

DATA ANALYTICS & VISUALIZATION FOR MITIGATING FRAUD RISKS

APRIL 29, 2015

The presentation will begin shortly.

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Learning Objectives

Upon completion of this course participants will be able to:

- Explain the board's, specifically the risk and/or audit committee's, expected responsibilities and role in compliance oversight and contrast with those of your organization.
- Recognize how data analytics can be used to identify anomalies in transactions that may indicate a lack of business rationale or other concerns to enhance effective governance practices.
- Discuss how your organization may use monitoring via data analysis to better prioritize and focus risk management resources toward areas of concern in a timely manner.



Presenters

- **Moderator: Amy Rojik**, Director, National Assurance, BDO USA, LLP
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- **Jeff Harfenist**, Managing Director, Global Forensics, BDO Consulting
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- **Julia Bailey**, Managing Director, Global Forensics, BDO Consulting
JBailey@bdo.com

Today's Agenda

1. Why use data analytics & visualization?
2. How to do more with less?
3. How to marry data analytics with visualization?
4. What are the challenges?
5. How is it used for continuous monitoring?

Why Use Data Analytics & Visualization?

Making the case



External Drivers

Increases In...

- ↑ SEC, DoJ, and global enforcement
- ↑ Government resources
- ↑ Aggressive investigation techniques
- ↑ Prosecution of individuals, executives, & "gatekeepers"
- ↑ Guilty pleas (fewer "DPAs")
- ↑ Global government cooperation
- ↑ Penalties (in U.S. and globally)
- ↑ Gov't leniency for strong compliance
- ↑ D/O liability cases
- ↑ Whistleblowers & incentives for them

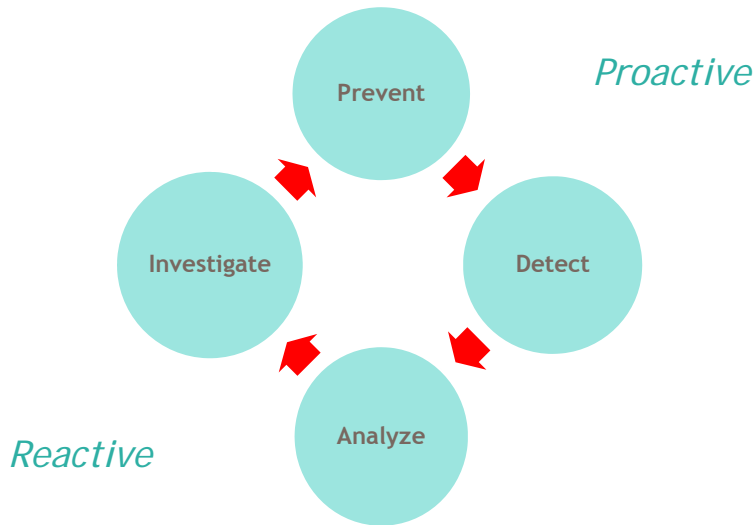


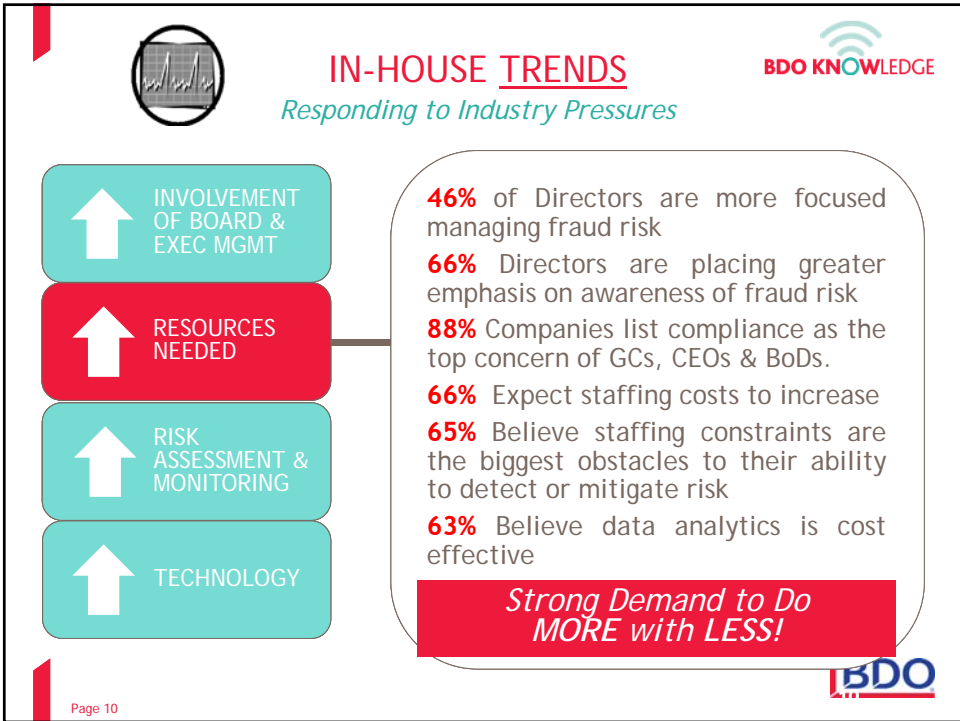
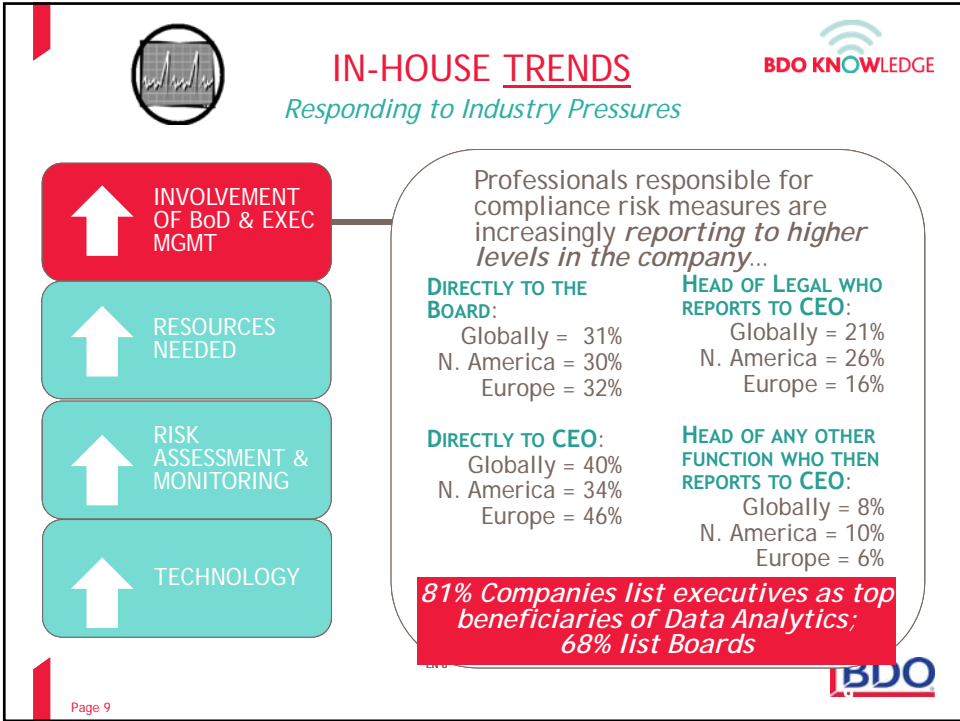
Internal Drivers

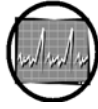
- Data volumes are growing exponentially
- People fail to identify complex patterns and anomalous trends
- Business processes and controls don't operate perfectly
- Toxic employees exist
- Performance pressures have not abated
- Compliance assets are being spread thinner



Benefits Associated with Analytics







IN-HOUSE TRENDS

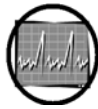
Responding to Industry Pressures



- ↑ INVOLVEMENT OF BoD & EXEC MGMT
- ↑ RESOURCES NEEDED
- ↑ RISK ASSESSMENT & MONITORING
- ↑ TECHNOLOGY

Increasing governmental emphasis on assessing risk

- 88%** Boards include risk into strategic discussions
- 68%** Companies try to measure effectiveness of compliance
- 90%** Believe data analytics enhances risk assessment
- 74%** Companies use data analytics when investigating fraud or bribery



IN-HOUSE TRENDS

Responding to Industry Pressures



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90% of the world's data has been generated only in the past 2 years

- 79%** Believe data analytics can review larger amounts of data in a shorter amount of time
- 82%** Believe it can detect fraud & corruption sooner
- 89%** Believe it can detect potential misconduct that it couldn't detect before
- 26%** Companies are actually using technology for monitoring fraud (and growing)



Data Analytics & Visualization

Doing More with Less



Fraud's Trajectory

- Typically starts out small
- Increases in complexity and aggressiveness
- Often grows in magnitude, and number of participants
- Will rarely cease on its own accord



Data Analytics Overview

- Analyzes the company's existing data
- Looks for transactions and relationships that fail to fit existing norms or company parameters (Potentially Anomalous Transactions or "PATs")
- The larger the data set, the more robust the results

Trying to Answer A Number of Questions

- What happened in the past?
- What is happening currently?
- What are the trends?
- What does the data tell you?
- How reliable are the indicators?
- What are the most pressing risks?



Inventory of Tools



Databases

- Excel
- Access
- SQL Server
- Oracle



Analysis

- SAS
- IDEA
- ACL



Visualization

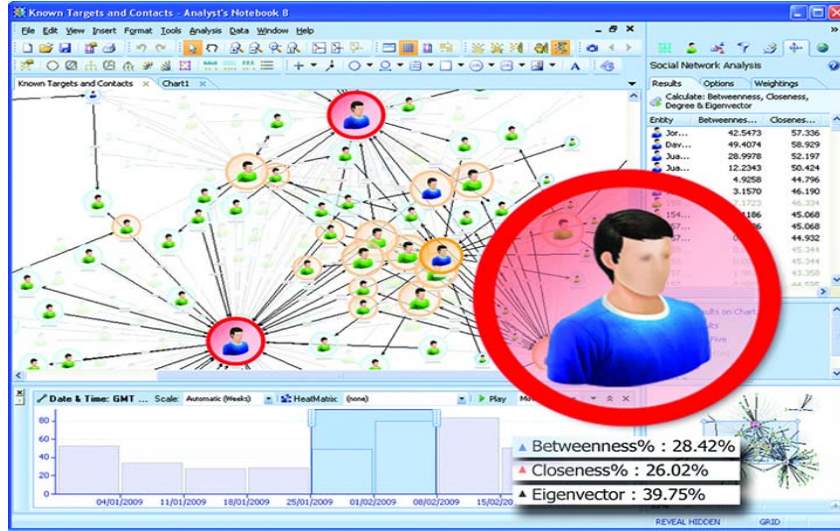
- Excel Charts
- Tableau
- MicroStrategy

Marrying Analytics with Visualization

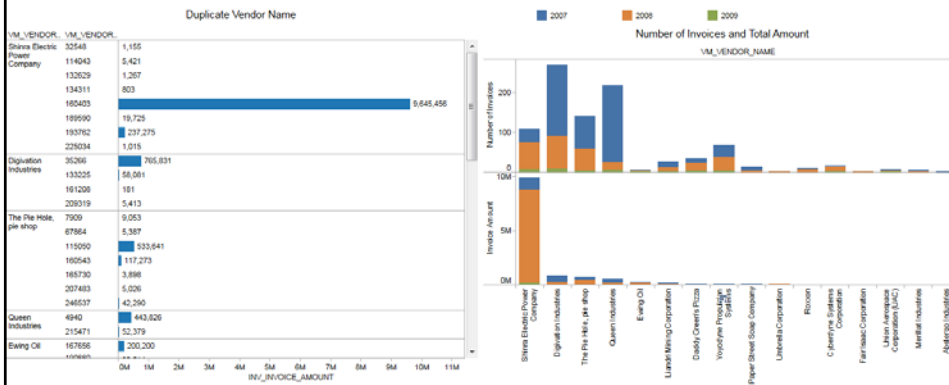
Detecting Fraud & Corruption



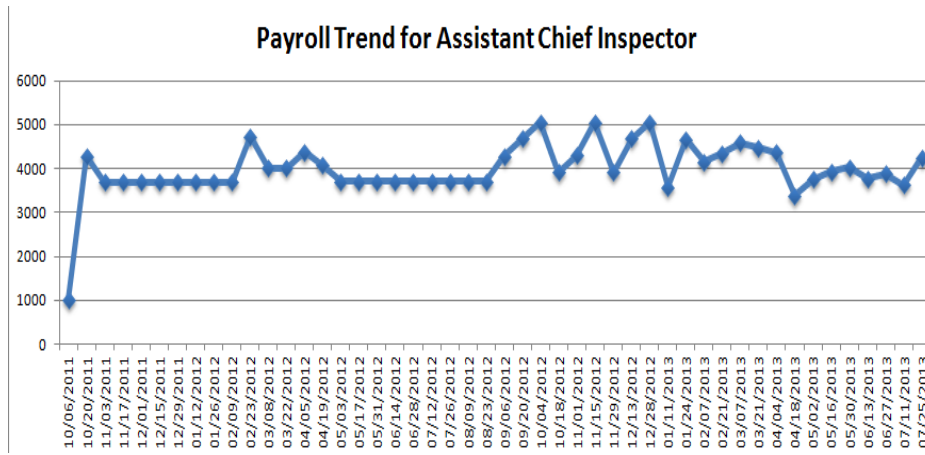
Example: Link Analysis



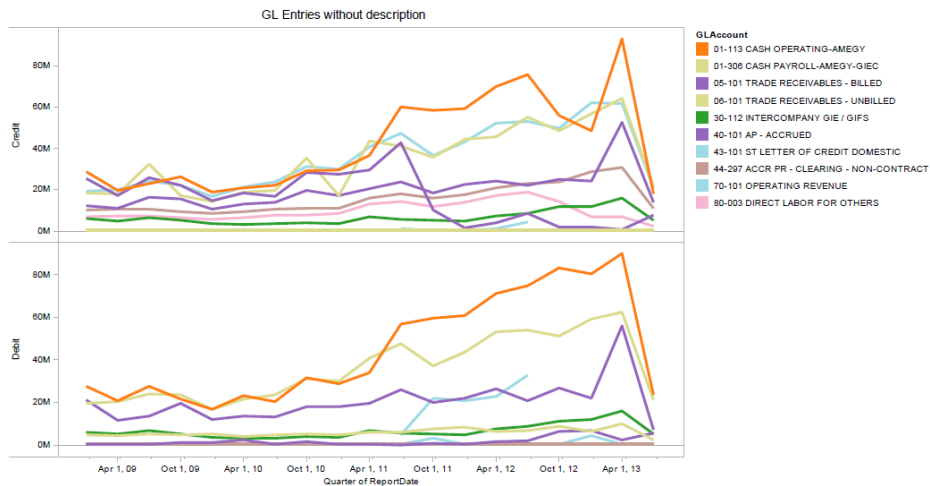
Example: Duplicate Vendors



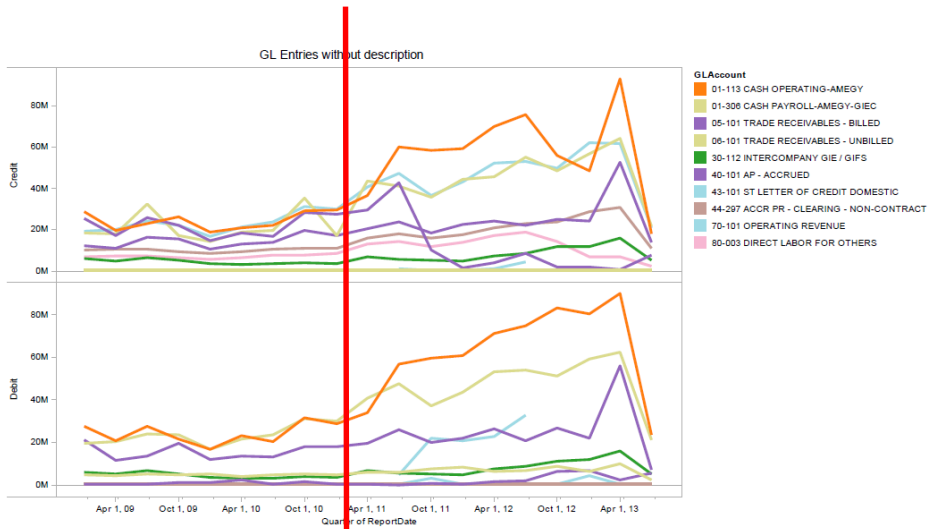
Example: Payroll Trends



Example: GL Entries without Description



Example: GL Entries without Description



Data Analytic Challenges



Data Analytics - Challenges

- **Accessibility:**
 - Are there issues with legacy systems and acquisitions?
- **Reliability/Completeness:**
 - Do non-numeric fields contain numeric data (and vice-versa)?
 - Can it be reconciled to a control point?
- **Integrity:**
 - Has data transferred from legacy systems been adversely affected, altered, corrupted or truncated?
- **Consistency:**
 - Are date formats consistent across the data sets?

Analytics Challenges - PATs

- There are several fundamental challenges, including:
 - Potentially anomalous transactions fail to reveal that they have no legitimate business purpose
 - Potentially anomalous transactions fail to indicate that they were consummated for less than equivalent value
 - False positives
- Techniques should identify transactional patterns in the form of more complex combinations

Data Analytics Case Example

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Theft via "Conflicted" Purchases



Common schemes for Purchases from conflicted vendors:

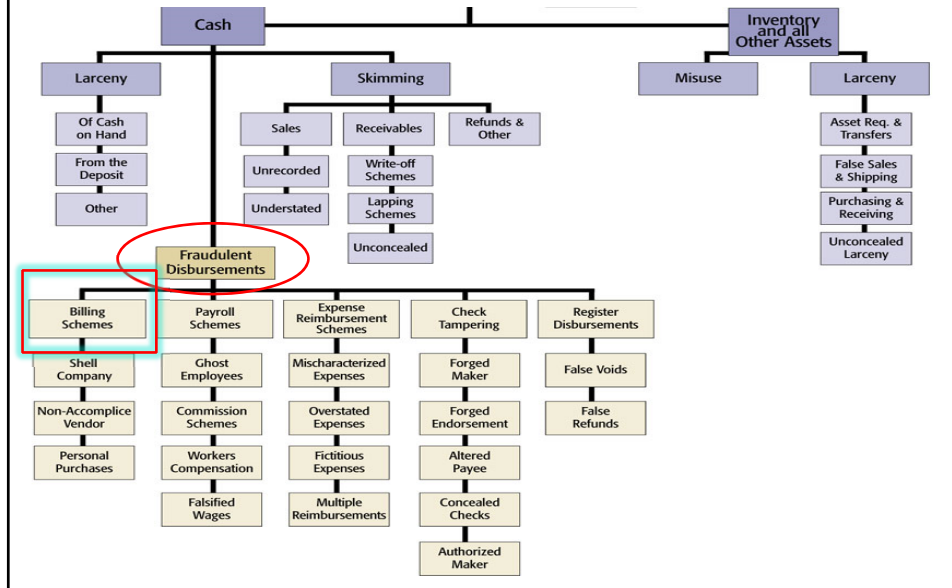
[What This Means: Buying from a supplier/vendor where the employee has an undisclosed interest.]

- ❖ Employee negotiates a higher price than normal
- ❖ Bid rigging, manipulating competitive quotes
- ❖ Purchases of off-grade product disguised as a good product
- ❖ Employee approves invoices for phantom goods or services

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Misappropriation of Assets



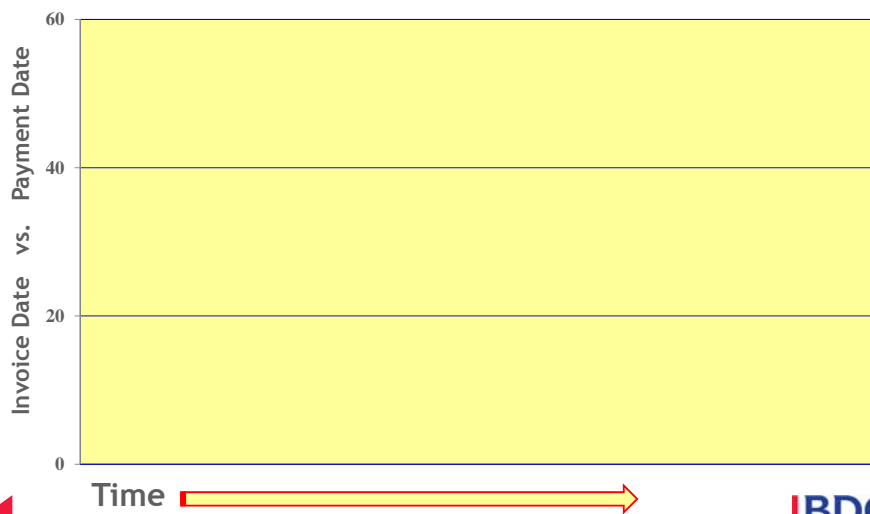
Analytical Testing - PATs

- Stratification
- Gaps/Duplicates
- Filter/Sort
- Non-Recurring
- Aging
- Join/Relate
- Relational Analysis
- Ratio Analysis
- Frequency Analysis
- Missing Data
- Trends/Regression
- Benford's Law

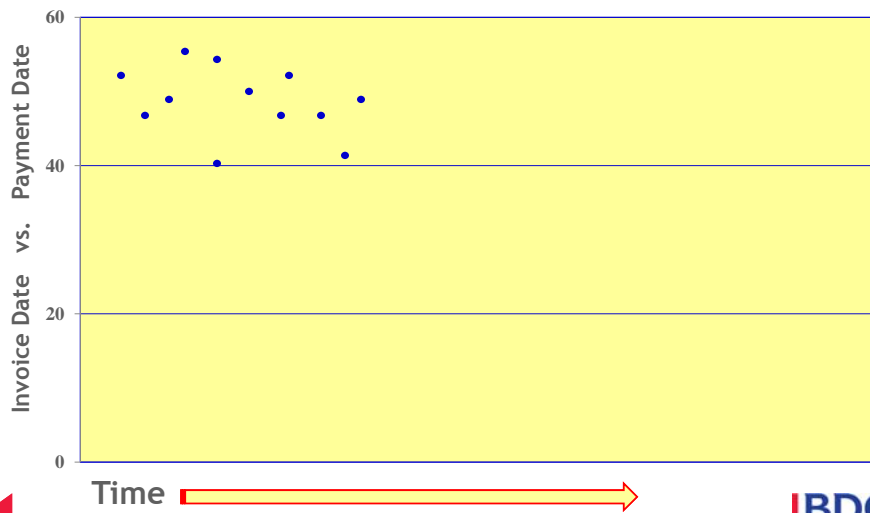
Analytical Testing - PATs

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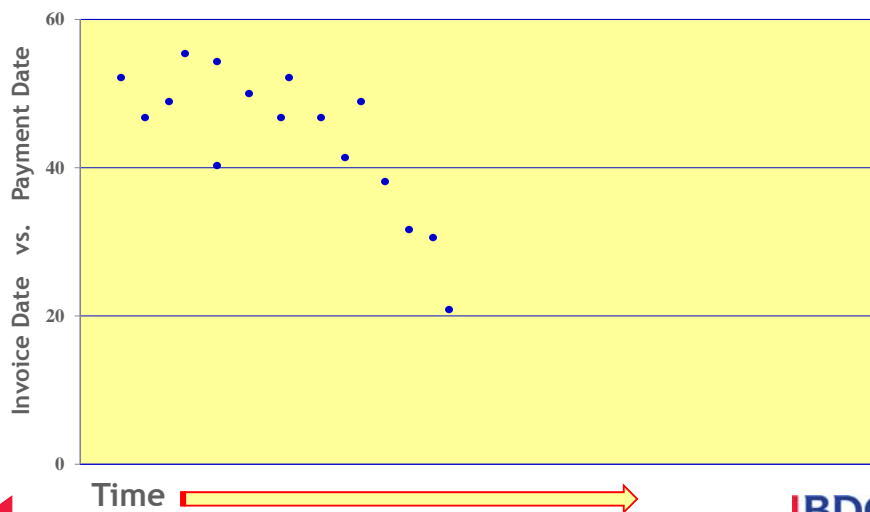
Vendor Payments Attribute Analysis



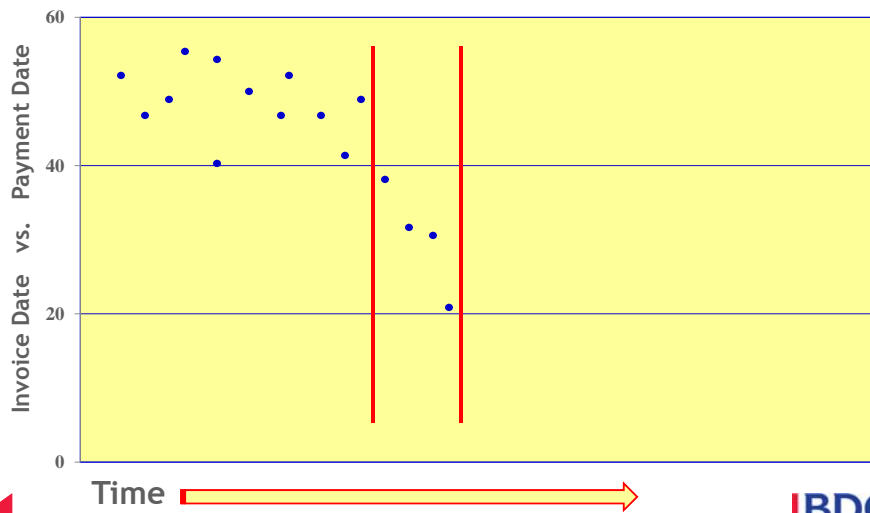
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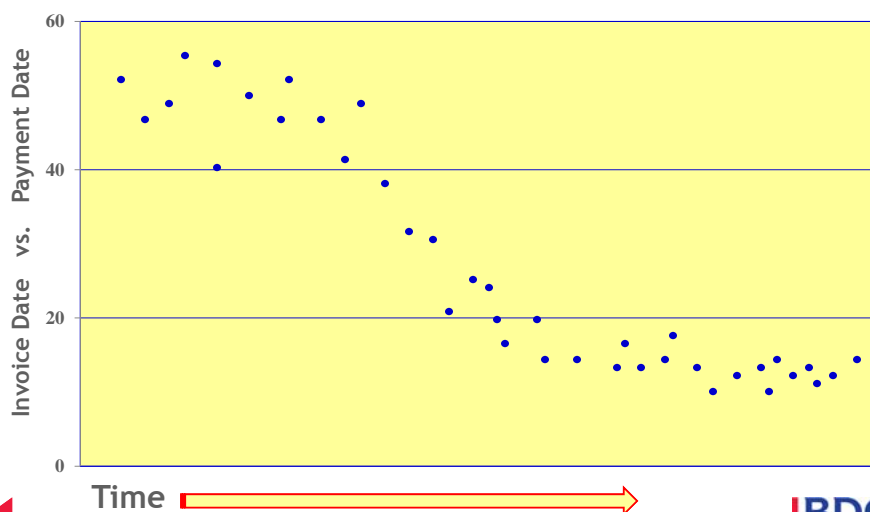
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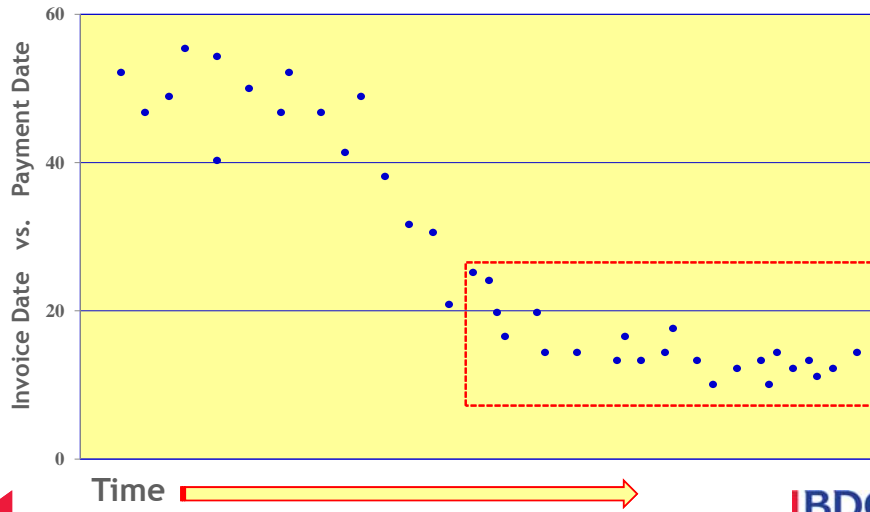
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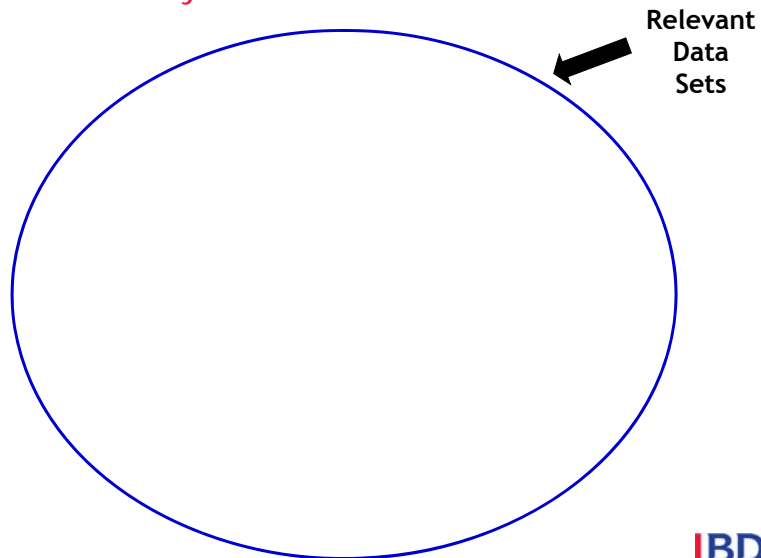
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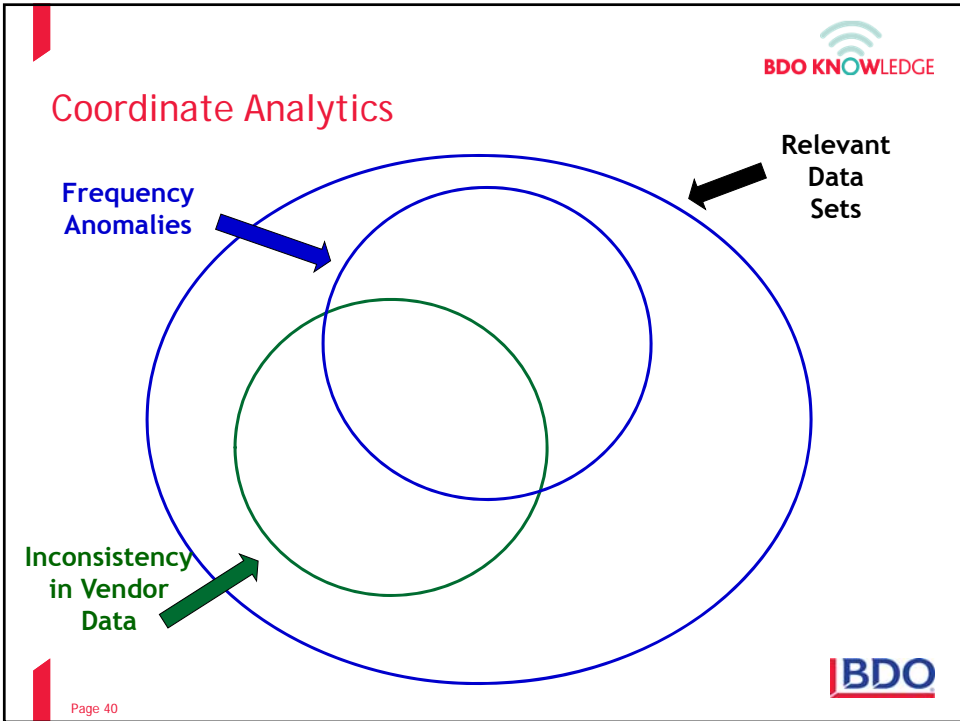
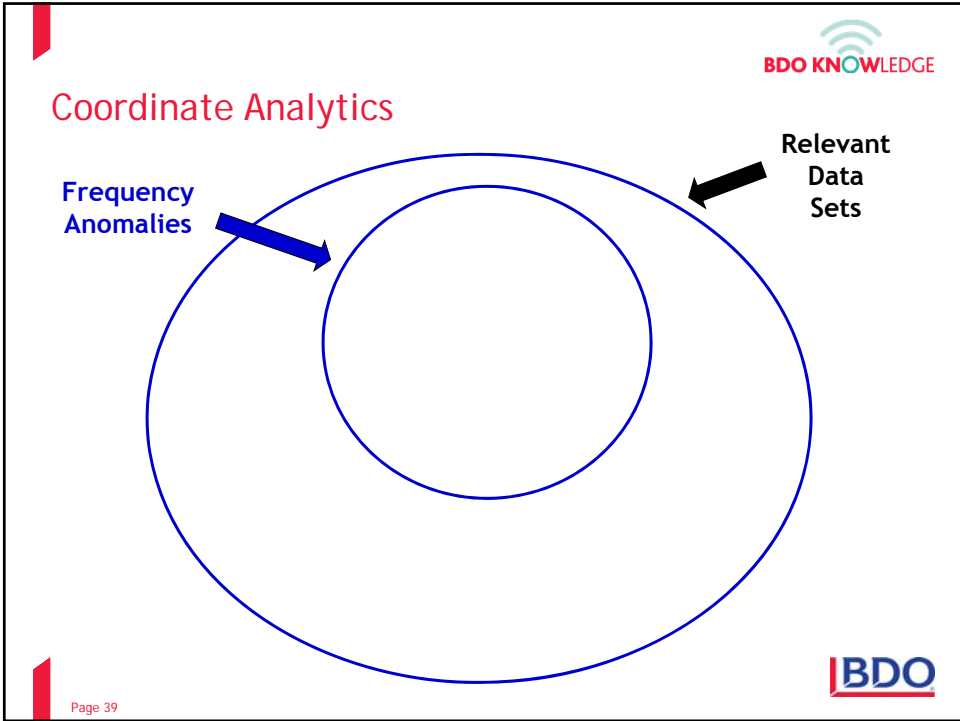


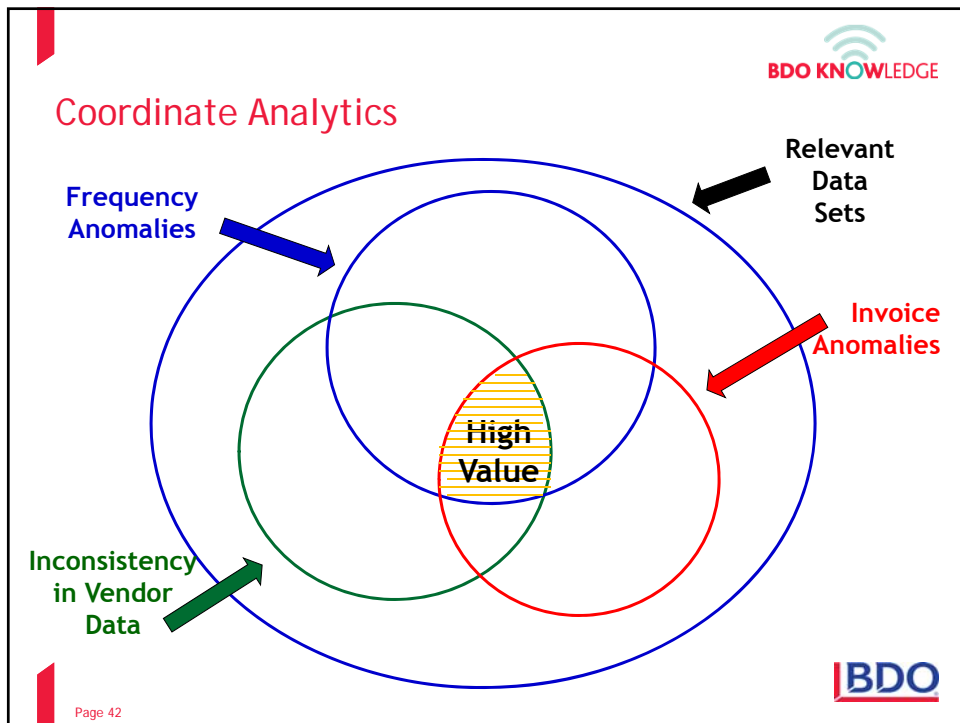
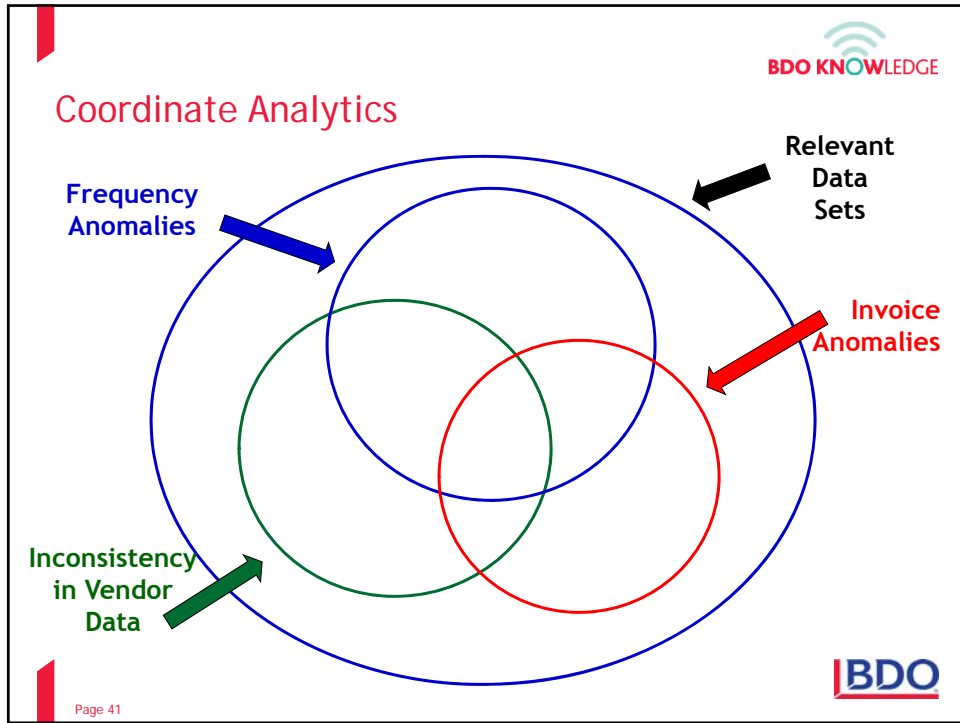
Vendor Payments Attribute Analysis



Coordinate Analytics







Continuous Monitoring

Doing More With Less



What is Continuous Monitoring?



Data mining software coupled with advanced analytics and exception management capabilities



Established forensic protocols and recognized investigative methods



Real-time (or near real-time) detection of:

- ❖ Inefficiencies in purchasing
- ❖ Potentially anomalous transactions
- ❖ High-risk relationships
- ❖ Compliance failures
- ❖ Circumvention of controls



CM vs. Traditional Approach

Continuous Monitoring

- Evaluates 100% of the transactions or associated target functions
- Transactions or functions requiring further review are identified in real-time (or near real-time)
- Process is highly automated and can be repeated on as frequent a basis as required
- Automatically brings in relevant outside data
- Leads to optimal allocation of limited internal resources
- Timely correction of errors and identification of prohibited behaviors

Traditional Approach

- Evaluates only a small percentage of transactions or targeted functions
- Transactions or functions requiring further review are identified during scheduled reviews
- Process is somewhat automated and is repeated on a rolling basis as determined by IA
- Outside data is considered only if it is specifically sought
- Internal resources are dispatched in less than optimal fashion
- Errors and prohibited behaviors are not identified on a timely basis

Ongoing Benefits of CM Include...

- Objective basis for quantifying system-wide risk
- Uncover and eliminate high risk 3rd party relationships
- Evaluate training regimens
- Improve/augment existing IA protocols
- Assess overall compliance with the books & records provisions of the FCPA and other pertinent laws
- Monitor compliance and ongoing risk of newly acquired businesses
- Identify potential instances of non-compliance on a timely basis
- Continually evaluate efficacy of existing control environment
- Implement measures to fill gaps in the existing control environment
- Improve/augment the qualitative nature of data being captured
- Eliminate waste and inefficiencies in the supply chain

Additional Webinars

BDO Knowledge Upcoming Webinar:

- How ASU 2015-02 Changes Consolidation Accounting (May 14, 2015 - registration forthcoming on <https://www.bdo.com/events>)

BDO Knowledge Archived Webinars:

- 2015 Q1 Technical Update - April 2015
<https://www.bdo.com/events/quarterly-technical-update-q1-2015-15>
- 2015 Executive Pay Outlook for Mid-Cap Companies - March 2015
<https://www.bdo.com/events/2015-executive-pay-outlook-for-mid-cap-companies-a>
- What's On the Minds of Boards - January 2015
<https://www.bdo.com/events/what-is-on-the-minds-of-boards>

BDO Board Reflections

Additional resources accessible via BDO *Board Governance*:

<https://www.bdo.com/services/assurance/board-governance/overview>

Recent BDO Publications:

- FASB Flash Reports
- 2013 COSO Internal Control - Integrated Framework - Update on Implementation Considerations
- BDO 2014 Board Survey
- BDO Guide to Going Public
- BDO Board Reflections: Perspectives on Executive Succession Planning
- CAQ Approach to Audit Quality Indicators
- Cybersecurity - Its Impact on the External Audit and Other Recent Developments
- Cybersecurity - A Board Primer
- Private Company Council (PCC) Flash Reports
- Significant Accounting and Reporting Matters Guide

For a complete listing of publications, refer to:

<https://www.bdo.com/insights/>

Presenter Biographies



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Julia K. Bailey leads BDO Consulting's Compliance practice in Washington, DC with over 20 years experience in providing international, political and regulatory compliance services.

Ms. Bailey's practice focuses developing compliance programs to address fraud and corruption risks, implementing proactive compliance measures, designing systems to identify compliance risks and detect compliance failures, and creating tools to rate risks and track metrics for industry-leading organizations both domestically and abroad.

Prior to joining BDO, Ms. Bailey worked as in-house compliance counsel for Fortune 100 corporations: she served as Assistant General Counsel, International Transactions and Compliance of Honeywell International, Inc., where she managed all aspects of its global anti-corruption and political compliance programs. She also served as Associate General Counsel of International & Domestic Compliance at BAE Systems, Inc. and as Special Counsel, International, for Northrop Grumman Corporation.

Ms. Bailey is a regular public speaker and author on topics ranging from anti-corruption, ethics & compliance, international trade, and corporate political activities, among others.



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Jeff Harfenist leads BDO Consulting's Global Fraud & Forensics practice in Texas. With more than 25 years of forensic accounting experience, he has managed forensic teams on some of the most high-profile, and complex investigations in U.S. history, including Tyco, Enron and ALG. Advising multinational organizations and their counsel, Mr. Harfenist has extensive experience leading domestic and international engagements for public and private organizations across numerous industries.

Mr. Harfenist's practice focuses on fraud-related matters, including alleged violations of the Foreign Corrupt Practices Act (FCPA) and other relevant anti-corruption statutes, kickbacks, embezzlement, Ponzi schemes, financial statement fraud, M&A anti-corruption due diligence and joint venture audits.

Skilled in implementing systems designed to detect fraud and mitigate risk, Mr. Harfenist is adept at utilizing forensic tools to identify anomalous transactions and high-risk relationships. He is experienced in working with large data sets, having managed matters involving more than 50 million documents.

Mr. Harfenist has published and presented extensively on managing fraud risk, including on such topics as FCPA, compliance, monitoring, and risk assessments.



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Amy has spent 11 years in BDO's National Assurance practice directing, developing and delivering learning initiatives. She helped establish and directs the firm's external Corporate Governance and Financial Reporting center, designed for financial executives and those charged with governance of both public and private companies.

Amy has written various thought leadership pieces on a variety of matters related to corporate governance, including cyber security, fraud, and succession planning. In collaboration with various BDO leaders, she published BDO's *Effective Audit Committees in the Ever Changing Marketplace* and related practices aids and helped establish BDO's Revenue Recognition Resource Center.

She has a combined 11 years of Big Four firm public accounting experience, serving manufacturing and high technology companies as well as private companies, primarily in the wholesale distribution and biotechnology markets. Such experience included assisting clients with public debt offerings and acquisition transactions.

