Applying Data Analytics to Address Fraud Risk

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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

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Assessing Fraud Risk:

"The organization considers the potential for fraud in assessing risks to the achievement of objectives."

Opportunity

Fraud Triangle

Rationalization

Motivation
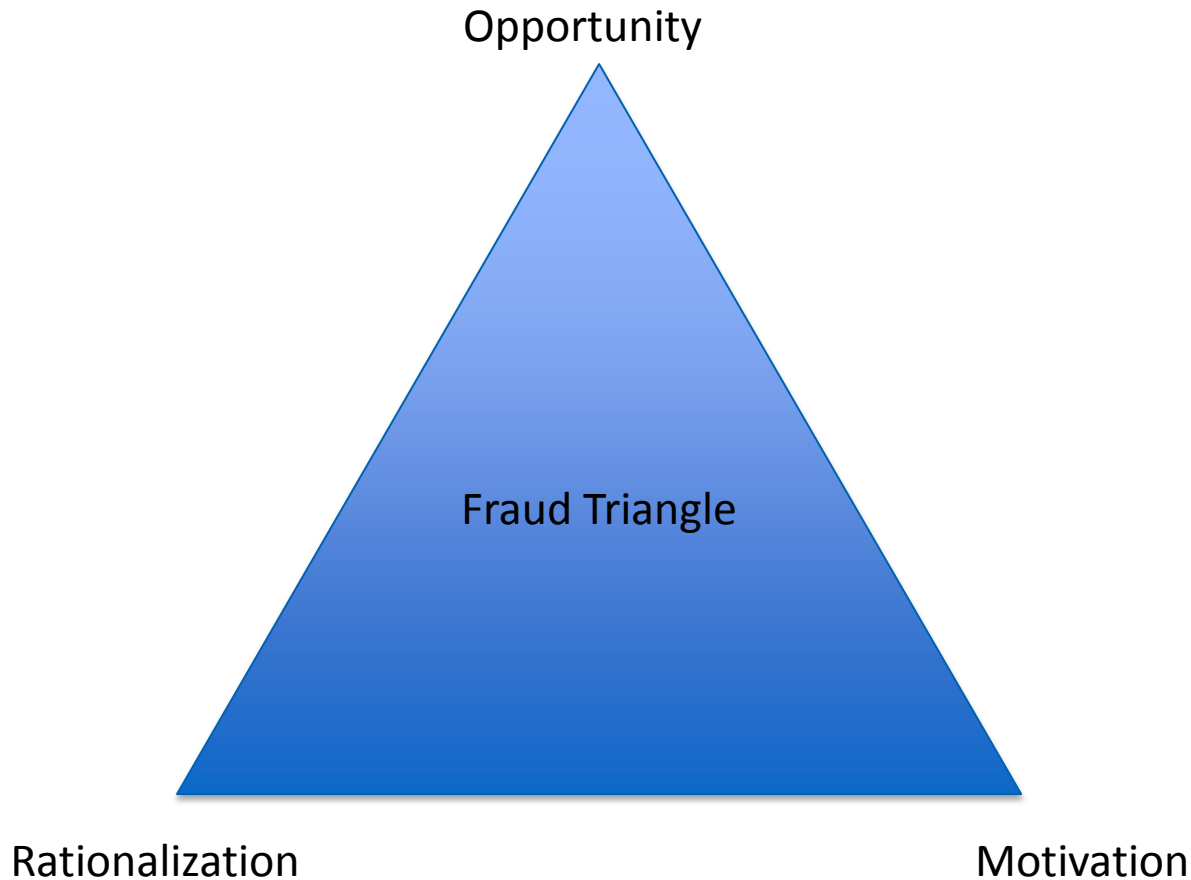
Using Data Analytics to Test Anti-Fraud Controls

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

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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

Product Demo

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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

$$\mathbf{Bel}_{tR_i}(\sim f) = r_i \quad \mathbf{Bel}_t(\sim f) = 1 - \prod_{R_i \in A_t}(1 - r_i)$$

Conclusion/Benefits

- Reduced # of false positives

- Reduced testing effort by focusing only on high suspicious score transactions

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Thank You!

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