be processed by the employee.
- Purchasing more inventory or services than needed. In the case of inventory, this can lead to obsolete inventory.
- Fraudulent purchasing of poor quality inventory or services leading to additional purchases or rework, respectively.

Please note the following when reviewing the below tests:

- The employee is assumed as the one accepting the associated payment to influence a decision.
- Although inventory is used in many of the below examples, fraud could be associated to any type of purchase. Of special note are consulting services which have less quantified success metrics associated with the service, thereby providing more opportunity for malfeasance.

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced profitability ratios when other measures suggest positive sales growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive sales growth. Further, ending inventory, as a percentage of sales, should move in a direct proportion to the increases/decreases in cost of goods sold in relation to sales. Further, increased obsolescence as a % of inventory trend analysis may identify an increase in fraudulent activity. | N/A |
| Benford's Law | All | A | Analysis of all inventory receipts and vendor payments. | •Receiving Log<br>•Invoice Payment |
| Stratification and aging of inventory receipts and vendor payments. | All | A | Focus should be given to high dollar adjustments and high occurrences of small dollar adjustments. | •Invoice Payment<br>•Receiving Log |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Stratify vendor payments on approval limits, especially directly under (i.e., 5%) the approval limit. | All | A | A high incidence of invoice payments directly below an approval limit may be an attempt to circumvent a management review. | •Invoice Payment |
| Stratify inventory actual to standard price. | All | A | Inventory prices may be agreed to that are higher than normal as part of the fraud schemes. This stratification will direct audit efforts on those parts exceeding the standard price. | •On Hand Inventory |
| Trend in obsolete inventory over two or more periods. | All | A | Inventory that had been over-purchased will generally result in obsolescence, which should be identified through trend analysis. | •On Hand Inventory |
| Age inventory by the date of last part issuance. | All | A | Inventory that had been over-purchased will generally result in obsolescence, which should be identified through trend analysis. | •On Hand Inventory |
| Calculate number of months of inventory that is on hand (on a part by part basis) and extract those with high number of months. | All | A | Inventory that had been over-purchased will generally result in obsolescence that should be identified through trend analysis. | •On Hand Inventory<br>•Shipment Log |
| Extract all parts greater than zero in cost that have had no usage in the current year. | All | A | Inventory that had been over-purchased will generally result in obsolescence, which should be identified through trend analysis. | •On Hand Inventory<br>•Shipment Log |
| Inventory price greater than retail price (if inventory is for sale). | All | E | Inventory prices may be agreed to that are higher than normal as part of the fraud schemes. | •On Hand Inventory |
| Inventory receipts per inventory item that exceed the economic order quantity or maximum for that item. | All | E | Inventory quantity may be agreed to that are higher than normal as part of the fraud schemes. | •Receiving Log<br>•Inventory Master File |
| Identify duplicate payments based on various means that would be made with intent by the employee and accepted by the vendor, with intent. | All | E | Duplicate payment tests can be enacted on the vendor, invoice number, amount. More complicated tests can look where the same invoice and amount are paid yet the payment is made to two different vendors. Another advanced test would be to search for same vendor and invoice when a different amount is paid. | •Invoice Payment |
| Calculate the ratio of the largest purchase to next largest purchase by vendor. | All | E | By identifying the largest purchase to a vendor and the next largest purchase, any large ratio difference may identify a fraudulently issued “largest” purchase. | •Invoice Payment |
| Calculate the annualized unit price changes in purchase orders for the same the product in same year. | All | A | Assesses price changes in purchases for potential fraudulent company purchases and employee payments. | •Purchase Order |
| List all vendors who had multiple invoices immediately below an approval limit (e.g., many $999 payments to a vendor when there is a $1,000 approval limit) highlighting a circumvention of the established control. | All | E | Multiple invoices below an approval limit may be an attempt to circumvent a management review. | •Invoice Payment |
| Extract round dollar payments and summarize by vendor. | All | E | Payments made in round dollars have a higher incidence of being fraudulent and should be scrutinized closely. | •Invoice Payment |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Review payments with little or no sequence between invoice numbers. | All | E | Vendors issuing phony invoices many times will invoice the company with no gaps in invoice sequence. | •Invoice Payment |
| Payments to any vendor that exceed the 12-month average payments to that vendor by a specified percentage (i.e., 200%). | All | E | Large payments are unusual and should be scrutinized as potentially being fraudulent. | •Invoice Payment |
| Payments to any vendor that exceed the 12-month average payments to any vendor within the purchase category (i.e., supplies, fixtures, etc.) by a specified percentage (i.e., 200%). | All | E | Large payments are unusual and should be scrutinized as potentially being fraudulent, especially when analyzed in relation to other vendors of similar products. | •Invoice Payment |
| Summarize invoice payment general ledger activity by type of purchase and identify areas with less than three vendors. | All | E | By summarizing general ledger activity, the vendors by type of purchase (i.e., fixtures, transportation, etc.) can be identified. Types with less than three vendors could identify an area where few vendors are being used, reducing competitive influence, and providing the opportunity for fraudulent activity. | •Invoice Payment<br>•General Ledger Detail |
| Calculate the average payment by general ledger activity type and review for payments made that exceed that average by a large percentage (i.e., 100%). | All | E | By summarizing general ledger activity by type of purchase (i.e., fixtures, transportation, etc.) high value payments may be identified to fraudulent vendors. | •Invoice Payment<br>•General Ledger Detail |
| Summarize by vendor the number of inferior goods based on number of returns. | All | E | Inferior quality may be reduced to companies with employees receiving fraudulent payments. | •Receiving Log |
| Delivery of inventory to employee address identified by joining employee address to shipment address file. | All | E | Inventory may be shipped directly to an employee address to act as consideration to the employee for fraudulent activity. | •Shipment Register<br>•Employee Address |
| Delivery of inventory to address that is not designated as a business address. | All | E | Inventory may be shipped to an employee address that is entered into the system to appear as a regular business address. Such a shipment would act as consideration to the employee for fraudulent activity. The identification of whether an address is legitimately a business one can be done to software databases such as Select Phone Pro. | •Shipment Register |

**Conflict of Interest**

Employee, manager, or executive has an undisclosed economic or personal interest in a transaction that adversely affects the company.[4]

**Note:** The tests discussed below focus solely on identifying related party transactions. All effects from such conflicts are presented in the section under Bribery / Illegal Gratuities / Economic Extortion.

[4] Occupational Fraud & Abuse – Joseph T. Wells - ACFE

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Match the vendor master file to the employee master file on various key fields. | All | E | Telephone number, address, tax id numbers, numbers in the address, zip code, PO Box and zip code in vendor file to employee zip codes, especially those employees working in the accounts payable department. | • Vendor Master<br>• Employee Master |
| Vendor address that is not designated as a business address. | All | E | The identification of whether an address is legitimately a business one can be done to software databases such as Select Phone Pro. | • Vendor Master |
| Review Internet resources, online newspaper archives, background check, and commercial credit databases for related parties of employees. | All | E | Review of Internet resources such as AuditNet.Org, online newspapers such as newyorktimes.com and wsj.com, and other online background databases may identify employee related parties. | • N/A |

**Fictitious Revenues / Revenue Timing Differences**

Financial statement fraud where revenues are inflated through fictitious entries for sales that never occurred or improperly realized in an inappropriate period.[4]

These types of financial statement fraud normally transpire from:

- **Fictitious** – Phantom customers / Fictitious sales entries
- **Inflated** – Fictitiously inflated prices and/or quantity of sales transactions
- **Timing** – Recognition of revenue earlier than committed by GAAP

Also, the above financial statement effects generally take place close to year-end and are usually later reversed immediately after year-end.

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to increased sales when other indicators of sales are not in direct correlation. These other indicators could be company performance measures (i.e., operations, productivity, etc.). | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. These other measures could be company performance measures (i.e., production volume, productivity, etc.). Also review receivable turnover and day's sales outstanding, which generally will increase due to fictitious sales that are not being paid for by customers. | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be given to increased sales when other indicators of sales are not in direct correlation. These other indicators could be company performance measures (i.e., operations, productivity, etc.). | N/A |
| Benford's Law | All | A | Analysis of all customer sales orders, shipments, and sales invoices. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |

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| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Age customer sales orders, shipments, and sales invoices. | All | A | Focuses audit efforts on periods of increased activity. Additional scrutiny should be given to large spikes in sales activity towards year-end. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |
| Stratify customer sales orders, shipments, and sales invoices. | All | A | Focuses audit efforts on high rates. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |
| Complete a trend analysis of sales invoices by customer. | All | A | Focuses audit efforts on customers that may be comprised of fraudulent activity. | |
| Extract any employee who can enter sales orders/adjustments and also can create customer accounts. | All | E | Users who can create new customers and then post orders/adjustments to those customers would be taking advantage of a non-segregation of duties to commit their fraud. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | •Sales Invoice Register User Access Master File<br>•Customer Master User Access File<br>•Sales Invoice Register User Access Log File<br>•Customer Master Access Log File |
| Confirmation of customer receivable balances. | All | E | Confirmations that are sent and returned unanswered may identify phantom customer balances. | •Sales Invoice Register<br>•Customer Master File |
| Comparison of cash receipts to year-end receivables (joined by invoice number between the two files). | All | E | Sales to valid customers would be paid with cash after year-end. Through this test, using all open accounts receivable invoices at year-end, customers with large outstanding balances can be reviewed more closely for phantom customer sales. | •Sales Invoice Register<br>•Cash Receipt Log |
| Calculate an average sale by customer for each quarter of the year and relate to one another. | All | E | This test should focus on customers with high quarterly sales to identify a time period when inflated sales entries were made. | •Sales Invoice Register |
| Calculate the total sales by customer for each quarter of the year and relate to one another. | All | E | This test should focus on customers with high quarterly sales to identify a time period when inflated sales entries were made. | •Sales Invoice Register |
| Join the customer statement report file to accounts receivable and review for balance differences. | All | E | Through the matching of the customer statement report file (file that is used to print customer statements) and the open invoices to that customer, any improper changes to customer statements to mask fraudulent revenue schemes will be detected. | •Customer Statement Report File<br>•Sales Invoice Register |
| Summarize by customer all shipments or invoices with no sales orders and list detail transactions. | Fictitious | E | May identify fictitious shipments and/or invoices that were never ordered by the customer. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |
| Sequence possible duplicate sales invoices based on the absolute value of the invoice and customer. | Fictitious | E | Lists possible duplicate invoices, which may be used to inflate sales. | •Sales Invoice Register |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Dormant customer accounts for the past six months that post a sale in the last two months of the year. | Fictitious | E | Customers that have been dormant may be used as accounts to post fraudulent activity. | •Sales Invoice Register |
| Extract all round dollar sales orders, shipments, and sales invoices. | Fictitious | E | Round dollar sales transactions have a higher likelihood of being fraudulent. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |
| Review sales invoices with little or no sequence between invoice numbers. | Fictitious | E | Employees issuing phony invoices many times will create such invoices with no gaps in invoice sequence. | •Sales Invoice Register |
| Extract customers with no telephone or tax id number. | Fictitious | E | Customers without this information are more prone to abuse and should be scrutinized as possible phantom customers. | •Customer Master File |
| Identify customers added during the period under review. | Fictitious | E | New customer additions should be reviewed using this report to determine whether any phantom customers are being created. | •Customer Master File |
| Comparison of after year-end open accounts receivable trial balance to the year-end receivables trial balance (joined by invoice number between the two files). | Fictitious | E | Through this test, using all open accounts receivable invoices at year-end, customers with large outstanding balances can be reviewed more closely for phantom customer sales. | •Sales Invoice Register<br>•Cash Receipt Log |
| Unique journal entries in sales accounts. | Fictitious | E | All journal entries in sales accounts, especially those appear to be unique adjustments should be reviewed as potential inflationary tactics. | •General Ledger Detail |
| Journal entries between subsidiaries in sales accounts. | Fictitious | E | Journal entries in sales accounts may be posted between entities in an effort to increase the perceived operating performance of an organizational subsidiary at the expense of another subsidiary. | •General Ledger Detail |
| Sales to customers with an address that is not designated as a business address. | Fictitious | E | The identification of whether an address is legitimately a business one can be done to software databases such as Select Phone Pro. | •Sales Invoice Register<br>•Customer Master File |
| Extract customer sales that exceed the 12-month average sales from that customer by a specified percentage (i.e., 200%). | Fictitious and Inflated | E | This test may identify a large fraudulently recorded sale. | •Sales Invoice Register |
| Extract customer sale balances that exceed the customer credit limit. | Fictitious and Inflated | E | This test may identify a large fraudulently recorded sale. | •Sales Invoice Register<br>•Customer Master File |
| Summarize by customer all returns and discounts in the period after year-end. | Fictitious and Inflated | E | May identify bill-and-hold sales or shipments that were never ordered by the customer and later returned. May also identify sales made prior to year-end with large discounts that were agreed to between the customer and organization that need to be taken after year-end, all in an effort to inflate period end sales. | •Sales Invoice Register |
| Summarize by customer all accounts receivable write offs in the period after year-end. | Fictitious and Inflated | E | May identify fictitious sales at year-end that were subsequently written off after year-end. | •Sales Invoice Register |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Calculate the ratio of the largest sale to next largest sale by customer. | Inflated | E | By identifying the largest sale to a customer and the next largest sale, any large ratio difference may identify a fraudulently recorded "largest" sale. Special note should be given to sales that are 10x larger which may identify a change in an associated decimal place to inflate sales. | •Sales Invoice Register |
| Extract sales where the ship or invoice quantity exceeds the order quantity. | Inflated | E | May identify fictitious shipment and/or invoice quantity that were never ordered by the customer. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |
| Extract sales where the invoice price exceeds the order price. | Inflated | E | May identify fictitious invoice pricing that was never agreed to by the customer or otherwise fictitious sales. | •Shipment Log<br>•Sales Order<br>Sales Invoice Register |
| Sales prices on a sale more than 2 and 3 deviations of the mean sales price for that product. | Inflated | E | May identify fictitious invoice pricing that was never agreed to by the customer or otherwise fictitious sales. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |
| Sales with prices that exceed the approved maximum price for that product. | Inflated | E | May identify fictitious invoice pricing that was never agreed to by the customer or otherwise fictitious sales. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |
| Review computer system log files for changes in dates. | Timing | E | Computer system date changes may be completed in order to allow additional sales to be posted within the period that would normally be outside of the period. | •Computer System Administration Log |
| Extract all sales that were ordered and shipped after year-end but were recorded as revenue in the year-end (based on respective date fields). | Timing | E | This analysis should identify sales posted within the period that should have been recorded in later period. | •Shipment Log<br>•Sales Order<br>•Sales Invoice Register |
| Calculate an average sale by customer for the first three quarters of the year and relate to the last quarter of the year. | Timing | E | This test should focus on customers with high fourth quarter sales to identify end of year sales entries made to inflate annual sales figures. | •Sales Invoice Register |
| Calculate the total sales by customer for the first three quarters of the year and relate to the last quarter of the year. | Timing | E | This test should focus on customers with high fourth quarter sales to identify end of year sales entries made to inflate annual sales figures. | •Sales Invoice Register |

**Understated Liabilities and Expenses**

Financial statement fraud where liabilities or expenses are excluded in the financial statements.[4]

These types of financial statement fraud normally transpire from:

- **Capitalization** – Improper capitalization of expenses
- **Unrecognized** – Not recognizing expenses
- **Timing** – Not recognizing expenses in the current period but rather in later periods (i.e., vendor, payroll, or depreciation)

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| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced expenses when there are increased sales and other production performance metrics. | N/A |
| Liquidity Ratio Tests | All | A | | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | | N/A |
| Benford's Law | All | A | Analysis of all fixed asset additions, vendor payments, and payroll payments. | • Fixed Asset Additions<br>• Invoice Payment<br>• Payroll Register |
| Stratify fixed asset additions. | All | A | Focuses audit efforts on high dollar capitalization. | • Fixed Asset Additions |
| Unique journal entries in liability, expense, and/or fixed asset accounts. | All | E | Unique journal entries are more prone to be fraudulent and should be closely scrutinized. | • General Ledger Detail |
| General ledger journal entries made with little or no description in liability, expense, and/or fixed asset accounts. | All | E | Journal entries without a description are more prone to be fraudulent and should be closely scrutinized. | • General Ledger Detail |
| Journal entries between subsidiaries in liability and expense accounts. | Fictitious | E | Journal entries in liability and expense accounts may be posted between entities in an effort to increase the perceived operating performance of an organizational subsidiary at the expense of another subsidiary. | • General Ledger Detail |
| Age fixed asset additions by month. | Capitalization | A | Focus should be placed on large dollar additions, especially those posted later in the year. | • Fixed Asset Additions |
| Stratify addition information by dollar amount. | Capitalization | A | Focus should be placed on large dollar additions. | • Fixed Asset Additions |
| Fixed asset summarization (additions), by type, etc. | Capitalization | E | Focus should be placed on large dollar additions. | • Fixed Asset Additions |
| Age vendor, payroll, and depreciation expenses in daily or weekly increments for the year under review and an additional three months after year-end. | Unrecognized and Timing | A | Focuses audit efforts on periods of increased activity. Additional scrutiny should be given to lower dips at year-end followed by spikes after year-end. | • Fixed Asset Additions<br>• Invoice Payment<br>• Payroll Register |
| Calculate an average purchase by vendor for the first three quarters of the year and relate to the last quarter of the year. | Unrecognized and Timing | E | This test should focus on vendors with fictitiously low fourth quarter purchases reported per the financial statements. | • Invoice Payment |
| Calculate an average purchase by vendor for each quarter of the year and relate to one another. | Unrecognized and Timing | E | This test should focus on vendors with low fourth quarter purchases to identify fictitiously low fourth quarter purchases reported per the financial statements. | • Invoice Payment |
| Calculate the total purchases by vendor for each quarter of the year and relate to one another. | Unrecognized and Timing | E | This test should focus on vendors with low quarterly purchases to identify a time period when fictitiously low fourth quarter purchases were reported per the financial statements. | • Invoice Payment |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Calculate the total purchases by vendor for the first three quarters of the year and relate to the last quarter of the year. | Unrecognized and Timing | E | This test should focus on vendors with low quarterly purchases to identify a time period when fictitiously low quarterly purchases were reported per the financial statements. | • Invoice Payment |
| Summarize depreciation expense by fixed asset type by month. | Unrecognized | E | Depreciation expense may be understated which can be reviewed by asset type. | • Fixed Asset Register |
| Extract all fixed assets, not fully depreciated, with no current year depreciation. | Unrecognized | E | May identify assets that have fraudulent ceased depreciating. | • Fixed Asset Register |
| Summarize fixed assets and depreciation expense by depreciable life. | Unrecognized | E | Depreciation expense may be understated due to higher than normal useful lives being used for fixed assets. | • Fixed Asset Register |
| Extract assets with high salvage values compared to asset values. | Unrecognized | E | Depreciation expense may be understated due to higher than normal salvage values being used for fixed assets. | • Fixed Asset Register |
| Age outstanding purchase orders with no invoices charged. | Unrecognized | E | Purchase orders with no associated invoices may represent purchases made that have not been recorded in the financial statements. | • Purchase Order<br>• Invoice Payment<br>• Accounts Payable Trial Balance |
| Match receiving logs to associated vendor invoices. | Unrecognized | E | Vendor receipts that have no associated invoices should be summarized and reviewed for reasonableness to outstanding accruals at period end. | • Receiving Log<br>• Invoice Payment<br>• Accounts Payable Trial Balance |
| Extract all check payments after period end for invoices dated prior to year-end with no listing of it in the accounts payable listing. | Timing | E | This test will utilize the key purchasing dates stored within organizational databases that can help detect understated expenses and liabilities that are recorded in future timeframes. | • Invoice Payment |
| Review computer system log files for changes in dates. | Timing | E | Computer system date changes may be completed in order to allow reduced expenses to be posted within the period that would normally be outside of the period. | • Computer System Administration Log |

**Overstated Assets / Valuation**

Fictitious inflation of asset values or other improper valuations, generally to enhance the appearance of financial statements.[4] These types of financial statement fraud normally transpire from:

- **Inventory**
  - Overstating inventory quantity and/or pricing
  - Understating inventory related reserves
- **Accounts Receivable**
  - Overstating accounts receivable quantity and/or pricing (this area is covered in Fictitious Revenue / Revenue Timing Differences)
  - Understating accounts receivable related reserves

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- **Fixed Assets**
  - Overstating fixed assets
  - Understating fixed asset reserves (this area is covered in Liabilities and Expenses).

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive sales growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be to reduced profitability ratios when other measures suggest a positive sales growth. Further, ending inventory, as a percentage of sales, should move in a direct proportion to the increases/decreases in cost of goods sold in relation to sales. Also, increased obsolescence as a % of inventory trend analysis may identify an increase in fraudulent activity. | N/A |
| Benford's Law | All | A | Analysis of inventory, receivable, and fixed asset balances. | • On Hand Inventory<br>• Open Accounts Receivable<br>• Fixed Assets |
| Stratify receivables, inventory, and/or fixed assets. | All | A | Focuses audit efforts on larger dollar balances or balances directly under an approval review limit. | • On Hand Inventory<br>• Open Accounts Receivable<br>• Fixed Assets |
| Age inventory by last receipt date. | Inventory | A | Inventory that was last received a long period of time ago is more prone to be obsolete and therefore, should be reviewed for reasonableness to inventory obsolescence reserves. | • On Hand Inventory |
| Age open receivables in daily or weekly increments. | Receivables | A | Focuses audit efforts on periods of increased activity. Additional scrutiny should be given to large spikes in sales activity towards year-end. | •Open Accounts Receivable |
| Age fixed asset additions. | Fixed Assets | A | Focuses audit efforts on periods of increased activity. Additional scrutiny should be given to large spikes in sales activity towards year-end. | • Fixed Asset Additions |
| Compute standard deviation for each employee for the last three months and list those employees that provided 3x the standard deviation in the current month (one for inventory adjustments, asset transfers, and accounts receivable write offs). | All | E | Employees with high adjustments may signal actions to inflate assets. | • On Hand Inventory<br>• Open Accounts Receivable<br>• Fixed Assets<br>• Shipment Register |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Summarize user access for the inventory adjustments, accounts receivable, and/or fixed asset systems for segregation of duties reviews. | All | E | User access to systems may identify segregation of duties issues. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | • System User Access Logs or<br>• System User Access Master File |
| Extract all round dollar balances. | All | E | Round dollar payments have a higher likelihood of being fabricated and therefore, fraudulent. | • On Hand Inventory<br>• Open Accounts Receivable<br>• Fixed Assets |
| Unique journal entries in asset accounts. | All | E | All unique journal entries in asset accounts should be reviewed as potential inflationary tactics. Especially in the moving of long term assets to short term ones. | • General Ledger Detail |
| General ledger journal entries made in asset accounts with little or no description. | All | E | All journal entries poorly described in asset accounts should be reviewed as potential inflationary tactics. Especially in the moving of long term assets to short term ones. | • General Ledger Detail |
| Journal entries between subsidiaries in asset accounts. | All | E | Journal entries in asset accounts may be posted between entities in an effort to increase the perceived operating performance of an organizational subsidiary at the expense of another subsidiary. | • General Ledger Detail |
| Duplicate inventory listing by amount and description, as well as, quantity and amount. | Inventory | E | Inventory may be fraudulently listed in duplicate in the on hand register to inflate period end balances. | •On Hand Inventory |
| Inventory price greater than retail price. | Inventory | E | Inventory prices may be adjusted in an attempt to inflate period end balances. | •On Hand Inventory |
| Compares actual unit price to standard unit price (on a part by part basis). | Inventory | E | Inventory prices may be adjusted in an attempt to inflate period end balances. | •On Hand Inventory |
| Relate a summarization of inventory coded as obsolete to all inventory-by-inventory types. | Inventory | E | Scrutiny should be given to inventory balances that exist that are in inventory types coded as obsolete. | •On Hand Inventory<br>•Obsolete Inventory |
| Inventory receipts per inventory item that exceed the economic order quantity or maximum for that item. | Inventory | E | Over-ordering of product may indicate inventory that has a higher risk of becoming obsolete and should be reviewed in relation to obsolescence reserves. | •Receiving Log<br>•On Hand Inventory |
| Calculate turnover and number of months of inventory that is on hand (on a part by part basis). | Inventory | E | Inventory with low turnover has a higher risk of becoming obsolete and should be reviewed in relation to obsolescence reserves. | •On Hand Inventory<br>•Sales Register |
| Calculate the percentage of parts (total cost) with no usage during the current year to the outstanding balance of inventory (on a part by part basis). | Inventory | E | Inventory with no usage during the year has a higher risk of becoming obsolete and should be reviewed in relation to obsolescence reserves. | •On Hand Inventory<br>•Sales Register |
| Extract all parts that are older than the shelf life date (if applicable). | Inventory | E | Inventory with exceeded shelf life dates has a higher risk of becoming obsolete and should be reviewed in relation to obsolescence reserves. | •On Hand Inventory |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Extract inventory items with no description. | Inventory | E | Inventory with no description is more prone to being fictitiously added. | •On Hand Inventory |
| Sample inventory and perform test counts. | Inventory | E | Test counts to the inventory warehouse may identify missing and potentially fictitiously added inventory. | •On Hand Inventory |
| Sales summarized by customer compared to open receivables and sorted from high to low. | Receivables | E | Customers with low current sales to receivable balances should be scrutinized in relation to associated reserves for bad debts. | •Open Accounts Receivable<br>•Sales Invoice Register |
| Recalculates the aging of receivables for agreement to the accounts receivable aging report. | Receivables | E | Accounts receivable aging reports may be fabricated to support a lower reserve for bad debts. | •Open Accounts Receivable |
| Identify customer write offs from an old aging category to new invoices that are equal in dollar amount. | Receivables | E | One scheme to improve an aging report is to write off old receivables and then reinstate them as sales in more current periods. | •Open Accounts Receivable |
| Summarize user access to the sales order, shipment, accounts receivable, and cash receipt systems. | Receivables | E | User access to systems may identify segregation of duties issues. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | •System User Access Logs or<br>•System User Access Master File |
| Summarize customer activity with weighted days sales outstanding and interest lost for not receiving cash in 30, 45 and 60 days. | Receivables | E | Customers with high days sales outstanding ratios should be scrutinized in relation to associated reserves for bad debts. | •Open Accounts Receivable<br>•Sales Invoice Register |
| Summarize by customer all returns and discounts in the period after year-end. | Receivables | E | May identify bill-and-hold sales or shipments that were never ordered by the customer and later returned. May also identify sales made prior to year-end with large discounts that were agreed to between the customer and organization that need to be taken after year-end, all in an effort to inflate period end sales. | •Sales Invoice Register |
| Summarize by customer all accounts receivable write offs in the period after year-end. | Receivables | E | May identify fictitious sales at year-end that were subsequently written off after year-end. | •Sales Invoice Register |
| Duplicate fixed asset listing by amount and description. | Fixed Assets | E | Fixed assets may be fraudulently listed in duplicate to inflate period end balances. | •Fixed Asset Register |
| Sample fixed assets and perform test counts. | Fixed Assets | E | Test counts to the actual fixed assets may identify missing and potentially fictitiously added inventory. | •Fixed Asset Register |
| Fixed asset summarization (in aggregate and additions) by type. | Fixed Assets | E | Focus should be given to fixed asset types with unusually high balances that may have been fraudulently inflated. | •Fixed Asset Register<br>•Fixed Asset Additions |

**Improper Disclosures**
Improper disclosures in the notes of financial statements such as omission of loan covenants, significant negative effects, related party transactions, or outright fraud committed.[4]

Given improper disclosures are a direct result of financial statement fraud, especially liability omissions, please refer to the following sections of this document for associated computer reports:

- Conflicts of Interest
- Fictitious Revenues / Timing Differences
- Understated Liabilities and Expenses
- Overstated Assets/Valuation

**Non-Financial Fraudulent Statements**
Fraudulent statements made by employees that have no direct financial statement impact such as employee credentials or other internal/external documents.[4]

Practically all of the time, data does not exist to support the necessary analysis. In the one case that data may exist (falsifying documents for reimbursement of employee expenses), this was covered in **Expense Reimbursement Schemes.**

**Cash Larceny**
Intentional taking away of an employer's cash without the consent and against the will of the employer. It differs from other schemes where cash is taken (i.e., skimming) in that the sale is recorded on the company books. After the fraud, it may be later adjusted or left as an unexplained item. Cash larceny generally occurs from the register or from a bank deposit.[4]

The above schemes are normally hidden through:

- False discounts or other adjustments to the customer account.
- Lapping of one customer's cash to another to provide the appearance that invoices are being paid.
- Destruction of records (either sale records or customer account statements).
- Other false entries to accounts such as to accounts receivable or inventory accounts.

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive sales growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be to reduced profitability ratios when other measures suggest a positive sales growth. Further lower net sales will be seen even though gross sales may not change given adjustments to conceal the larceny. | N/A |

[4] Occupational Fraud & Abuse – Joseph T. Wells - ACFE
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| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Benford's Law | All | A | Analysis of payments. | •Invoice Sales Register |
| Stratification and aging of cash receipts – sales system balances by day. | All | A | Focus should be given to high occurrences of small dollar receipt to sales differences. Such differences may signal a fraud that is occurring at a slow rate over a long period of time (and under a review/approval limit). | •Cash Receipt Register<br>•Sales System Register |
| Summarize by employee the difference between the cash receipt report and the sales register system. | All | E | Focus should be given to employees with high dollar differences, especially high occurrences of small dollar differences. | •Cash Receipt Register<br>•Sales System Register |
| Summarize by employee by day the difference between the cash receipt report and the sales register system. | All | E | Focus should be given to employees with high dollar differences, especially high occurrences of small dollar differences. | •Sales System Register<br>•Cash Receipt Register |
| Summarize by location discounts, returns, cash receipt adjustments, accounts receivable write offs, and voids charged. | All | E | Locations with high adjustments may signal actions to hide cash larceny schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Cash Receipts Register |
| Summarize by employee discounts, returns, cash receipt adjustments, accounts receivable write offs, and voids charged. | All | E | Employees with high adjustments may signal actions to hide cash larceny schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Cash Receipts Register |
| List top 100 employees by dollar size (one for discounts, one for refunds, one for cash receipt adjustments, one for accounts receivable write offs, and one for sale voids). | All | E | Employees with high adjustments may signal actions to hide cash larceny schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Cash Receipts Register |
| List top 100 employees who have been on the top 100 list for three months (one for discounts, one for refunds, one for cash receipt adjustments, one for accounts receivable write offs, and one for sale voids). | All | E | Employees with high adjustments may signal actions to hide cash larceny schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Cash Receipts Register |
| List top 10 locations that have been on the top 10 list for three months (one for discounts, one for refunds, one for cash receipt adjustments, one for accounts receivable write offs, and one for sale voids). | All | E | Locations with high adjustments may signal actions to hide cash larceny schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Cash Receipts Register |
| Compute standard deviation for each employee for the last three months and list those employees that | All | E | Employees with high adjustments may signal actions to hide cash larceny schemes. | •Sale System Register<br>•Invoice Sales Register |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| provided 3x the standard deviation in the current month (one for discounts, one for refunds, one for cash receipt adjustments, one for accounts receivable write offs, and one for sale voids). | | | | •Cash Receipts Register |
| Compare adjustments to inventory to the void/refund transactions summarized by employee. | All | E | First, a summary of adjustments by inventory number (SKN number) and employee is completed which is then compared to credit adjustments (to inappropriately decrease inventory that was supposedly returned) by inventory number. | •Sales System Register<br>•Inventory Detail Register |
| Unique journal entries in cash accounts. | All | E | All journal entries in cash accounts, especially those appear to be unique adjustments should be reviewed as concealment actions to a cash larceny scheme. | •General Ledger Detail |
| Summarize user access for the sales, accounts receivable, cash receipt, and general ledger systems for segregation of duties reviews. | All | E | User access to systems may identify segregation of duties issues. For example, if an employee can make changes to the accounts receivable system and then post other concealment entries in the general ledger, such non-segregation of duties would allow an employee to hide his/her actions. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | •System User Access Logs or System User Access Master File |
| Summarize user access for the sales, accounts receivable, cash receipt, and general ledger systems in non-business hours. | All | E | Many times, concealment adjustments are made in non-business hours. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | •System User Access Logs |

**Skimming**

Removal of cash from a victim entity prior to its entry in the accounting system. There are three subcategories of skimming[4]:

- **Unrecorded Sales** – Employee sells goods, collects payment, and does not record the transaction.
- **Understated Sales and Receivables** – Similar to unrecorded sales except that the employee records a portion of the sale and pockets the remaining balance.
- **Refunds & Other** – Employee enters a false refund and pockets the cash or steals checks in the mail to the organization.

The above schemes are normally hidden through:

- False discounts or other adjustments to the customer account.
- Lapping of one customer's cash to another to provide the appearance that invoices are being paid.
- Destruction of records (either sale records or customer account statements).
- Other false entries to accounts such as to accounts receivable or inventory accounts.

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| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced sales ratios when other measures suggest a positive sales growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be to reduced sales ratios when other measures suggest a positive sales growth. Further, high expense account changes may signal debit entries made to expense versus the cash account for accounts receivable balances that were reduced (and the associated customer cash receipt stolen). | N/A |
| Benford's Law | All | A | Analysis of payments. | •Invoice Sales Register |
| Stratification and aging of customer accounts. | All | A | Focus should be given to customer accounts that are becoming old in the aging. | •Invoice Sales Register |
| Summarize net sales by employee and extract top 10 employees with low sales. | All | E | Employees with lower sales may be suspect. This test may also prove more valuable when executed over a trend in time. | •Sale System Register |
| Summarize by location discounts, returns, inventory adjustments, accounts receivable write offs, and voids charged. | All | E | Locations with high adjustments may signal actions to hide skimming schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Inventory Adjustments |
| Summarize by employee discounts, returns, inventory adjustments, accounts receivable write offs, and voids charged. | All | E | Employees with high adjustments may signal actions to hide skimming schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Inventory Adjustments |
| List top 100 employees by dollar size (one for discounts, one for refunds, one for inventory adjustments, one for accounts receivable write offs, and one for sale voids). | All | E | Employees with high adjustments may signal actions to hide skimming schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Inventory Adjustments |
| List top 100 employees who have been on the top 100 list for three months (one for discounts, one for refunds, one for inventory adjustments, one for accounts receivable write offs, and one for sale voids). | All | E | Employees with high adjustments may signal actions to hide skimming schemes. | •Sale System Register<br>•Invoice Sales Register<br>•Inventory Adjustments |
| List top 10 locations that have been on the top 10 list for three months (one for discounts, one for refunds, one for inventory adjustments, one for accounts receivable write offs, and one for sale voids). | All | E | Locations with high adjustments may signal actions to hide skimming schemes. | • Sale System Register<br>• Invoice Sales Register<br>• Inventory Adjustments |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Compute standard deviation for each employee for the last three months and list those employees that provided 3x the standard deviation in the current month (one for discounts, one for refunds, one for inventory adjustments, one for accounts receivable write offs, and one for sale voids). | All | E | Employees with high adjustments may signal actions to hide skimming schemes. | • Sale System Register<br>• Invoice Sales Register<br>• Inventory Adjustments |
| Compare adjustments to inventory to the void/refund transactions summarized by employee. | All | E | First, a summary of adjustments by inventory number (SKN number) and employee is completed which is then compared to credit adjustments (to inappropriately decrease inventory that was supposedly returned) by inventory number. | •Sales System Register<br>•Inventory Detail Register |
| Summarize user access for the sales, accounts receivable, inventory, and general ledger systems for segregation of duties reviews. | All | E | User access to systems may identify segregation of duties issues. For example, if an employee can make changes to the accounts receivable system and then post other concealment entries in the general ledger, such non-segregation of duties would allow an employee to hide his/her actions. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | • System User Access Logs or<br>• System User Access Master File |
| Summarize user access for the sales, accounts receivable, inventory, and general ledger systems in non-business hours. | All | E | Many times, concealment adjustments are made in non-business hours. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | • System User Access Logs |
| Compute the percentage of assigned to unassigned time for employees. | All | E | Service employees that have a high majority of unassigned time may be charging the customer and pocketing the proceeds. | •Employee Timecard System |
| Review telephone logs for calls on non-business hours. | All | E | Service employees that are completing transactions on non-business hours will probably use company lines to effectuate their services. | • Detail Telephone Record |
| Extract sales with over X% discount and summarize by employee. | Understated Sales | E | Employees with high discount adjustments may signal actions to hide understated sales schemes. | • Sale System Register |
| Extract invoices with partial payments. | Understated and Refunds & Other | E | Employees that are using lapping to hide their skimming scheme may find it difficult to apply a payment from one customer to another customer's invoices in a fully reconciled fashion. | • Invoice Sales Register |
| Join the customer statement report file to accounts receivable and review for balance differences. | Understated and Refunds & Other | E | Through the matching of the customer statement report file (file that is used to print customer statements) and the open invoices to that customer, any improper changes to customer statements to mask skimming schemes will be detected. | • Customer Statement Report File<br>• Invoice Sales Register |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Extract customer open invoice balances that are in a credit position. | Understated and Refunds & Other | E | Customers with a credit position account may be due to improper credit entries posted to the customer account to hide cash skimming. | • Invoice Sales Register |
| Extract customers with no telephone or tax id number. | Understated and Refunds & Other | E | Customers without this information may have been created for use in posting improper entries to hide a skimming scheme. | • Customer Master File |
| Identify customers added during the period under review. | Understated and Refunds & Other | E | The issuers of new customer additions should be reviewed using this report to determine whether an employee is using a phony customer account as part of a lapping scheme by crediting their account for cash misappropriation. | • Customer Master File |
| Match the customer's master file to the employee master file on various key fields. | Understated and Refunds & Other | E | Telephone number, address, tax id numbers, numbers in the address, zip code, PO Box and zip code in customer file to employee zip codes, especially those employees working in the accounts receivable department. Questionable customer accounts should be reviewed using this report to determine whether an employee is using a phony customer account as part of a lapping scheme by crediting their account for cash misappropriation. | • Customer Master File<br>• Employee Master File |

**Inventory Misuse/Larceny**

Inventory Misuse and Larceny is composed of the following sections[4]:

- **Larceny** - Employee takes inventory or other assets from the company premises without attempting to conceal it in the books or records.
- **Asset Transfers –** Employee records an asset transfer from one location to the other and takes the inventory or other asset in the transfer process.
- **Purchasing and Receiving Schemes** – Receiving employee to falsify records of incoming shipments and misappropriate the assets.
- **False Shipments** – Fraudulent shipments that are charged to customers to conceal the taking of inventory.

The above schemes are normally detected through attempts to conceal the fraud including writing off assets as obsolete or writing off customer sales (if asset was fraudulently recorded as sold to the customer).

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive sales growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. Further, inventory turnover should be carefully reviewed for sudden increases due to increased adjustments and fraudulent taking of inventory. | N/A |

[4] Occupational Fraud & Abuse – Joseph T. Wells - ACFE

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be to reduced profitability ratios when other measures suggest a positive sales growth. Further, ending inventory, as a percentage of sales, should move in a direct proportion to the increases/ decreases in cost of goods sold in relation to sales. Further, increased obsolescence as a % of inventory trend analysis may identify an increase in fraudulent activity. | N/A |
| Benford's Law | All | A | Analysis of all inventory receipts, shipments, adjustments, and receivable adjustments. | • Shipment Register<br>• Receiving Log<br>• Inventory Adjustments<br>• Invoice Sales Register |
| Stratification and aging of inventory receipts, shipments, adjustments, and receivable adjustments. | All | A | Focus should be given to high dollar adjustments and high occurrences of small dollar adjustments. Such differences may signal a fraud that is occurring at a slow rate over a long period of time (and under a review/approval limit). | •Shipment Register<br>•Receiving Log<br>•Inventory Adjustments<br>•Invoice Sales Register |
| Delivery of inventory to employee address identified by joining employee address to shipment address file. | All | E | Inventory may be shipped directly to an employee address. | • Shipment Register<br>• Employee Address |
| Delivery of inventory to address that is not designated as a business address. | All | E | Inventory may be shipped to an employee address that is entered into the system to appear as a regular business address. The identification of whether an address is legitimately a business one can be done to software databases such as Select Phone Pro. | • Shipment Register |
| Inventory actual to standard price. | All except Larceny | A | Inventory prices may be adjusted in an attempt to conceal inventory larceny schemes. | • On Hand Inventory |
| List top 100 employees by dollar size (one for inventory adjustments, asset transfers, and accounts receivable write offs). | All except Larceny | E | Employees with high adjustments may signal actions to hide inventory larceny schemes. | • Invoice Sales Register<br>• Inventory Adjustments<br>• Shipment Register |
| List top 100 employees who have been on the top 100 list for three months (one for inventory adjustments, asset transfers, and accounts receivable write offs). | All except Larceny | E | Employees with high adjustments may signal actions to hide inventory larceny schemes. | • Invoice Sales Register<br>• Inventory Adjustments<br>• Shipment Register |
| List top 10 locations that have been on the top 10 list for three months (one for inventory adjustments, asset transfers, and accounts receivable write offs). | All except Larceny | E | Locations with high adjustments may signal actions to hide inventory larceny schemes. | • Invoice Sales Register<br>• Inventory Adjustments<br>• Shipment Register |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Compute standard deviation for each employee for the last three months and list those employees that provided 3x the standard deviation in the current month (one for inventory adjustments, asset transfers, and accounts receivable write offs). | All except Larceny | E | Employees with high adjustments may signal actions to hide inventory larceny schemes. | • Invoice Sales Register<br>• Inventory Adjustments<br>• Shipment Register |
| Summarize user access for the receiving, inventory adjustments, shipping, and customer account systems for segregation of duties reviews. | All except Larceny | E | User access to systems may identify segregation of duties issues. For example, if an employee posts a fraudulent shipment to their home address and then writes off the receivable, this non-segregation would facilitate the fraud. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | • System User Access Logs or<br>• System User Access Master File |
| Duplicate inventory listing by amount and description, as well as, quantity and amount. | All except Larceny | E | Inventory may be fraudulently listed in duplicate in the on hand register to appear on hand, concealing the inventory larceny. | • On Hand Inventory |
| Inventory price greater than retail price. | All except Larceny | E | Inventory prices may be adjusted in an attempt to conceal inventory larceny schemes. | • On Hand Inventory |
| Extract all inventory coded as obsolete which possess reorder points within the inventory system. | Purchasing and Receiving Schemes | E | Inventory that has been written off as obsolete while also having reorder points may be a sign that the items were written off fraudulently to conceal an inventory larceny. | • Inventory Master File<br>• Inventory Adjustments |
| Receipts per receiving report in the receiving system that do not agree to the receipts per the accounts payable invoice. | Purchasing and Receiving Schemes | E | Receipts per the receiving log may be fraudulently lowered to conceal an inventory larceny and then increased when passed to accounts payable to effectuate the payment to the vendor. | • Receiving Log<br>• Invoice Payment |
| Inventory receipts per inventory item that exceed the economic order quantity or maximum for that item. | Purchasing and Receiving Schemes | E | Over-ordering of product so that it may be taken fraudulently may be detected through this analysis. | • Receiving Log<br>• Inventory Master File |
| Inventory with a negative quantity balance. | False Shipments | E | Employees posting fraudulent shipments may erroneously enter more shipments than there is inventory for a stated inventory item. | • On Hand Inventory |
| Dormant customer accounts for the past six months that post a sale in the last two months of the year. | False Shipments | E | Customers that have been dormant may be used as accounts to post fraudulent sales, concealing an inventory larceny. | • Sales Register |
| Calculate the ratio of the largest sale to next largest sale by customer. | False Shipments | E | By identifying the largest sale to a customer and the next largest sale, any large ratio difference may identify a fraudulently recorded “largest” sale. This would essentially be made to conceal an inventory larceny. | • Sales Register |
| Shipping documents with no associated sales order. | False Shipments | E | A false shipment, concealing an inventory larceny, may be posted to the sales journal with no corresponding shipment entry, thereby avoiding detection of the entry. | • Sales Register<br>Shipment Register |

**Billing Schemes**

Billing schemes occurs when a fraudster causes the victim organization to issue a payment by submitting invoices for fictitious goods or services, inflated invoices, or invoices for personal purchases[4]. There are three subcategories of billing schemes defined as follows:

- **Shell Company** – creates a phony organization on the company's books for use in paying fictitious invoices.
- **Non-Accomplice Vendor** – intentional mishandling of vendor payment in order to make fictitious payment to employee.
- **Personal Purchases** – purchases using company accounts such as a company procurement card.

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | | N/A |
| Liquidity Ratio Tests | All | A | | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | | N/A |
| Benford's Law | All | A | Analysis of payments. | •Invoice Payment |
| Stratification and aging of vendor payments. | All | A | | •Invoice Payment |
| Vendor payments trend analysis. | All | A | Special note should be given to vendors that had minimal purchases in prior periods yet having large payments in current periods. | •Invoice Payment |
| Identify duplicate payments based on various means. | All | E | Duplicate payment tests can be enacted on the vendor, invoice number, amount. More complicated tests can look where the same invoice and amount are paid yet the payment is made to two different vendors. Another advanced test would be to search for same vendor and invoice when a different amount is paid. | •Invoice Payment |
| Summarize debit memos by vendor, issuer, and type. | All | E | Debit memo trends that appear unusual should be investigated as attempts to cover unauthorized payments. | •Invoice Payment |
| Summarize accounts payable activity by general ledger account, sort from high to low, and review for reasonableness. | All | E | Expense account trends that appear unusual should be investigated as attempts to cover unauthorized payments. | •Invoice Payment<br>•G/L Distribution |
| Extract manual checks and summarize by vendor and issuer. | All | E | Manual checks are more prone to abuse and therefore should be scrutinized, especially if a particular issuer is drafting the majority of manual checks. | •Check Register |
| Extract all purchases with no purchase orders and summarize by vendor and issuer. | All | E | Purchases with no purchase orders are more prone to abuse and therefore should be scrutinized, especially if a particular issuer is drafting the majority of payments without purchase orders. | •Invoice Payment |
| Extract all round dollar payments. | All | E | Round dollar payments have a higher likelihood of being fabricated and therefore, fraudulent. | •Invoice Payment |

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| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Calculate the ratio of the largest purchase to next largest purchase by vendor. | All | E | By identifying the largest purchase to a vendor and the next largest purchase, any large ratio difference may identify a fraudulently issued "largest" check. | •Invoice Payment |
| Compare check register to invoice payment file to identify any checks with no related system invoices. | Shell Company | E | Check payments that do not appear on the invoice register may be an attempt to hide unauthorized payments. | •Invoice Payment and Check Register |
| Match vendor master file to the accounts payable invoice file. | Shell Company | E | Identify payments to a potentially unapproved vendor by joining the vendor to the invoice file on vendor number. The joining of these two files should be done in an "unmatched" format so that only those vendor numbers in the invoice file not appearing in the vendor file are shown. | •Vendor Master<br>•Invoice Payment |
| Extract vendors with no telephone or tax id number. | Shell Company | E | Vendors without this information are more prone to abuse and should be scrutinized. | •Vendor Master |
| Identify vendors added during the period under review. | Shell Company | E | The issuers of new vendor additions should be reviewed using this report to determine whether a particular issuer is drafting the majority of vendor additions. | •Vendor Master |
| Vendors with an address that is not designated as a business address. | Shell Company | E | The identification of whether an address is legitimately a business one can be done to software databases such as Select Phone Pro. | •Vendor Master |
| List all vendors who had multiple invoices immediately below an approval limit (e.g., many $999 payments to a vendor when there is a $1,000 approval limit) highlighting a circumvention of the established control. | Shell Company | E | Invoices below an approval limit may be an attempt to circumvent a management review. | •Invoice Payment |
| Match the vendor master file to the employee master file on various key fields. | Shell Company | E | Telephone number, address, tax id numbers, numbers in the address, zip code, PO Box and zip code in vendor file to employee zip codes, especially those employees working in the accounts payable department. | • Vendor Master<br>•Employee Master |
| Review payments with little or no sequence between invoice numbers. | Shell Company | E | Employees developing shell companies many times will invoice the company with no gaps in invoice sequence, highlighting that the victim company is the shell company's only customer. | •Invoice Payment |
| Payments to any vendor that exceed the 12-month average payments to that vendor by a specified percentage (i.e., 200%). | Shell Company and Non-Accomplice Vendor | E | Large payments are unusual and should be scrutinized as potentially being fraudulent. | •Invoice Payment |
| Extract vendor payments where the payment is a specified percentage (i.e., 200%) greater than the last largest payment to that vendor. | Shell Company and Non-Accomplice Vendor | E | Large payments are unusual and should be scrutinized as potentially being fraudulent. | • Invoice Payment |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Sample vendor open invoices for confirmation with vendor. | Non-Accomplice Vendor | E | Vendor invoices may remain open on the subledger when the vendor believes such invoices have been paid. | • Invoice Payment |
| Extract SIC codes from credit card payments normally associated with personal purchases. | Personal Purchases | E | Personal purchases with company cards may be a sign of abuse. | • Procurement Card |
| Extract multiple charges of the same product type (using SIC code) below a predefined credit card expense limit. | Personal Purchases | E | Charges below an approval limit may be an attempt to circumvent a management review. | • Procurement Card |
| Summarize credit card use by employee and sort from high to low. | Personal Purchases | E | High usage of credit cards by certain employees may be a sign of abuse. | • Procurement Card |
| Vendors will a billing address that is different from their delivery address. | Personal Purchases | E | Company purchases sent to a different delivery address from where it is paid may signal personal purchases made on account of the company. | • Vendor Master |
| Extract all delivery addresses that do not correspond to company locations. | Personal Purchases | E | Company purchases should normally be sent to company locations with others a potential sign of fraud. | • Vendor Master |

**Payroll Schemes**

Perpetrator (internal or external to the organization) produces false documents (sales order, time cards, false employee hiring records) that cause the company to unknowingly issue a check.[4] The schemes fall into the following sub-categories:

- **Ghost employees** – payments to someone on the payroll who does not exist.
- **Falsified hours and salary** – overpayment of wages due to the falsification of hours, wage rates, or other adjustments.
- **Commission schemes** – overpayment of wages due to fictitious sales, altered sales, or converting sales from other salesperson accounts.

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive profit growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive profit growth. | N/A |
| Benford's Law | All | A | Analysis of payments. | • Payroll Register |
| Stratification of employee payments. | All | A | Focuses audit efforts on large activity. | • Payroll Register |

[4] Occupational Fraud & Abuse – Joseph T. Wells - ACFE

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Age employee payments on check date. | All | A | Focuses audit efforts on periods of increased activity. | • Payroll Register |
| Stratify on hourly rates, hours worked, net pay amount, commission amount, overtime hours. | All | A | Focuses audit efforts on high rates. | • Payroll Register |
| Compare salaried employee gross pay from one pay period to the next. | All | A | Review changes in salaried payroll for areas of potential fraud. | • Payroll Register |
| Age customer open invoices by salesperson. | Commission | A | Identifies salespeople that have unusually old receivable balances which may be phony invoices used to bolster commission payments. | • Sales Register (Open Invoices Designated) |
| Extract all round dollar payments. | All | E | Round dollar payments have a higher likelihood of being fraudulent. | • Invoice Payment |
| Compare current year to prior year payroll file to detect additional/ terminated employees. | Ghost employee | E | Highlights new and terminated employees for agreement to authorization records. New employees should be reviewed closely to determine whether "ghost" employees accepting fraudulent payments exist. | • Payroll Register<br>• Employee Master File |
| Compare employees reported per time card system to payroll system. | Ghost employee | E | Isolates differences between the employee register in the time card system and the payroll register. Focus should be on employees in the payroll register who do not appear in the time card system and may have been fraudulently added. | • Payroll Register<br>• Time Card System |
| Compare payroll data files to human resource data files to test for differences between the files. | Ghost employee | E | Ensures agreement between human resource and payroll records. Isolate potential unauthorized payroll payments. Detect new or terminated employees for agreement to authorized forms. | • Payroll Register<br>• Employee Master File |
| Extract all employee payments with no deductions/taxes withheld. | Ghost employee | E | Highlights payments without taxes/deductions that are, by their nature, more prone to fraud. | • Payroll Register |
| Extract all employees without an employee number or social security number. | Ghost employee | E | Reports potential "ghost" employees, which may have unauthorized payments. Please note this field may be blank or filled with "999999999." | • Payroll Register<br>• Employee Master File |
| Extract employee payments with payment dates after termination dates. | Ghost employees | E | Reports potentially unauthorized payments to terminated employees, which may be made by an employee and later intercepted. | • Payroll Register<br>• Employee Master File |
| Extract employees without names. | Ghost employees | E | Reports potential "ghost" employees that may have unauthorized payments or payments made with payees being written in after check printing. | • Payroll Register<br>• Employee Master File |
| Sequence duplicate social security numbers paid in the same pay period. | Ghost employees | E | Lists possible duplicate payments to employees, which are highly prone to fraud. | • Payroll Register<br>• Employee Master File |
| Sequence duplicate direct deposit numbers paid in the same pay period. | Ghost employees | E | Lists possible duplicate payments to employees that are highly prone to fraud. | • Payroll Register<br>• Employee Master File |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Sequence possible duplicate payments based on the absolute value of the net pay and the check date. | Ghost employees | E | Lists possible duplicate payments to employees that are highly prone to fraud. | • Payroll Register |
| Sequence duplicate mailing addresses numbers paid in the same pay period. | Ghost employees | E | Lists possible duplicate payments to employees that are highly prone to fraud. | • Payroll Register<br>• Employee Master File |
| Extract users who can write checks and also add new employees in the payroll and timecard system. | Ghost employees and Falsified hours and salary | E | Users who can enter new employees, enter time, and write fraudulent checks would be taking advantage of a non-segregation of duties to commit their fraud. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | • Payroll Register User Access Master File<br>• Time Card User Access Master File<br>• Payroll Register User Access Log File<br>• Time Card User Access Log File |
| Calculate the % of bonus to gross pay (on a person by person basis) and sort from high to low. | Falsified hours and salary | E | Reports high and potentially unauthorized bonus payments. | • Payroll Register |
| Calculate the % of fringe expense to the gross pay (on a person by person basis) and sort from high to low. | Falsified hours and salary | E | Reports unusually high fringe payments. Also, payments with fringe payments equal to zero are, by their nature, more prone to fraud. | • Payroll Register |
| Calculate the % of overtime to gross pay (on a person by person basis) and sort from low to high. | Falsified hours and salary | E | Reports high and potentially unauthorized overtime expenses. | • Payroll Register |
| Calculate the average payroll per employee and sort from high to low. | Falsified hours and salary and Commission schemes | E | Reports high and potentially unauthorized employee payments. | • Payroll Register |
| Compare bonus payments to budget or prior year on an employee-by-employee basis. | Falsified hours and salary | E | Reports large changes and potentially unauthorized bonus payments. | • Payroll Register |
| Compare current year to prior year payroll file to detect changes in pay rates. | Falsified hours and salary | E | Highlights changes in rates that can be reviewed for unusual trends, exceptions and unauthorized changes. | • Payroll Register<br>• Employee Master File |
| Compare hours reported per time card system to payroll system. | Falsified hours and salary | E | Isolates differences between the hours worked and the hours paid to employees. Overpayments may be detected if more hours are paid for then worked or unauthorized deductions of hours may be occurring. | • Payroll Register<br>• Time Card System |
| Compare overtime hours to budget or prior year by department. | Falsified hours and salary | E | Reports large changes and potentially unauthorized overtime payments. | • Payroll Register |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Compare payroll data files to human resource data files to test for differing salary rates. | Falsified hours and salary | E | Ensures agreement between human resource and payroll records. Isolate potential unauthorized payroll payments. Detect new or terminated employees for agreement to authorized forms. | • Payroll Register<br>• Employee Master File |
| Extract all employees paid more than 25% of their gross pay in overtime. | Falsified hours and salary | E | Reports large and potentially unauthorized overtime payments. | • Payroll Register |
| Extract all employees with over X hours per pay period. | Falsified hours and salary | E | Reports large and potentially unauthorized hours charged by employees. One popular test is to review any employees with over 168 hours (more than the weekly limit). | • Payroll Register |
| Recalculate gross pay. | Falsified hours and salary | E | Recalculate gross pay for agreement to company records. Any differences may signal a control weakness in the computer system or fraudulently adjusted payment. | • Payroll Register |
| Recalculate net pay. | Falsified hours and salary | E | Recalculate net pay for agreement to company records. Any differences may signal a control weakness in the computer system or fraudulently adjusted payment. | • Payroll Register |
| Recalculate the hours reported per the time card system by employee. | Falsified hours and salary | E | Recalculate hours per time card system for agreement to payroll check writing system. Any differences may signal a control weakness in the computer system or fraudulently adjusted payment. | • Time Card System |
| Summarize commissions paid by product line, region, and salesperson. | Commission schemes | E | Focus should be on areas of high ratios for potential fraudulently inflated sales/commissions. | • Payroll Register |
| Complete a trend analysis of commission to sale ratios by salesperson. | Commission schemes | E | Sales and commission ratios should work in a linear fashion over time and should not appear overstated in relation to the sales. | • Payroll Register<br>• Sales Register |
| Recalculate commissions based on current year sales and other required performance measures. | Commission schemes | E | Recalculate commissions for agreement to company records. Any differences may signal a control weakness in the computer system or fraudulently adjusted payment. | • Payroll Register<br>• Sales Register |
| Classify sales prices by salesperson and calculate an average price per salesperson. | Commission schemes | E | Focus should be on areas of high sales prices for potential fraudulently inflated sales/commissions. | • Sales Register |
| Sequence possible duplicate sales invoices based on the absolute value of the invoice and customer. | Commission schemes | E | Lists possible duplicate invoices that may be used to inflate sales, and associated commissions. | • Sales Register |
| Dormant customer accounts for the past six months that post a sale in the last two months of the year. | Commission schemes | E | Customers that have been dormant may be used as accounts to post fraudulent activity, increasing any associated commissions. | • Sales Register |
| Calculate the ratio of the largest sale to next largest sale by customer. | Commission schemes | E | By identifying the largest sale to a customer and the next largest sale, any large ratio difference may identify a fraudulently recorded "largest" sale. This would essentially be made to increase any associated commissions. | • Sales Register |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Extract customer sales that exceed the 12-month average sales from that customer by a specified percentage (i.e., 200%). | Commission schemes | E | This test may identify a large fraudulently recorded sale. This would essentially be made to increase any associated commissions. | • Sales Register |
| Extract customer sale balances that exceed the customer credit limit. | Commission schemes | E | This test may identify a large fraudulently recorded sale. This would essentially be made to increase any associated commissions. | • Sales Register<br>• Customer Master File |
| Compare the customer masterfile to the sales register for phony customers. | Commission schemes | E | Phony customers added could be used to post fraudulent invoices that would be used to inflate commissions. | • Sales Register<br>• Customer Master File |
| Extract customers with no telephone or tax id number. | Commission schemes | E | Customers without this information are more prone to abuse and should be scrutinized as possible phantom customers. | • Customer Master File |
| Identify customers added during the period under review. | Commission schemes | E | New customer additions should be reviewed using this report to determine whether any phantom customers are being created. | • Customer Masterfile |
| Extract any salesperson users who can enter sales orders/adjustments and also can create customer accounts. | Commission schemes | E | Users who can create new customers and then post orders/adjustments to those customers would be taking advantage of a non-segregation of duties to commit their fraud. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | • Sales Register User Access Master File<br>• Customer Master User Access Master File<br>• Sales Register User Access Log File<br>• Customer Master Access Log File |

**Expense Reimbursement Schemes**

Perpetrator (internal or external to the organization) produces false documents (expense reimbursement forms) that cause the company to unknowingly issue a check.[4] Schemes fall into the following four categories:

- **Mischaracterized expenses** – fraudulent requests for expenses that are personal in nature or would not normally be paid under the company policy.
- **Overstated expenses** – the inappropriate inflating of submitted expenses.
- **Fictitious expenses** – the employee fabricates and submits expenses that were never incurred.
- **Multiple reimbursements** – submitting of the same expense on multiple occasions to defraud the company into paying the expenses twice.

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| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive profit growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive profit growth. | N/A |
| Employee expenses (by employee, division, department, etc.) budget to actual horizontal analysis. | All | A | | •Invoice Payment |
| Benford's Law | All | A | Analysis of payments. | •Invoice Payment |
| Stratification of employee payments. | All | A | Focuses audit efforts on large activity. | •Invoice Payment |
| Trend analysis of expenditure payments by employee. | All | A | | •Invoice Payment |
| Age employee payments on check date. | All | A | Focuses audit efforts on periods of increased activity. | •Invoice Payment |
| Stratify on expense payment amount. | All | A | Focuses audit efforts on high invoice payments. | •Invoice Payment |
| Extract multiple charges of the same product type (using SIC code) below a predefined credit card expense limit. | All | E | Charges below an approval limit may be an attempt to circumvent a management review. | •Procurement Card |
| Summarize credit card use by employee and sort from high to low. | All | E | High usage of credit cards by certain employees may be a sign of abuse. | •Procurement Card |
| Extract all round dollar payments. | All | E | Round dollar payments have a higher likelihood of being fraudulent. | •Invoice Payment |
| Extract payments to employees for expenses that were incurred during time periods when the employee was on vacation. | Fictitious expenses | E | Expenses for business are rarely charged when the employee is also on vacation. | •Invoice Payment<br>•Procurement Card |
| Extract SIC codes from credit card payments normally associated with personal purchases. | Mischaracterized Expenses | E | Personal purchases with company cards may be a sign of abuse. | •Procurement Card |
| Sequence possible duplicate expenses based on the absolute value of the amount and receipt date. | Multiple reimburse-mints | E | Lists possible duplicate invoices that may be used to inflate sales, and associated commissions. | •Invoice Payment |

**Check Tampering**

Perpetrator (internal or external to the organization) causes the company to issue an inappropriate payment through a fraudulent check[4]. The schemes are organized as follows:

- **Forged maker** – checks that are fraudulently stolen and signed by the employee which are then payable to the perpetrator, an accomplice, a vendor, or cash.
- **Intercepted checks** – checks that are intercepted in the mail or through the return of a check by a fraudster.
- **Forged endorsement** – checks that were intended for a payee are stolen, and the employee fraudulently makes the payee's endorsement.
- **Concealed Check** – checks that are properly approved and signed by the person responsible for signing checks who is deceived by the fraudster.
- **Authorized maker** – checks that are properly approved and signed by the person responsible for signing checks who is also the fraudster.

* Please note that in the below file, "Check Register" may designate the vendor check register but could also refer to the payroll check register.

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive profit growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. | N/A |
| Income Statement/ Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive profit growth. | N/A |
| Benford's Law | All | A | Analysis of payments. | •Check Register* |
| Stratification and aging of check voids. | All | A | Focus should be given to high occurrences of small check voids. Such differences may signal a fraud that is occurring at a slow rate over a long period of time (and under a review/approval limit). | •Check Register* |
| Extract all voided checks and summarize by issuer for reasonableness. | All | E | Checks may be voided in the system and then cashed (which requires another entry in the bank reconciliation to conceal the fraud). | •Check Register* |
| Extract all reconciling items per the bank reconciliation and summarize for reasonableness. | All | E | Most of the concealment of check tampering is done between the bank balance and the general ledger. Therefore, these adjusting entries should be closely scrutinized. | •General Ledger Detail |
| Summarize debit memos by vendor, issuer, and type. | All | E | Debit memo trends that appear unusual should be investigated as attempts to cover unauthorized payments. | •Invoice Payment |
| Identify duplicate payments based on various means. | All | E | Duplicate payments are made to properly pay down open vendor balances when another check, intended for the vendor, is stolen. | •Invoice Payment |

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| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| | | | Duplicate payment tests can be enacted on the vendor, invoice number, amount. More complicated tests can look where the same invoice and amount are paid yet the payment is made to two different vendors. Another advanced test would be to search for same vendor and invoice when a different amount is paid. | |
| Summarize accounts payable activity by general ledger account, sort from high to low, and review for reasonableness. | All | E | Expense account trends that appear unusual should be investigated as attempts to cover unauthorized payments. | •Invoice Payment G/L Distribution |
| Compare balance per accounts payable subledger to vendor account balances per their accounts receivable system. | All | E | Vendors that are not paid will show their customer account from the defrauded company as an old receivable. In order to obtain an electronic file of all customer account statements, it may be necessary to request statements and enter them into a spreadsheet. Please note that even vendors with NO balance should be requested of to provide customer statements. | •Accounts Payable Subledger<br>•Customer Account Statements (from all vendors) |
| Extract users who can write checks and also post entries to the general ledger. | All | E | Users who can enter write a fraudulent checks and also subsequently conceal the misappropriation through adjustments to the general ledger cash accounts would be taking advantage of a non-segregation of duties to conceal their fraud. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | •Check Register *User Access Master File<br>•General Ledger User Access Master File<br>•Check Register * User Access Log File<br>•General Ledger User Access Log File |
| Extract all employee payments equal to zero in any given pay period. | All | E | Reports unusual check amounts to employees for review. Check amounts may be written in after printing. | •Check Register* |
| Extract all checks payable to "Cash" and summarize by issuer for reasonableness. | Forged maker | E | Checks issued to "Cash" have a higher incidence of fraud. | •Check Register* |
| Extract manual checks and summarize by vendor and issuer. | Forged maker | E | Manual checks are more prone to abuse and therefore should be scrutinized, especially if a particular issuer is drafting the majority of manual checks. | •Check Register* |
| Extract all purchases with no purchase orders and summarize by vendor and issuer. | Forged maker | E | Purchases with no purchase orders are more prone to abuse and therefore should be scrutinized, especially if a particular issuer is drafting the majority of payments without purchase orders. | •Invoice Payment |
| Sequence gaps in checks. | Forged maker | E | Check that are stolen will normally not appear in the check register and therefore will be seen as a gap in the check sequence. | •Check Register* |

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Extract checks that are out of the normal sequence. | Forged maker, Concealed check, and Authorized Maker | E | Checks that are fabricated or stolen will many times not be in the same general sequence as the company's normal check sequence. | •Check Register* |
| Sample vendor open invoices for confirmation with vendor. | Forged maker, Concealed check, and Authorized Maker | E | Similar to the above comparison test, vendor invoices may appear paid on the subledger when the vendor believes such invoices have not been paid. | •Invoice Payment |

**Register Disbursements**

Money is taken from the register and concealed through a false transaction to justify the removal of money[4]. Unlike cash larceny and skimming schemes where there is an actual sale to a customer and the funds are removed, in these transactions, there is no sale. Rather, the employee steals cash and then posts the following phony transactions:

- **Fictitious/Overstated refunds** – where the employee processes a customer refund when the customer did not request the refund or it is overstated with the additional amount stolen.
- **Credit card refunds** – This is the same as the fictitious/overstated refund yet it is charged to an employee's credit card
- **False voids** – Same as the refund in that the sale is voided, usually with fabricated or extra copies of customer receipts.

| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| Profitability Ratio Tests | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive sales growth. | N/A |
| Liquidity Ratio Tests | All | A | Attention should be given to reduced cash flow when other measures suggest that cash flow from operations should be increasing. | N/A |
| Income Statement/Balance Sheet horizontal analysis and budget to actual analysis. | All | A | Special note should be given to reduced profitability ratios when other measures suggest a positive sales growth. Further lower net sales will be seen even though gross sales may not change given adjustments to conceal the larceny. | N/A |
| Benford's Law | All | A | Analysis of payments. | •Invoice Sales Register |
| Stratification and aging of refunds and voids. | All | A | Focus should be given to high occurrences of small refunds/voids. Such differences may signal a fraud that is occurring at a slow rate over a long period of time (and under a review/approval limit). | •Sales System Register |
| Summarize by location refunds and voids charged. | All | E | Locations with high adjustments may signal actions to hide register disbursement schemes. | •Sales System Register |
| Summarize by employee refunds and voids charged. | All | E | Employees with high adjustments may signal actions to hide register disbursement schemes. | •Sales System Register |

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| Title | Sub-category | Type | Description | Data File(s) |
|---|---|---|---|---|
| List top 100 employees by dollar size (one for refunds and one for sale voids). | All | E | Employees with high adjustments may signal actions to hide register disbursement schemes. | •Sales System Register |
| List top 100 employees who have been on the top 100 list for three months (one for refunds and one for sale voids). | All | E | Employees with high adjustments may signal actions to hide register disbursement schemes. | •Sales System Register |
| List top 10 locations that have been on the top 10 list for three months (one for discounts and one for sale voids). | All | E | Locations with high adjustments may signal actions to hide register disbursement schemes. | •Sales System Register |
| Compute standard deviation for each employee for the last three months and list those employees that provided 3x the standard deviation in the current month (one for discounts and one for sale voids). | All | E | Employees with high adjustments may signal actions to hide cash larceny schemes. | •Sales System Register |
| Compare adjustments to inventory to the void/refund transactions summarized by employee. | All | E | First, a summary of adjustments by inventory number (SKN number) and employee is completed which is then compared to credit adjustments (to inappropriately decrease inventory that was supposedly returned) by inventory number. | •Sales System Register<br>•Inventory Detail Register |
| Extract users who can enter and approve void and refund transactions. | All | E | Users who can enter the void/refund and subsequently approve it have a non-segregation of duties that give an opportunity to fraud. | •Sales System User Access Master File<br>•Sales System User Access Log File |
| Extract users who can post refunds and voids, as well as, inventory adjustments. | All | E | Users who can enter the void/refund subsequently conceal the misappropriation through adjustments to the inventory system have a non-segregation of duties that give an opportunity to fraud. User access should be reviewed from the perspective of adjustments within the application and adjustments to the data itself. | •Sales System User Access Master File<br>•Inventory System User Access Master File<br>•Sales System User Access Log File<br>•Inventory System User Access Log File |
| Customer sales and refunds within the same day. | All | E | Although possible, it is improbable that a customer would return a product in the same day. Such refund transactions may be fraudulently invoked. | •Sales System Register |
| Customer sales posted to one card and refunds posted to another card. | Credit card refunds | E | A common fraud is to have a customer make a purchase of a product and then fraudulently charge the refund to a fraud perpetrator or accomplice's credit card. | •Sales System Register |

# Chapter 4
# How to Obtain Data, Files, and Software

**General Overview**
In order to run any computer reports, the organization's data files will need to be requested. But before you run off and ask for "all accounts payable files" or "everything in inventory", it is best to have a plan of action. Therefore, the below four steps provide such an action plan to help any reviewer obtain the specific data needed:

**Step 1 – Determining the Reports for Risk Mitigation/Prevention**
**Step 2 – Making Arrangements with the Client to Obtain Data**
**Step 3 – Transferring the Client's Data**
**Step 4 – Verifying the Data Received**

For additional free tools on downloading data, please see the following link on AuditSoftware.Net:
**http://www.auditsoftware.net/community/how/data/index.htm**

**Step 1 – Determining the Reports for Risk Mitigation/Prevention**
As a first step, the auditor needs to complete the risk assessment as discussed in Chapter 1 to arrive the key reports needed. These decisions should be based on the cost-benefit of the reports in achieving risk mitigation. Once the key areas have been identified, the reports expected to be run can be identified using the tables presented in Chapter 3.

**Step 2 – Making Arrangements with the Client to Obtain Data**
The auditor should then meet with the appropriate organizational personnel (generally the primary contact for the audit and a key contact in information systems) to make arrangements to obtain the client data. Matters to be discussed include:

- Specific data fields/files needed (please see "Data File" column in the Chapter 3 report tables)
- Format of files needed
- Record layout of the file (The auditor should arrange to get copies of the record layout.)
- Timing of the transfer
- Method of transfer (See Step 3 below)
- Arrangements for verification information (see Step 4 below)

All of the above considerations should be formalized in a written request letter to the organization (see Example 1).

**Step 3 – Transferring the Client's Data**
There are many ways to transfer data to the auditor's computer, depending on the equipment of the client and auditor. Examples of possible data transfer methods include:

- Floppy disk
- E-mail
- Tape
- High storage disks (such as, 100MB Iomega Zip disks)
- FTP or network transfers
- Web hard drive services (i.e., www.swapdrive.com)
- CD-ROM

The first two methods are more likely to be used for small PC systems. The last five methods are more likely to be used on larger systems (LANs, minicomputers, or mainframes). Traditionally, downloading data had been one of the most difficult tasks in computer assisted auditing because of the complexities of reading the client's data. Today's tools can read data files from almost any computer system. Also, many audit software products can use ODBC technology to download client data directly from any compliant database system with minimal assistance from client personnel.

**EXAMPLE 1**
**Data Request Letter**

{Name}
{Title}
{Company}

Dear {Name}:

As part of our audit titled { }, we will be performing certain audit tests in the { } area using data extraction software. We expect that this processing will save a great deal of time during the audit of this area. For the specific tests we need to perform, we require the *X* file be available for us on *X/X/XXXX*. We believe the following fields are required from the file as of *X/X/XXXX*:

- **List Fields Here**

If you believe, after looking at the reports we expect to process (see below table), that we will need more data fields besides those listed above, please provide these fields in the file extraction. If it would be easier, we can receive the entire *X* file from which we can extract and define our desired fields.

We will need this file in a flat file format (no delimiters). Please do not translate the file to ASCII in the download if you are downloading the file from a mainframe computer. To assist in downloading the file to our PC, we prefer that the file be provided on a CD-ROM.

Please contact us if you are unclear as to the source or significance of any of the items requested. Thank you for your assistance.

Sincerely,

Expected Reports To Produce

| Report Name | Expected Completion Date |
|---|---|
| *List reports here* | *List desired report completion date* |

## Step 4 – Verifying the Data Received

It is generally good practice to verify client data before processing it. There are two reasons for this. First, the auditor can confirm that the data file received from the client is complete and accurate. Second, the auditor can assure that the data has been read correctly by the computer audit tool. Verification of client data is generally accomplished through one or more of the following procedures:

- Obtain a printout of the first 100 rows and match "on screen" to the data file.
- Compute totals for key data fields and agree them to control totals supplied by the client's IS personnel.
- Agree account totals to general ledger balances.
- Calculate totals or statistics of the file to determine if the relative size of the activity appears reasonable.
- Check the sequence (such as, check numbers, inventory part numbers, or invoice numbers) for gaps and/or duplicates.
- Select a sample of data items and trace the information to client records.
- Any exceptions, unreconciled amounts, or other indications of problems should be resolved before applying the automated procedures.

**Required Data Files**

The below data files (in alphabetical order) are used in the list of reports in chapter three of this document:

| Data File | Area | Description |
|---|---|---|
| Accounts Payable Trial Balance | Accounts Payable | Open invoices from vendors |
| Cash Receipt Log | Sales/Cash Receipts | Cash receipts from customers |
| Check Register | Accounts Payable | Check payments to vendors |
| Customer Master File | Sales/Cash Receipts | Customer specific information by customer |
| Customer Statement Report File | Sales/Cash Receipts | File containing all information printed on customer statements |
| Detail Telephone Record | Accounts Payable | Detail of telephone charges for a given period. |
| Employee Address | Payroll | Employee specific information by employee |
| Employee Timecard System | Payroll | Detail hourly time information by employee |
| Fixed Asset Additions | Fixed Assets | Additions to the fixed asset trial balance for a given period |
| Fixed Assets | Fixed Assets | Open fixed asset balances with accumulated depreciation |
| General Ledger Detail | General Ledger | Detail general ledger transactions by account number |
| Inventory Adjustments | Inventory | Adjustments to inventory on hand quantities |
| Inventory Detail Register | Inventory | Detail transactions affecting inventory on hand balances |
| Inventory Master File | Inventory | Inventory specific information by inventory number |
| Invoice Payment | Accounts Payable | Invoice payments to vendors |
| On Hand Inventory | Inventory | Open inventory balances by inventory number |
| Open Accounts Receivable | Accounts Receivable | Open accounts receivable balances by invoice |
| Payroll Register | Payroll | Payroll payments to employees |
| Procurement Card | Accounts Payable | Detail procurement card activity by card |
| Purchase Order | Accounts Payable | Detail purchase order activity file |
| Receiving Log | Accounts Payable | List of all inventory receipts |
| Sales Invoice Register | Sales/Cash Receipts | Detail sales invoices to customers |
| Sales Order | Sales/Cash Receipts | Detail list of sales orders from customers |
| Shipment Log | Sales/Cash Receipts | Shipments to customers |
| System User Access Logs | All | Detail log of computer system access by accessing user |
| System User Access Master File | All | Computer system user specific information by user |
| Vendor Master | Accounts Payable | Vendor specific information by vendor |

**How to Obtain Software**

The table below lists key information for some popular audit software products. Please note that by listing the below products, it not represent an endorsement of that product as any software selection requires an individualized assessment of software needs.

| Product | Description | Phone | Website |
|---|---|---|---|
| @Risk | Monte Carlo simulation tool | 607-277-8000 | www.palisade.com |
| ACL | Audit software | 604-669-4225 | www.acl.com |
| DATAS | Audit software applying digital analysis techniques | 888-453-1231 | www.digitalanalysisonline.com |
| Microsoft Excel | Spreadsheet software including regression analysis | See website for local office listing | www.microsoft.com |
| IDEA | Audit software | 416-867-1906 | www.caseware-idea.com |
| Microsoft Access | Database software | See website for local office listing | www.microsoft.com |