Using Data Analytics to Detect Disbursements Fraud

A Forensic Accountant’s Perspective

Bill Acuff, CPA, CFF, CFE, CIA, CGMA | Director of Forensic and Internal Audit Services
• Prevention
KEY STEPS TO MANAGE FRAUD RISKS

1. Governance
2. Risk Assessment
3. Prevention
4. Detection
5. Deterrence and response
KEY STEPS TO MANAGE FRAUD RISKS

1. Governance
2. Risk Assessment
3. Prevention
4. Detection
5. Deterrence and response
Managing the Business Risk of Fraud: A Practical Guide

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The Institute of Internal Auditors
The American Institute of Certified Public Accountants
Association of Certified Fraud Examiners
“You see, Mr. Gittes, most people never have to face the fact that at the right time…..and the right place….they’re capable of anything.”

- Corrupt Businessman Noah Cross - Chinatown
Rita Crundwell


- One of the best-known Quarter Horse breeders in the country
- Won 52 world championships
- Named the leading owner by the American Quarter Horse Association for 8 consecutive years
Rita Crundwell: An unsophisticated fraud

- Begin working for the City in 1983
- Divorced in 1986
- In late 1988, inherited 6.9 acres and single family home from Mother
- She drove a six-year-old Oldsmobile Cutlass
- Annual budget for the City was approximately $8M
- Compensation in 2012 was $80,000 but took 12 extra weeks off and reduced to $61,000
3 farms
1 vacation home
400 quarter horses
$2M motor home
Rita Crundwell: An unsophisticated fraud

- Fraud began in 1990 and lasted 21 years
- Opened a bank account and could deposit, transfer, disburse and record funds without review
- She made herself indispensible and had computers in her mobile home and would call back quickly if any questions arose
- Financial statement audits began in 2006 – she played on the softball team of the auditing firm
- During her tenure:
  - City laid off employees
  - Streets could not be resurfaced
  - Waste water treatment facility was delayed
- 20 years in federal prison
Rita Crundwell: An unsophisticated fraud

Red Flags

1. Lack of segregation of duties
2. Extravagant lifestyle

- Had an outside investor in her quarter horse business
- Her family was in the satellite business and her family owned all of the cell phone towers in Illinois
FRAUD IS A HUMAN ACT

• All numbers are created by humans operating from different psychological foundations
• The human act of fraud relies heavily on both an individual’s emotions and state of mind
• Personal incentive and perceived pressure drive human behavior
• The need to rationalize wrongdoing is psychologically rooted
• The assessment of the opportunity, including the likelihood of being caught, is behavioral assessment
“What can I say? Embezzlement happens.”
CRESSEY’S HYPOTHESIS

Fraud Triangle

*Trusted persons become trust violators when…*

- They conceive of themselves as having a problem which is non-sharable
- Are aware this problem can be secretly resolved by violation of the position of financial trust
- Are able to apply to their own conduct in that situation verbalizations which enable them to adjust their conceptions of themselves as trusted persons
CRESSEY’S FRAUD TRIANGLE

Trust Violation
Perceived Opportunity
(weakness or door open in the system)

Non Sharable Problem
Perceived Incentive/Pressure
(knowingly commit fraud for a perceived need)

Behavior is Appropriate Rationalization
(justify theft to self)
FRAUD TRIANGLE

Elements of Fraud

- Theft Act
- Concealment
- Conversion
Occupational Fraud and Abuse

Corruption
- Conflicts of Interest
  - Purchase Schemes
  - Sales Schemes
  - Other
- Bribery
  - Invoice Kickbacks
  - Big Rigging
  - Other
- Illegal Gratuities
  - Other
- Economic Extortion
  - Other

Asset Misappropriation
- Asset/Revenue Overstatement
  - Timing Differences
  - Fictitious Revenues
  - Concealed Liabilities & Expenses
  - Improper Disclosures
  - Improper Asset Valuations
- Non-Financial
  - Employment Credentials
  - Internal Documents
  - External Documents

Fraudulent Statements
- Financial
  - Asset/Revenue Understatement
  - Improper Asset Valuations
  - Improper Disclosures
  - Concealed Liabilities & Expenses
  - Fictitious Revenues
  - Timing Differences
- Non-Financial
  - Employment Credentials
  - Internal Documents
  - External Documents

Cash
- Larceny
  - Cash On Hand
  - From the Deposit
  - Other
- Skimming
  - Sales
  - Receivables
  - Understated
  - Unrecorded
  - Write-off Schemes
  - Lapping Schemes
  - Unconcealed
- Fraudulent Disbursements
  - Billing Schemes
  - Payroll Schemes
  - Expense Reimbursements
  - Check Tampering
- Inventory and all Other Assets
  - Misuse
    - Refunds & Other
    - Write-off Schemes
  - Larceny
    - Asset Req. & Transfer
    - False Sales & Shipping
    - Purchasing & Receiving
    - Unconcealed Larceny

DE COSIMO
CERTIFIED PUBLIC ACCOUNTANTS
CORRUPTION SCHEMES

The offering, giving, receiving or soliciting any thing of value to influence an official act or business decision:

- Bribery (Kickbacks)
- Conflicts of interest
- Illegal gratuities
- Economic extortion
2013 CORRUPTION INDEX
ASIAN CASES

U.S. CASES

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Occupational Fraud and Abuse

Corruption
- Conflicts of Interest
  - Purchase Schemes
  - Sales Schemes
  - Other

- Bribery
  - Invoice Kickbacks
  - Big Rigging
  - Other

- Illegal Gratuities
- Economic Extortion

Asset Misappropriation
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  - Fictitious Revenues
  - Concealed Liabilities & Expenses
  - Improper Disclosures
  - Improper Asset Valuations
- Non-Financial
  - Employment Credentials
  - Internal Documents
  - External Documents

Fraudulent Statements

Inventory and all Other Assets
- Larceny
  - Cash
    - Cash On Hand
      - From the Deposit
        - Other
      - Fraudulent Disbursements
        - Billing Schemes
          - Shell Company
          - Non-Accomplice Vendor
          - Personal Purchases
        - Payroll Schemes
          - Ghost Employees
          - Commission Schemes
          - Workers Compensation
        - Expense Reimbursements
          - Mischaracterized Expenses
          - Overstated Expenses
          - Fictitious Expenses
          - Multiple Reimbursements
        - Check Tampering
          - Forged Maker
          - Forged Endorsement
          - Altered Payee
          - Concealed Checks
          - Authorized Maker
        - Skimming
          - Sales
            - Refunds & Other
          - Unrecorded
          - Lapping Schemes
          - Unconcealed
        - Register Disbursements
          - False Voids
          - False Refunds
- Misuse
  - Asset Req. & Transfer
  - False Sales & Shipping
  - Purchasing & Receiving
  - Unconcealed Larceny

DECOSSIMO
CERTIFIED PUBLIC ACCOUNTANTS
FREQUENCY AND MEDIAN LOSS ASSET MISSAPPROPRIATION SCHEMES
SCHEME TYPE BY SIZE OF VICTIM

- Corruption: 33.0% (39.5% for <100 Employees)
- Billing: 20.3% (28.7% for <100 Employees)
- Check Tampering: 6.8% (22.1% for 100+ Employees)
- Non-Cash: 18.1% (22.8% for 100+ Employees)
- Skimming: 10.2% (17.0% for 100+ Employees)
- Expense Reimbursements: 13.1% (16.5% for 100+ Employees)
- Payroll: 8.2% (16.5% for 100+ Employees)
- Cash Larceny: 7.0% (14.4% for 100+ Employees)
- Financial Statement Fraud: 7.8% (12.2% for 100+ Employees)
- Cash on Hand: 12.0% (12.7% for 100+ Employees)
- Register Disbursements: 3.2% (2.8% for 100+ Employees)

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DETECTION METHOD

- Employee: 49.0%
- Customer: 21.6%
- Anonymous: 14.6%
- Vendor: 9.6%
- Other: 6.5%
- Shareholder/Owner: 4.3%
- Competitor: 1.5%

SOURCE OF TIPS

PERCENT OF TIPS
SOURCE OF TIPS

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FREQUENCY OF ANTIFRAUD CONTROLS CITED

- External Audit of F/S: 81.4%
- Code of Conduct: 77.4%
- Internal Audit Department: 70.6%
- Management Certification of F/S: 70.6%
- External Audit of ICOFR: 65.2%
- Management Review: 62.0%
- Independent Audit Committee: 62.0%
- Hotline: 54.1%
- Employee Support Programs: 52.4%
- Fraud Training for Managers/Executives: 47.8%
- Fraud Training for Employees: 47.8%
- Anti-Fraud Policy: 45.4%
- Dedicated Fraud Department, Function or Team: 38.8%
- Proactive Data Monitoring/Analysis: 34.8%
- Formal Fraud Risk Assessments: 33.5%
- Surprise Audits: 33.2%
- Job Rotation/Mandatory Vacation: 19.9%
- Rewards for Whistleblowers: 16.5%
# Loss Based on Presence of Antifraud Controls

<table>
<thead>
<tr>
<th>Control</th>
<th>Percent of Cases</th>
<th>Control in Place</th>
<th>Control Not in Place</th>
<th>Percent Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proactive Data Monitoring/Analysis</td>
<td>34.8%</td>
<td>$73,000</td>
<td>$181,000</td>
<td>59.7%</td>
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<tr>
<td>Employee Support Programs</td>
<td>52.4%</td>
<td>$90,000</td>
<td>$200,000</td>
<td>55.0%</td>
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<tr>
<td>Management Review</td>
<td>62.6%</td>
<td>$100,000</td>
<td>$208,000</td>
<td>51.9%</td>
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<tr>
<td>Code of Conduct</td>
<td>77.4%</td>
<td>$100,000</td>
<td>$200,000</td>
<td>50.0%</td>
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<tr>
<td>Internal Audit Department</td>
<td>70.6%</td>
<td>$100,000</td>
<td>$180,000</td>
<td>44.4%</td>
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<td>Formal Fraud Risk Assessments</td>
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<td>$94,000</td>
<td>$168,000</td>
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<td>Surprise Audits</td>
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<td>$93,000</td>
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<tr>
<td>External Audit of ICOFR</td>
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<td>$103,000</td>
<td>$180,000</td>
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<td>Fraud Training for Managers/Executives</td>
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<td>$100,000</td>
<td>$168,000</td>
<td>40.5%</td>
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<tr>
<td>Hotline</td>
<td>54.1%</td>
<td>$100,000</td>
<td>$168,000</td>
<td>40.5%</td>
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<tr>
<td>Dedicated Fraud Department, Function or Team</td>
<td>38.6%</td>
<td>$100,000</td>
<td>$164,000</td>
<td>39.0%</td>
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<tr>
<td>Fraud Training for Employees</td>
<td>47.8%</td>
<td>$100,000</td>
<td>$164,000</td>
<td>39.0%</td>
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<tr>
<td>Anti-Fraud Policy</td>
<td>45.4%</td>
<td>$100,000</td>
<td>$155,000</td>
<td>35.5%</td>
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<tr>
<td>Management Certification of F/S</td>
<td>70.0%</td>
<td>$120,000</td>
<td>$184,000</td>
<td>34.8%</td>
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<tr>
<td>Job Rotation/Mandatory Vacation</td>
<td>19.9%</td>
<td>$100,000</td>
<td>$150,000</td>
<td>33.3%</td>
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<tr>
<td>External Audit of F/S</td>
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<td>$125,000</td>
<td>$186,000</td>
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<td>Rewards for Whistleblowers</td>
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<td>$100,000</td>
<td>$135,000</td>
<td>25.9%</td>
</tr>
<tr>
<td>Independent Audit Committee</td>
<td>62.0%</td>
<td>$120,000</td>
<td>$150,000</td>
<td>20.0%</td>
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</table>
THE 2012 MARQUET REPORT ON EMBEZZLEMENT

A WHITE COLLAR FRAUD STUDY OF MAJOR EMBEZZLEMENT CASES ACTIVE IN THE U.S. IN 2012

Published by Marquet International, Ltd.
May 14, 2013
THE 2012 MARQUET REPORT ON EMBEZZLEMENT

Key Findings

► There was an 11% increase in the number of cases over 2011

► Average loss for 2012 was $1.4M with the median loss of $340K and average scheme lasting 4.7 years

► The most common embezzlement scheme involved the issuance of forged or unauthorized checks

► 65% of the cases in which a motivating factor was known was to obtain and maintain more lavish lifestyle

► 84% of cases involved individual perpetrators, nearly 58% were female but males stealing nearly 3 times more.

► 67% involve individuals in bookkeeping or finance positions

► 3.9% had prior criminal/fraudulent activity
Types of Embezzlement Schemes

- Forged/unauthorized check
- Theft/conversion of cash receipt
- Unauthorized electronic funds transfers
- Vendor/Billing fraud
- Credit card/account fraud
- Fraudulent reimbursement schemes
- Inventory/equipment theft
- Payroll shenanigans
- Theft/conversion of cash receipt
- Bogus loan schemes
KEY STEPS TO MANAGE FRAUD RISKS

1. Governance
2. Risk Assessment
3. Prevention
4. Detection
5. Deterrence and response
Inherent fraud schemes are finite within each organization.

Scenarios are based on the business process of the organization or how the fraud scheme would work based on the specific controls and procedures (or lack thereof) in place.
FRAUD TRIANGLE

Elements of Fraud

Theft Act

Concealment

Conversion
RISKS FALLING OUTSIDE SOX

- Reputation
- Legal
- Strategic
- Operational
CONDUCTING A FRAUD RISK ASSESSMENT

- Design the Fraud Risk Assessment Strategy
- Identify Fraud Risk Framework
- Educate Stakeholders
- Perform Fraud Risk Owner Workshops
- Develop, Communicate and Execute Fraud Risk Response Strategy
FRAUD RISK ASSESSMENT HEAT MAP
“Our best strategy may be to destigmatize embezzlement.”
KEY STEPS TO MANAGE FRAUD RISKS

1. Governance
2. Risk Assessment
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PRIMARY INTERNAL CONTROL WEAKNESSES

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KEY STEPS TO MANAGE FRAUD RISKS

1. Governance
2. Risk Assessment
3. Prevention
4. Detection
5. Deterrence and response
DETECTION OF FRAUD

- Part of an overall fraud prevention program by increasing the perception of detection
- The sooner the fraud is discovered, it can be stopped from escalating into something bigger
- Almost 49% of organization recovery no assets
- Data analytics offers tools and techniques, reaching into huge populations of data identifying anomalies that merit further investigation
RED FLAGS

Do not ignore a red flag – Studies of fraud cases consistently show that red flags were present, but were either not recognized or were recognized but not acted upon by anyone.

Sometimes an error is just an error – Red flags should lead to some kind of appropriate action, i.e. an investigation by a measured & responsible person, but sometimes an error is just an error and no fraud exists
"I gotta tell ya, these embezzlement convictions raise a red flag."
BHEAVIORAL RED FLAGS OF PERPETRATORS

- Living Beyond Means: 43.8%
- Financial Difficulties: 33.9%
- Unusually Close Association with Vendor/Customer: 21.8%
- Control Issues, Unwillingness to Share Duties: 21.1%
- “Wheeler-Dealer” Attitude: 18.4%
- Divorce/Family Problems: 16.8%
- Irritability, Suspiciousness or Defensiveness: 15.0%
- Addiction Problems: 11.6%
- Complained About Inadequate Pay: 8.4%
- Past Employment-Related Problems: 8.9%
- Refusal to Take Vacations: 8.8%
- Excessive Pressure from Within Organization: 8.4%
- Social Isolation: 7.4%
- Complained About Lack of Authority: 6.5%
- Excessive Family/Peer Pressure for Success: 8.4%
- Instability in Life Circumstances: 5.8%
- Pest Legal Problems: 5.8%

0% 10% 20% 30% 40% 50%
PERCENT OF CASES

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POSSIBLE RED FLAGS IN CORRUPTION SCHEME

Kickbacks

Analytical Symptoms
- Increasing purchases from favored vendor
- Decreasing purchases from other vendors
- Decreasing quality
- 1099s from vendor company to buyer relatives
- All transactions with one buyer and one vendor
- Use of unapproved vendors

Documents and Records
- Increase use of unapproved vendors
- Increase 1099s to buyer relatives
- Decrease quality

Behavioral Symptoms
- Increasing prices
- Larger order quantities
- Buyer doesn’t relate well to other buyers or vendors
- Employee work habits change
- Quality complaints about purchased products
- Unsuccessful vendor complaints
- Anonymous tips about buyers or vendors

Tips and Complaints
- Buyer doesn’t relate well to other buyers or vendors
- Employee work habits change
- Quality complaints about purchased products
- Unsuccessful vendor complaints
- Anonymous tips about buyers or vendors

Lyfestyle Symptoms
- Buyer building expensive home (beyond expectations)
- Buyer owning more expensive automobiles
- Buyer living beyond known salary

Internal Controls
- Use of unapproved vendors
- Increase use of unapproved vendors
- Increase 1099s to buyer relatives
- Decrease quality

W. Steve Albrecht, PH.D., CFE, CPA, CIA
RED FLAGS – EMPLOYEE FRAUD AND MINDSET

1. Lack of segregation of duties
2. Living beyond their means
3. Over-protectiveness of data and key documents
4. Persistent demoralization
5. Being the first one in or the last one out
6. Resistant to take vacation or sick leave
7. Propensity to work “outside” the system
8. Weak code of ethics
9. Poor work performance
10. Excessive drive to achieve
WAYS IN WHICH DATA ANALYSIS IS USED

▲ Analyze entire populations of transactional data to look for various forms of anomalies

▲ Analyze transactions for indicators of known fraud risks
WAYS IN WHICH DATA ANALYSIS IS USED

- Identify relationships between employee and vendors
- Identify indicators of fictitious vendors
- Trend analysis for vendor payments, payroll and T&E
- Identify indicators of ghost employees
- Analysis of purchase card and T&E activity for indications of personal use
- Analysis of access and maintenance logs
DATA ANALYSIS SOFTWARE

- Designed specifically for auditors and investigators
- Read only access to data imported
- Creates log of all operations carried out and changes
- Import data from and export data to multitude of formats
- Read and process millions of records
- Runs independently from the organization’s core systems
- Allows every transaction in a population to be rapidly examined
- Exceptions targeted
- Incident-oriented
- Clearer picture of what is happening
DATA ANALYSIS SOFTWARE

- IDEA
- ACL
- CLEAR
- Active Data for Excel
- Arbutus
- Datawatch
DATA ANALYSIS SOFTWARE FUNCTIONS

✓ Compares, joins, matches, appends and connects different files from different sources, both internal and external
✓ Identifies and extracts specific transactions, identifies gaps or duplicates
✓ Profiles data by summarizing, stratifying or aging the files
✓ Development of complex tests for some frauds
✓ Provides for automation for continuous testing
✓ Digital analysis using Benford’s Law
✓ Creates useful file statistics automatically
✓ Displays the data and results graphically
✓ Creates samples using different sampling methods
<table>
<thead>
<tr>
<th>Traditional Sampling</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random and Scattered</td>
<td>Exceptions targeted</td>
</tr>
<tr>
<td>Highlights what &quot;could happen&quot;</td>
<td>Incident-oriented</td>
</tr>
<tr>
<td>Conclusions are extrapolated</td>
<td>Clear picture of what is happening</td>
</tr>
</tbody>
</table>
DATA ANALYSIS SOFTWARE CONSIDERATIONS

- Planning and requesting the data
- Performing the transfer
- Importing the data to the audit software
- Insuring that the transfer is successful
- Normalizing data
- Fuzzy matching
NORMALIZING DATA

<table>
<thead>
<tr>
<th>ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suite 45, 123 W Main Street, Miami, Florida, USA</td>
</tr>
<tr>
<td>#45 - 123 WEST MAIN ST, MIAMI FL US</td>
</tr>
<tr>
<td>Apt.,45,123 W. Main Street, Miami,Florida,U.S.A..</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NORMALIZED_ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 123 W MAIN ST MIAMI FL USA</td>
</tr>
<tr>
<td>45 123 W MAIN ST MIAMI FL USA</td>
</tr>
<tr>
<td>45 123 W MAIN ST MIAMI FL USA</td>
</tr>
</tbody>
</table>

UPPER, LOWER, TRIM, LTRIM, ALLTRIM, REMOVE, STRIP, COMPACT, REPLACE
FUZZY MATCHING

Levenshtein Distance

The Levenshtein distance between two words is the minimum number of single-character edits (i.e. insertions, deletions or substitutions) required to change one string into the other.

@SIMILARPHRASE, NEAR, MATCH, BETWEEN, COMPARE, FREETEXT, SOUNDSLIKE
# DUPLICATE PAYMENTS TEST

**Fields Needed:**
- Vendor/ supplier number
- Invoice number
- Invoice date
- Invoice amount

<table>
<thead>
<tr>
<th>Test</th>
<th>Vendor Num</th>
<th>Invoice Num</th>
<th>Invoice Date</th>
<th>Invoice Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Exact</td>
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<td>Exact</td>
<td>Exact</td>
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<tr>
<td>B</td>
<td>Exact</td>
<td>Exact</td>
<td>-</td>
<td>Exact</td>
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<tr>
<td>C</td>
<td>Exact</td>
<td>Exact</td>
<td>Exact</td>
<td>-</td>
</tr>
<tr>
<td>D</td>
<td>Exact</td>
<td>-</td>
<td>Exact</td>
<td>Exact</td>
</tr>
<tr>
<td>E</td>
<td>Exact</td>
<td>Different</td>
<td>Exact</td>
<td>Exact</td>
</tr>
<tr>
<td>F</td>
<td>Different</td>
<td>Exact</td>
<td>Exact</td>
<td>Exact</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&quot;Fuzzy&quot; Match</th>
<th>Vendor Num</th>
<th>Invoice Num</th>
<th>Invoice Date</th>
<th>Invoice Amount</th>
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<tbody>
<tr>
<td>G</td>
<td>Exact</td>
<td>Fuzzy</td>
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<td>Similar</td>
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<tr>
<td>K</td>
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<td>-</td>
<td>Exact</td>
<td>Fuzzy</td>
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</tbody>
</table>

- Letters and digits only
- Letters only
- Digits only
- Contain similar characters
- Within "blank" percentage
SIX STEP APPROACH TO DATA MINING FRAUD DETECTION

Step 1 – Understand the organization and various transactions

Step 2 – Identify the inherent frauds that could exist

Step 3 – Catalog possible fraud symptoms or red flags considering concealment strategies

Step 4 – Use technology to gather data about symptoms

Step 5 – Analyze the results

Step 6 – Investigate the symptoms
NIGRINI CYCLE

- Data profile
- First Digits
- Second Digits
- First-two digits
- Second order
- Summation
- Last-two digits
- Number duplication
- Largest subsets
- Same Same Different
- Relative Size Factor
## DATA PROFILE

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<thead>
<tr>
<th>Details</th>
<th>Count</th>
<th>% of Total</th>
<th>$</th>
<th>% of Total</th>
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</thead>
<tbody>
<tr>
<td>Amounts 10 and higher</td>
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<td>93.82</td>
<td>492,913,582.26</td>
<td>100.54</td>
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<tr>
<td>Amounts greater than 0 and &lt; 10</td>
<td>7,320</td>
<td>3.86</td>
<td>40,159.47</td>
<td>0.01</td>
</tr>
<tr>
<td>Amounts equal to zero</td>
<td>123</td>
<td>0.06</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Amounts less than 0 and &gt; -10</td>
<td>195</td>
<td>0.10</td>
<td>-1,121.31</td>
<td>0.00</td>
</tr>
<tr>
<td>Amounts -10 and lower</td>
<td>4,069</td>
<td>2.15</td>
<td>-2,674,995.52</td>
<td>-0.55</td>
</tr>
<tr>
<td></td>
<td>189,470</td>
<td>100.00</td>
<td>490,277,624.90</td>
<td>100.00</td>
</tr>
</tbody>
</table>

### Low-value Amounts

<table>
<thead>
<tr>
<th>Details</th>
<th>Count</th>
<th>% of Total</th>
<th>$</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amounts greater than 0 and &lt;= 50</td>
<td>43,253</td>
<td>22.83</td>
<td>1,188,603.10</td>
<td>0.24</td>
</tr>
</tbody>
</table>

### High-value Amounts

<table>
<thead>
<tr>
<th>Details</th>
<th>Count</th>
<th>% of Total</th>
<th>$</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amounts 100 000 and higher</td>
<td>370</td>
<td>0.20</td>
<td>242,946,614.32</td>
<td>49.55</td>
</tr>
</tbody>
</table>
DATA HISTOGRAM

Histogram of Invoices Paid

Count

< $0  $0 - $1K  $1K - $2K  $2K - $3K  $3K - $4K  $4K - $5K  $5K - $6K  $6K - $7K  $7K - $8K  > $8K

Dollar Intervals in $ Thousands

Mark J. Nigrini, PhD.
### PERIODIC DATA

The image displays a software interface for analyzing invoice data. Here are the key findings from the periodic data analysis:

- **# of Valid Values:** 189,470
- **# of Zero Items:** 0
- **# of Records:** 189,470
- **# of Data Errors:** 0
- **Earliest Date:** 1/1/2010
- **Latest Date:** 12/31/2010
- **Record # of Earliest:** 1
- **Record # of Latest:** 4736
- **Most Common Day:** Tuesday
- **Most Common Month:** February
- **Items in January:** 20953
- **Items in February:** 27038
- **Items in March:** 19898
- **Items in April:** 13334
- **Items in May:** 11679
- **Items in June:** 12718
- **Items in July:** 12347
- **Items in August:** 12930
- **Items in September:** 12285
- **Items in October:** 13175
- **Items in November:** 13280
- **Items in December:** 20133
- **Items on Sunday:** 15846
- **Items on Monday:** 32289
- **Items on Tuesday:** 35083
- **Items on Wednesday:** 33871
- **Items on Thursday:** 31779
- **Items on Friday:** 29557
- **Items on Saturday:** 11043

---

**DECO Simo Certified Public Accountants**
PERIODIC GRAPH
BENFORD’S LAW

Overview

- Benford’s Law predicts the digit patterns in “naturally occurring” sets of data.
- The law is named after Frank Benford, a physicist at the GE Research Laboratories in the 1930’s.
- He tested his theory by tabulating the first digits for approximately 20,000 observations.
- He used integral calculus to formulate the expected digit frequencies in lists of numbers.
- His results show clear bias towards the low digits, but the later digits become less pronounced.
- The scale invariance theorem, by Pinkham, asserts that a set of numbers conforming to Benford’s Law, when multiplied by a nonzero constant, still conforms.
The numbers should represent the sizes of similar phenomena.

There should be no built-in maximum or minimum values.

The data should not consist of assigned numbers.

There should be more small items than large items.

Data sets should have four or more digits for a good fit.

As a data set increases in size, it becomes more feasible to get the expected digit frequencies; at least 1,000 records.

If the data set is under 10,000 observations, the first-three-digits test should not be performed.

Positives and negatives evaluated separately.
BENFORD’S LAW

Data Sets

✓ The populations of towns and cities in Europe? YES
✓ The daily and weekly number of shares bought and sold for an individual company listed on the NYSE? YES
✓ The five-digit postal zip codes used in the U.S.? NO
✓ The street numbers for every house in the U.S.? YES
✓ The dollar amounts of each air ticket sold or refunded by American Airlines for a year? NO
✓ The invoiced amount of each bill issued by DirectTV? NO
✓ The extended inventory values of a Wal-Mart warehouse with more than 20,000 line items? YES
**BENFORD’S LAW – First Digits’ Expected Frequencies**

<table>
<thead>
<tr>
<th>First Digit</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>30.10%</td>
</tr>
<tr>
<td>1</td>
<td>30.10%</td>
</tr>
<tr>
<td>2</td>
<td>17.61%</td>
</tr>
<tr>
<td>3</td>
<td>12.49%</td>
</tr>
<tr>
<td>4</td>
<td>9.69%</td>
</tr>
<tr>
<td>5</td>
<td>7.92%</td>
</tr>
<tr>
<td>6</td>
<td>6.70%</td>
</tr>
<tr>
<td>7</td>
<td>5.80%</td>
</tr>
<tr>
<td>8</td>
<td>5.12%</td>
</tr>
<tr>
<td>9</td>
<td>4.58%</td>
</tr>
</tbody>
</table>

![Graph showing the expected frequencies of first digits according to Benford's Law.](image)
## INVOICES UNDER $10,000

**DECOSIMO FORENSIC ACCOUNTING**  
Computer Consultants, Inc.  
Payment History  
Exhibit 3  
Page 4

<table>
<thead>
<tr>
<th>Invoice Number</th>
<th>Voucher Number</th>
<th>Vendor Number</th>
<th>Vendor Name</th>
<th>Invoice Date</th>
<th>Amount</th>
<th>Check Number</th>
<th>Date Cleared</th>
<th>Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>40008544</td>
<td>10921</td>
<td>54382</td>
<td>AAA PLUMBING</td>
<td>3/15/2008</td>
<td>$1,495.00</td>
<td>172808</td>
<td>3/18/2008</td>
<td></td>
</tr>
<tr>
<td>40102926</td>
<td>11752</td>
<td>54382</td>
<td>M&amp;M EQUIPMENT AND REPAIR</td>
<td>4/15/2008</td>
<td>$3,850.00</td>
<td>176683</td>
<td>4/20/2008</td>
<td></td>
</tr>
<tr>
<td>40203702</td>
<td>12983</td>
<td>54382</td>
<td>JOHN H. WILEY AND ASSOCIATES</td>
<td>5/20/2008</td>
<td>$4,500.00</td>
<td>179261</td>
<td>5/22/2008</td>
<td></td>
</tr>
<tr>
<td>40300531</td>
<td>13182</td>
<td>54382</td>
<td>JOHN SMITH CONSULTANTS, INC.</td>
<td>6/1/2008</td>
<td>$6,500.00</td>
<td>181708</td>
<td>6/10/2008</td>
<td></td>
</tr>
<tr>
<td>40402424</td>
<td>13638</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>7/1/2008</td>
<td>$8,500.00</td>
<td>187025</td>
<td>7/24/2008</td>
<td></td>
</tr>
<tr>
<td>40500332</td>
<td>13806</td>
<td>54382</td>
<td>JOHN BOB AND COMPANY</td>
<td>8/6/2008</td>
<td>$8,500.00</td>
<td>188868</td>
<td>8/12/2008</td>
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</tr>
<tr>
<td>40601247</td>
<td>14163</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>9/15/2008</td>
<td>$9,500.00</td>
<td>193668</td>
<td>9/16/2008</td>
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<tr>
<td>40701963</td>
<td>14478</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>10/20/2008</td>
<td>$9,500.00</td>
<td>197621</td>
<td>10/27/2008</td>
<td></td>
</tr>
<tr>
<td>40800036</td>
<td>14664</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>11/1/2008</td>
<td>$8,825.00</td>
<td>199969</td>
<td>11/7/2008</td>
<td></td>
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<tr>
<td>40900892</td>
<td>14951</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>12/1/2008</td>
<td>$8,825.00</td>
<td>203053</td>
<td>12/11/2008</td>
<td></td>
</tr>
<tr>
<td>40803762</td>
<td>14873</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>12/2/2008</td>
<td>$9,080.00</td>
<td>201901</td>
<td>12/4/2008</td>
<td></td>
</tr>
<tr>
<td>41002604</td>
<td>15286</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>1/1/2009</td>
<td>$9,500.00</td>
<td>207486</td>
<td>1/26/2009</td>
<td></td>
</tr>
<tr>
<td>41106182</td>
<td>15703</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>2/1/2009</td>
<td>$9,500.00</td>
<td>212211</td>
<td>3/8/2009</td>
<td></td>
</tr>
<tr>
<td>41205440</td>
<td>15913</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>3/1/2009</td>
<td>$9,500.00</td>
<td>215828</td>
<td>4/1/2009</td>
<td></td>
</tr>
<tr>
<td>50105441</td>
<td>16263</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>4/1/2009</td>
<td>$9,500.00</td>
<td>220013</td>
<td>5/10/2009</td>
<td></td>
</tr>
<tr>
<td>50301195</td>
<td>16680</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>5/1/2009</td>
<td>$9,500.00</td>
<td>223815</td>
<td>6/18/2009</td>
<td></td>
</tr>
<tr>
<td>50302272</td>
<td>16727</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>6/1/2009</td>
<td>$9,500.00</td>
<td>224479</td>
<td>6/18/2009</td>
<td></td>
</tr>
<tr>
<td>50302271</td>
<td>16727</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>6/10/2009</td>
<td>$8,160.00</td>
<td>224479</td>
<td>6/18/2009</td>
<td></td>
</tr>
<tr>
<td>50303353</td>
<td>16782</td>
<td>54382</td>
<td>COMPUTER CONSULTANTS, INC.</td>
<td>6/22/2009</td>
<td>$9,545.00</td>
<td>225167</td>
<td>6/28/2009</td>
<td></td>
</tr>
</tbody>
</table>
NIGRINI CYCLE

1. **Same** invoice number, **Same** dollar amount, **Different** vendor numbers

2. **Relative Size Factor:**
   
   $$\text{Relative Size Factor} = \frac{\text{Largest Record in a Subset}}{\text{Second Largest Record in a Subset}}$$
## RELATIVE SIZE FACTOR

<table>
<thead>
<tr>
<th>VENDOR NUMBER</th>
<th>VENDORNAME</th>
<th>RELATIVE SIZE FACTOR</th>
<th>NUMBER OF RECORDS</th>
<th>HIGHEST INVOICE</th>
<th>SECOND HIGHEST INVOICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT006</td>
<td>ALABAMA SHELVING CORP.</td>
<td>199.01</td>
<td>2</td>
<td>6,330.00</td>
<td>63.30</td>
</tr>
<tr>
<td>PR090</td>
<td>PIAG</td>
<td>159.00</td>
<td>9</td>
<td>3,975.00</td>
<td>25.00</td>
</tr>
<tr>
<td>CA119</td>
<td>CARPETS OF CINCINNATI, INC.</td>
<td>145.35</td>
<td>2</td>
<td>12,573.00</td>
<td>86.50</td>
</tr>
<tr>
<td>DR006</td>
<td>DRESSER &amp; ASSOCIATES, INC.</td>
<td>144.00</td>
<td>2</td>
<td>8,640.00</td>
<td>60.00</td>
</tr>
<tr>
<td>HE001</td>
<td>HEIDELBERG USA</td>
<td>78.85</td>
<td>141</td>
<td>70,077.50</td>
<td>7,077.50</td>
</tr>
<tr>
<td>WH027</td>
<td>JOHNSON HEALTH CARE</td>
<td>66.67</td>
<td>2</td>
<td>1,000.00</td>
<td>15.00</td>
</tr>
<tr>
<td>LE004</td>
<td>LEAF SMITH INC.</td>
<td>62.63</td>
<td>5</td>
<td>51,834.43</td>
<td>827.67</td>
</tr>
<tr>
<td>IN031</td>
<td>INDUSTRIAL TIN FABRICATORS</td>
<td>57.71</td>
<td>2</td>
<td>4,767.02</td>
<td>82.60</td>
</tr>
<tr>
<td>SH004</td>
<td>JOINT INDUSTRIES, INC.</td>
<td>42.99</td>
<td>3</td>
<td>86,624.00</td>
<td>2,014.82</td>
</tr>
<tr>
<td>MO017</td>
<td>MONROE SYSTEMS</td>
<td>38.78</td>
<td>4</td>
<td>4,387.50</td>
<td>113.13</td>
</tr>
<tr>
<td>BA023</td>
<td>BALTA S.A. INC.</td>
<td>37.50</td>
<td>3</td>
<td>3,750.00</td>
<td>100.00</td>
</tr>
<tr>
<td>DI024</td>
<td>DIGITAL TECH DISPLAY &amp; ELECTRONICS</td>
<td>35.92</td>
<td>2</td>
<td>20,472.60</td>
<td>570.00</td>
</tr>
<tr>
<td>DA118</td>
<td>SOUTH FENCE COMPANY</td>
<td>28.07</td>
<td>2</td>
<td>421.00</td>
<td>15.00</td>
</tr>
<tr>
<td>BO003</td>
<td>GREG SMITH</td>
<td>26.05</td>
<td>9</td>
<td>6,901.87</td>
<td>264.94</td>
</tr>
<tr>
<td>MO170</td>
<td>MOUSER ELECTRONICS</td>
<td>23.82</td>
<td>2</td>
<td>179.10</td>
<td>7.52</td>
</tr>
<tr>
<td>SE012</td>
<td>CONTROLS, INC.</td>
<td>22.97</td>
<td>2</td>
<td>1,913.02</td>
<td>83.27</td>
</tr>
<tr>
<td>DA025</td>
<td>SILLY GUTTERING</td>
<td>14.62</td>
<td>3</td>
<td>5,630.00</td>
<td>385.00</td>
</tr>
<tr>
<td>UN005</td>
<td>UNITED WAY OF NW FLORIDA</td>
<td>13.65</td>
<td>160</td>
<td>7,500.00</td>
<td>549.36</td>
</tr>
<tr>
<td>EN002</td>
<td>MANUFACTURING COMPANY</td>
<td>13.54</td>
<td>35</td>
<td>5,938.93</td>
<td>438.52</td>
</tr>
</tbody>
</table>
Occupational Fraud and Abuse

- Corruption
  - Conflicts of Interest
    - Purchase Schemes
    - Sales Schemes
    - Other
  - Bribery
    - Invoice Kickbacks
    - Big Rigging
    - Other
  - Illegal Gratuities
  - Economic Extortion
- Asset Misappropriation
  - Financial
    - Asset/Revenue Overstatement
      - Timing Differences
    - Fictitious Revenues
    - Concealed Liabilities & Expenses
    - Improper Disclosures
    - Improper Asset Valuations
  - Non-Financial
    - Employment Credentials
    - Internal Documents
    - External Documents
- Fraudulent Statements
  - Financial
  - Non-Financial

Cash
- Larceny
  - Cash On Hand
  - From the Deposit
  - Other
- Skimming
  - Sales
  - Unrecorded
  - Understated
  - Unconcealed
- Fraudulent Disbursements
  - Billing Schemes
    - Shell Company
    - Non-Accomplice Vendor
    - Personal Purchases
  - Payroll Schemes
    - Ghost Employees
    - Commission Schemes
    - Workers Compensation
  - Expense Reimbursements
    - Mischaracterized Expenses
    - Overstated Expenses
    - Fictitious Expenses
    - Multiple Reimbursements
  - Check Tampering
    - Forged Maker
    - Forged Endorsement
    - Altered Payee
    - Concealed Checks
    - Authorized Maker
- Inventory and all Other Assets
  - Misuse
    - Asset Req. & Transfer
    - False Sales & Shipping
    - Purchasing & Receiving
  - Larceny
    - Unconcealed Larceny

DE COSIMO
CERTIFIED PUBLIC ACCOUNTANTS
### SCHEMES INVOLVING FRAUDULENT DISBURSEMENTS OF CASH

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Description</th>
<th>Cases</th>
<th>Percentage</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billing</td>
<td>Any scheme in which a person causes his or her employer to issue a payment by submitting invoices for fictitious goods or services, inflated invoices or invoices for personal purchases</td>
<td>346</td>
<td>24.9%</td>
<td>$100,000</td>
</tr>
<tr>
<td>Expense Reimbursements</td>
<td>Any scheme in which an employee makes a claim for reimbursement of fictitious or inflated business expenses</td>
<td>201</td>
<td>14.5%</td>
<td>$26,000</td>
</tr>
<tr>
<td>Check Tampering</td>
<td>Any scheme in which a person steals his or her employer’s funds by intercepting, forging or altering a check drawn on one of the organization’s bank accounts</td>
<td>165</td>
<td>11.9%</td>
<td>$143,000</td>
</tr>
<tr>
<td>Payroll</td>
<td>Any scheme in which an employee causes his or her employer to issue a payment by making false claims for compensation</td>
<td>129</td>
<td>9.3%</td>
<td>$48,000</td>
</tr>
<tr>
<td>Cash Register Disbursements</td>
<td>Any scheme in which an employee makes false entries on a cash register to conceal the fraudulent removal of cash</td>
<td>50</td>
<td>3.6%</td>
<td>$25,000</td>
</tr>
</tbody>
</table>
SIX STEP APPROACH TO DATA ANALYSIS FRAUD DETECTION

Step 1 – Understand the organization and various transactions

Step 2 – Identify inherent frauds that could exist

Step 3 – Catalog possible fraud symptoms or red flags

Step 4 – Use technology to gather data about symptoms

Step 5 – Analyze the results

Step 6 – Investigate the symptoms
Billing Schemes

- Shell Company
- Non-Accomplice Vendor
- Personal Purchases
SHELL COMPANIES

- A business with no actual employees
- No physical presence
- Exists only on paper
- Have legitimate uses
- Used for fraud, tax evasion, money laundering
- Created by perpetrator
- Legally formed
- Only in name
OTHER BILLING SCHEMES

• Assumes vendor already in AP but changes information
• Intercepts checks - false endorsement
• Pass through entity
• Personal purchases
• Direct or indirect access
• Management override
CONCEALMENT

• Levels of concealment – direct matches
• On transaction data or master file data
• Types of data, documents, false approvals, false representations, overriding controls
• Consider indirect access to data as well as direct
• Identify red flags associated with the concealment method
• Think like a fraudster
RED FLAGS ASSOCIATED WITH BILLING SCHEMES

- Incomplete vendor information on vendor master such as address, phone number and tax ID
- Recurring payments just under approval level
- Duplicate payments to vendors
- Matches between vendor master and employee data
- Lack of segregation of duties in accounting and purchasing function
- Sharp rise in the amount of service-related expenses or expenses in general
- Absence of detail on vendor invoices
- New or unknown vendors
- Unexplained or temporary changes to vendor master files
- Unfolded invoices
- Phone numbers which do not correspond with physical location
- Only PO Box for address or residential address
SHELL COMPANIES – Data Profile

- Mailing address
  - search for known mail box services
  - just numbers and search for duplicates in vendor data base and/or with employee master
- Location within a reasonable distance of the organization
- Telephone number -
  - search for cell phone numbers
  - search for duplicate numbers with vendor master
- Create date – search for correlation between create date and first invoice date
- Bank routing number – search for matches between vendor master and payroll master
- Invoice number – search for duplicate invoice numbers, inconsistent numbering or sequential numbering
- Invoice amount – unusually below approval amount
SHELL COMPANIES – Data Requirements

- Vendor Master
- Posted and approval by ID file
- Employee Master
- Check and disbursement registers
- PO and receiving transaction files
- Inventory transaction files
COMMON TESTS TO DETECT DISBURSEMENTS FRAUD

- Duplicate payments tests
- Benford’s Law analysis
- Rounded amount invoices
- Invoices just below approval levels
- Abnormal invoice volume activity such as rapid increase or high variance
- Vendors with sequential invoice Numbers or where numbers and dates are inconsistent
- Merge vendor and employee files to find matches
- Relative Size Factor
COMMON TESTS TO DETECT DISBURSEMENTS FRAUD

- Compare vendor master file to detect new or deleted vendors
- Review master file change logs by vendor
- Payments to vendors at prices exceeding standards or continued purchases from vendors with high rates of return or rejects
- Identify concentrations of contracts with one vendor initiated by the same contracting employee
- Identify purchasing activity in excess of current needs
- Analyze JEs
- Search for duplicate purchase orders, receiving reports, and debit memos
# APPROVAL LEVELS

<table>
<thead>
<tr>
<th></th>
<th>LEVELS</th>
<th>97%</th>
</tr>
</thead>
<tbody>
<tr>
<td>$500</td>
<td>$485</td>
<td></td>
</tr>
<tr>
<td>$1,000</td>
<td>$970</td>
<td></td>
</tr>
<tr>
<td>$1,500</td>
<td>$1,455</td>
<td></td>
</tr>
<tr>
<td>$5,000</td>
<td>$4,850</td>
<td></td>
</tr>
<tr>
<td>$20,000</td>
<td>$19,400</td>
<td></td>
</tr>
<tr>
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**Approval Levels**  
**December 31, 2009**  
**Decosimo Forensic Accounting - Exhibit 22**

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**Approval Limit**: $10,000
## INCONSISTENT INVOICE NUMBERING AND DATES

**DECOSIMO FORENSIC ACCOUNTING**  
John Smith Consulting and Associates  
Payment History  
Exhibit 3

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Total Checks Issued to Computer Consultants $174,895.00
**DUPLICATE PAYMENTS TEST**

**Fields Needed:**
- Vendor/ supplier number
- Invoice number
- Invoice date
- Invoice amount

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**Fuzzy Invoice Dates** – If dates are within a certain period
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VENDOR MASTER BEST PRACTICES

- Clearly define ownership of the vendor data
- Review and engage access controls
- Establish clear vendor setup procedures
- Enforce new vendor approval practices
- Determine when multiple vendor records will be allowed
- Manage one-time vendor accounts separately
- Apply consistent naming conventions
- Enforce Data Validation including the free IRS TIN matching system
- Remove employees from the master vendor file
- Perform maintenance on a regular basis
- Remove old/unused vendors
- Retain the right records
- Establish written, detailed procedures
Expense Reimbursement Schemes

- Mischaracterized Expenses
- Overstated Expenses
- Fictitious Expenses
- Multiple Reimbursements
P-CARDS AND T&E EXPENSES

- According to the ACFE, T&E frauds alone account for 14.5% of all frauds
- In organizations where T&E fraud become widespread, is often a symptom of a general unethical attitude
- Use of technology has a critical role in identifying indicators of fraud
- Can analyze millions of records
OPTION 2: Create and Design a fake store receipt or hotel bill online - from less than US$1 per fake receipt including printing of your fake receipt on thermal receipt paper, and delivery of a copy of each fake receipt to your door. **FOR NOVELTY USE ONLY**

Here’s how it works:

1. **You download** (for free) any of our MS Word Receipt Templates ([click here to go to our Fake Receipts Templates Page](https://www.decosimo.com/fake-receipts-templates) - opens in new window).

2. **You edit** them - replace the name of the store, the logo, the amounts, the items, dates, times etc.

3. **Purchase a Printing Voucher Below** (for US$14.99) - and we will print up to 15 receipts for you and deliver them to your door included in the price.

4. **Email** us the word documents with your fake receipt details on them, along with your Purchase Reference.

5. **Your HARD COPY** of a fake receipt is printed on real receipt paper. You receive it within days of ordering by express post.
P-CARDS AND T&E EXPENSES – Data Requirements

• Transactional data
• Purchase card or credit card detail purchase transactions from portal
• Employee information from HR/PR
COMMON TEST TO DETECT P-CARD AND T&E EXPENSE SCHEMES

- Identify transactions on weekends, holidays or while the employee is on vacation
- Identify split transactions in which a large purchase is made with smaller amounts, just under review and approval levels
- Identify purchases of the same item or service within a specific time frame
- Identify where a P-Card was used for a specific purchase and the same purchase was processed as a T&E claim
- Identify unusually high or frequent use of P-Cards compared to others
- Calculate expected mileage for fuel cards and travel dates
- Identify if first class tickets were submitted as an expense but later returned for economy tickets
- Identify where mileage claims were made for the same period as car rental charges or gas was claimed
RED FLAGS ASSOCIATED WITH EXPENSE REIMBURSEMENT SCHEMES

- Failure of supervisors to adequately review expense reports
- T&E expenses exceeding budget or prior years’ totals
- T&E expenses significantly exceed those of other employees with similar responsibilities
- Expense reports that lack support or are supported by photocopies
- Claims for reimbursement of old expenses
- Employees who pay higher dollar expenses in cash
- Expense reports which consistently total to round numbers
- Expense reports which consistently total at or just below the organization’s reimbursement limit
- Expense reports that have been approved by a manager outside the claimant’s department
Payroll Schemes

- Shell Company
- Non-Accomplice Vendor
- Personal Purchases
  - Personal Purchases
RED FLAGS ASSOCIATED WITH PAYROLL SCHEMES

- No segregation of duties in human resources and payroll
- Payroll expenses exceed budgeted or prior years’ totals
- Employees with the same personal information
- Employees lacking payroll information such as taxes or insurance being withheld
- Unexplained increases in overtime, either in departments or by employee
- A non-linear correlation between sales and commission expenses
- Disproportionately large increase in employee compensation
COMMON TESTS TO DETECT FRAUD IN PAYROLL

- Extract all round dollar amounts
- Compare current year payroll file to terminated employees
- Compare payroll data to human resource data
- Extract employees without employee number or SS number
- Extract employees without deductions or taxes withheld
- Extract employees with payments after termination dates
- Check for sequential or duplicate SS numbers
- Test for invalid SS numbers (as of 6.24.2011)
- Duplicate mailing addresses paid in same period
- Calculate % of overtime to gross pay
- Compare current year to prior year payroll file to detect pay rate changes
Check Tampering

- Forged Maker
- Forged Endorsement
- Altered Payee
- Concealed Checks
- Authorized Maker
RED FLAGS ASSOCIATED WITH CHECK TAMPERING SCHEMES

- No segregation of duties in check preparation and check delivery
- Unusual or excessive entries to cash accounts
- Excessive maintenance on vendor master or disbursements journal
- Excessive voided checks
- Signatures not matching authorized signatures
- Checks payable to cash or employee
- Out of sequence or duplicate number checks
- Canceled checks printed on inferior stock
- Canceled checks with dual endorsements
- Vendor complaints about non payment
- Bank statements with manual corrections
AUTHORIZED MAKER SCHEMES

• Employee with signature authority writes a fraudulent check
• Overriding controls through intimidation
  • High level managers can make employees afraid to question suspicious transactions
  • Can happen when ownership is absent or inattentive
• Poor controls
  • Failure to closely monitor accounts
  • Lack of separation of duties
CONCEALING CHECK TAMPERING

• Fraudster reconciling the bank statement
  • Fraudulent check can be removed
  • Doctor the bank statement
  • Code it as “void” or not include it in the disbursements journal
• Re-alteration of checks
  • Check is changed back to the rightful payee when returned from the bank
  • Re-altered checks will match the names of the legitimate payees listed in the disbursements journal
CONCEALING CHECK TAMPERING

• Falsifying the disbursements journal
  • Check made payable to the perpetrator but a different person is listed as the payee in the books
  • Amount of the check can also be falsified in the disbursements journal
  • Existing accounts that are rarely reviewed or are very active are preferred
CONCEALING CHECK TAMPERING

• Reissuing intercepted checks
  • New checks are issued to replace the ones that the vendor did not receive
  • The original invoice is changed in a manner that avoids a duplicate check for new check
  • New check issued and a stop payment is supposed to have been made

• Bogus supporting documents
  • Fake support is needed to support the check
  • False payment vouchers, invoices, purchase orders, receiving reports are submitted
STEPS FOR IMPLEMENTATION OF DATA ANALYSIS

► Define overall objectives
► Assign initial responsibilities for implementation and ongoing fraud detection
► Start with relatively simple tests and then add more complex analysis building a library of specific tests
► Identify and define specific fraud risk to be tested
► For each risk, identify and define data requirements, data access processes and analysis logic
► Coordinate with IT department
► Develop the test
► Validate the effectiveness of the test
► Establish timing and responsibilities for automated test processing
► Establish workflow and responsibilities for exception management and resolution
► Implement reporting processes
CONTINUOUS FRAUD DETECTION

► Moving from fraud specific data analysis tests on an ad hoc basis to continuously monitoring for fraud is not complex
► Consider who is responsible for reviewing and following up on results
► Determine how often, how to address unresolved items and who is responsible for the decision to initiate in-depth interviews or investigation
► Should be a dynamic process as systems change and people thinking of new ways to beat the system
► Regularly profile entire populations over a period of time for anomalies
► Software should provide workflow capabilities and dashboards that summarize results
Bill is director of forensic and internal audit services with Decosimo and has more than 30 years of experience in public accounting providing assurance services, conducting investigations, providing litigation support, performing forensic business analyses and audits, outsourcing of internal audit services, evaluating internal control systems and conducting fraud risks assessments and training. Besides being a certified public accountant (CPA), Bill has also earned the certified fraud examiner (CFE), certified in financial forensics (CFF), certified internal auditor (CIA) and chartered global management accountant (CGMA) credentials.

The contents and opinions contained in this article are for informational purposes only. The information is not intended to be a substitute for professional accounting counsel. Always seek the advice of your accountant or legal advisor with any questions.