Applying Data Analytics to Address Fraud Risk

Vikas Dutta
Abbasali Tavawala

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Agenda

- COSO Framework
  - Requirements for Fraud Risk Assessment
  - Cressey’s Fraud Triangle
- Anti-Fraud Controls Testing
  - Continuous auditing tools developed by Internal Audit
- Joint Effort with Rutgers
  - CA Account Payable Exception Prioritization using Suspicious Score Model (Pei Li)
## COSO – 2013 Framework and Guidance for Fraud Risk Assessment

### Control Environment
- 1. Demonstrates commitment to integrity and ethical values
- 2. Exercises oversight responsibility
- 3. Establishes structure, authority and responsibility
- 4. Demonstrates commitment to competence
- 5. Enforces accountability

### Risk Assessment
- 6. Specifies relevant objectives
- 7. Identifies and analyzes risk
- 8. **Assesses fraud risk**
- 9. Identifies and analyzes significant change

### Control Activities
- 10. Selects and develops control activities
- 11. Selects and develops general controls over technology
- 12. Deploys through policies and procedures

### Information & Communication
- 13. Uses relevant information
- 14. Communicates internally
- 15. Communicates externally

### Monitoring Activities
- 16. Conducts ongoing and/or separate evaluations
- 17. Evaluates and communicates deficiencies

- Potential for material misstatement NOW explicitly considered in assessing fraud risk
- Incentives, pressures, attitudes, rationalizations, and opportunities
- Responsibility and accountability
Assessing Fraud Risk:
“The organization considers the potential for fraud in assessing risks to the achievement of objectives.”
Using Data Analytics to Test Anti-Fraud Controls

Accounts Payable
- Payments to vendors not on Vendor Master File
- Payments processed during non-business hours
- Benford’s Analysis on Transaction Amounts (Using CAATs Or Excel)
- Duplicate Vendor Payments based on a set threshold value (> $1000)
- Rounded Payment Amounts
- Fraud Buzzword Keyword Search

Payroll Register Review
- Multiple User ID’s per bank account

Travel and Entertainment (T&E)
- Procurement Items expensed through T&E
- Top expense reports by amount
- Top claimants by amount

Journal Entries
- Benford’s Analysis on Transaction Amounts
- Entries posted during non-business hours
Analytics Methodology

Step 1: Data Extraction
- Identify data fields to be extracted
- Automate data extraction from business systems on a monthly basis

Step 2: Data Import
- Import data using Excel & Access

Step 3: Data Analysis
- Analyze data using Excel & Access through customized user forms

Benefits
- Use Excel & Access for analysis
  - Minimal learning curve
  - No additional licensing costs
- Ease of use for non IT staff
- Reduced reliance on IT department
- Automated data extraction
- No need for additional IT infrastructure
Future State

**Directional Objective:**

- Empower the business to create continuous monitoring tools
- Increase efficiency i.e. Manage by Exception and Provide Greater Assurance

**Test Scenarios:**

- Aging by Due Date and Invoice Date
- Debtor/Creditor Transaction Summary
- Compare Vendor Spend vs. Budget
- Compare Vendor Overall Spend and Approvals
- Compare Submission to Prior Expense Reports for Fraud
Joint Effort with Rutgers

Motivation for Creating Exception Prioritization Framework

- Large data sets with high # of perceived exceptions
- Time consuming & cost prohibitive to audit total population

Methodology

- Developed rule based criteria for identifying exceptions
- Use of Belief Function to develop suspicious scoring model

\[ \text{Bel}_{tR_i}(\sim f) = r_i \hspace{1cm} \text{Bel}_t(\sim f) = 1 - \prod_{R_i \in A_t} (1 - r_i) \]

Conclusion/Benefits

- Reduced # of false positives
- Reduced testing effort by focusing only on high suspicious score transactions
Thank You!

abbasali.tavawala@ca.com

sohit.raina@ca.com

vikas.dutta@ca.com