A MATURITY MODEL

Data Analytics-Enabled Auditing through Continuous Assurance of Enterprise Risk Management

January 16, 2013
Agenda

- Evolving world of Big Data and Analytics
- Why have Audit Data Analytics and Continuous Auditing in Internal Audit not been radiated or sustained?
  - What have been the challenges?
- A Hypothesis: Modifying the Audit Methodology will Manage Change and help transform the audit function
- Audit Methodology Reference Model
- Q&A
Analytic Waves Follow Reporting Waves

- **What will happen?**
  - **Prediction**

- **What is happening?**
  - **Monitoring**

- **Why did it happen?**
  - **Analysis**

- **What happened?**
  - **Reporting**

### 1980's
- **Reporting**
  - Statistical Reports

### 1990's
- **Analytics**
  - Query Excel OLAP

### 2000's
- **Analytics**
  - Dashboards Scorecards

### 2010's
- **Analytics**
  - Statistics Data mining Optimization

Source: TDWI
A Major Talent Gap is Expected

1. Data have swept into every industry and business function and are now an important factor of production.

2. Data generates value by creating transparency, enabling experimentation, segmenting populations to customize actions, automatically replacing human decisions, and innovating business models, products, and services.

3. The use of Big Data is becoming a key way for leading companies to outperform their peers.

4. The use of Big Data will lead to new waves of productivity and improve efficiency and effectiveness, enabling organizations to do more with less.

5. Certain sectors are poised for greater gains than others through the use of Big Data – these include Healthcare, Public Sector, US Retail, and Manufacturing.

6. There will be a shortage of talent necessary for organizations to take advantage of Big Data.

7. Several issues will need to be addressed to capture the full potential of Big Data, such as data policies, industry structure, and organizational change.
Continuous Risk Assessment to Verification of Risk Management

1. Continuous Risk Assessment

2. Dynamic Audit Planning

3. Audit Execution

4. Verification of Risk Management
Value of Data Analytics-Enabled Internal Auditing

1. Identify the “right” audits to perform (coverage focus)
   • If only 30 audits can be performed a year, how do we know which 30 audits to perform (i.e., which are the “riskiest” audit areas)?

2. Increase the number of audits performed per year (coverage breadth)
   • How do we increase the number of audits performed per year from 30 to 40 without adding hours or FTE?

3. Decrease the time required to cycle through the audit universe (coverage efficiency)
   • Currently it takes three years to audit every auditable entity, how do we decrease that cycle time to every two years?

4. Increase the frequency of audits of key risk areas (coverage frequency)
   • Currently we can only audit key risk areas every other year, how can we audit them every year?

5. Increase the scope of specific audits (coverage depth)
   • Currently we can only focus audits on two or three key areas of risk and test a sample of transactions, how can we audit five to 10 areas of risk (e.g., including fraud, inefficiencies, and regulatory non-compliance) and cover 100% of the transactions?
Data Analytics/Continuous Auditing Implementation (and Sustainability) Challenges

General

- Determining and establishing consensus on objectives and success criteria.
- Measuring and demonstrating success.
- Limited resources (technology and human know how).

Data Availability and Quality

- Lack of access to data.
- Disparate information systems with different data formats.
- Incomplete data sets, inconsistent data quality.
- Data privacy/security issues to navigate.

Data Analytics

- Inability to effectively leverage data analytics to achieve audit objectives.
- Definition of “exception;” addressing “false positives” and “false negatives.
- Workflow around exception resolution; managing volumes of exceptions.

Change Management

- Managing impact of CA/DA processes on auditors and other business processes.
## Audit Methodology-based Maturity Model

<table>
<thead>
<tr>
<th>Maturity Levels</th>
<th>Level I</th>
<th>Level II</th>
<th>Level III</th>
<th>Level IV</th>
<th>Level V</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA Methodology</td>
<td>Traditional Auditing</td>
<td>Ad Hoc Integrated Analysis</td>
<td>Continuous Risk Assessment &amp; Continuous Auditing</td>
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<td>Continuous Assurance of Enterprise Risk Management</td>
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<tr>
<td>Strategic Analysis</td>
<td>○</td>
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<tr>
<td>Enterprise Risk Assessment</td>
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<td>Internal Audit Plan Development</td>
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<td>Execution and Reporting</td>
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<td>Continuous Improvement</td>
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- ○: Data Analytics are generally not used
- ½: Data Analytics are partially used but are sub-optimized
- 🍃: Data Analytics are effectively and consistently used (optimized)

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## Audit Methodology: Strategic Analysis and Enterprise Risk Assessment Phases

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<tr>
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<tbody>
<tr>
<td><strong>1. Strategic Analysis</strong>&lt;br&gt;1.1 Understand the business&lt;br&gt;1.2 Stakeholder Needs Analysis&lt;br&gt;1.3 Perform an Enterprise Risk Assessment</td>
<td>• Use of management reports&lt;br&gt;• <strong>Limited use of descriptive data analytics</strong>&lt;br&gt;• Understand the business and verify results of management consultations (Annually)</td>
<td>• Extensive use of management reports&lt;br&gt;• Underlying data for <strong>expanded use of descriptive data analytics</strong> (i.e., benchmarking)&lt;br&gt;• Understand the business and verify results of management consultations (Annually)</td>
<td>• <strong>Predefined analytics</strong> (i.e., internal and external benchmarking) to identify and prioritize risks based on changes in the business&lt;br&gt;• Review protocols established&lt;br&gt;• <strong>Automated ETL, analytics and reporting</strong>&lt;br&gt;• Intervals of ERA</td>
<td>• <strong>Leverage Management systems</strong> to enable continuous assessment and prioritization of business risks&lt;br&gt;• Management provides continuous insight to business risks (both internal and external)&lt;br&gt;• <strong>System generated analytics and dashboards monitored by the business</strong>&lt;br&gt;• Specified strategic risk criteria, risk capacity and impact and likelihood analysis.</td>
<td>• Leverage management’s Continuous Monitoring processes by aggregating the output to extract enterprise insights about the risk management processes&lt;br&gt;• <strong>Linking the company’s strategic objectives with risk management practices</strong>&lt;br&gt;• Strategic objectives and risks are updated and monitored on a continuous basis&lt;br&gt;• System generated analytics &amp; dashboards monitored by the enterprise.&lt;br&gt;• <strong>IA Plan is dynamic and able to react to changes in the business</strong></td>
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## Audit Methodology: Audit Plan Development Phase

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<td>2. Internal Audit Plan Development</td>
<td>Perform relatively few analytics on an ad hoc basis</td>
<td>Integrated into work plan to achieve audit objective</td>
<td>Repeatable and sustainable</td>
<td>Continuously auditing the continuous monitoring function</td>
<td>End objective of all audit work</td>
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### 2. Internal Audit Plan Development

#### 2.1 Identify and Prioritize Areas of Focus

- Data Analytics are not utilized to develop the audit plan
- Discuss concerns with management and review prior year audit plan
- Assurance map and traditional audit plan

#### 2.2 Determine Assurance Appetite and Coverage

- High level quantitative measures (financial statement trends, industry benchmarking) – (Annually)
- Review prior audit observations, internal and external
- Audits with simple analytics incorporated

#### 2.3 Develop IA Plan

- Monitor quantitative and qualitative measures to ensure they are aligned with priority business risks (Quarterly/Monthly).
- Refined assurance of risk appetite and coverage using technology at determined time intervals
- Near real-time consideration of impact related to regulatory and environmental events
- Data analytics enabled audit plan

### End Objective of All Audit Work

- Leverage business intelligence and continuous monitoring to evaluate business results and risks.
- Leverage the business monitoring to identify audit trigger events and re-prioritize risks on a continuous (monthly) basis.
- System generated data analytics are from within the business unit
- Analytic enabled plan is dynamic and updated on a continuous basis.

- Enterprise and process risks are monitored using business intelligence and continuous monitoring techniques.
- Data analytics, risks and performance indicators are continuously reconciled to the Entity’s Strategic business objectives (monthly).
- Refined assurance of risk appetite and coverage using technology (monthly)
- Prioritize Strategic goals used to drive audit plan which is dynamic and updated on a continuous basis.
## Audit Methodology: Execution and Reporting Phases

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<tr>
<td><strong>3. Execution and Reporting</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>3.1 Project Architecture</strong></td>
<td>Perform relatively few analytics on an ad hoc basis</td>
<td>Integrated into work plan to achieve audit objective</td>
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<td>Continuously auditing the continuous monitoring function</td>
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<td><strong>3.2 Process Analysis</strong></td>
<td>Data Analytics are not utilized to drive the execution of the audit plan in traditional auditing</td>
<td>Ad hoc data analytics to identify outlying transactions or to assist in scoping the audit.</td>
<td>Data is readily available</td>
<td>Leverages the business monitoring and independently performs analysis to identify trends and prioritize areas to focus audit efforts.</td>
<td>Business monitoring and audit's procedures rely on the same technology.</td>
</tr>
<tr>
<td><strong>3.3 Measure and Analyze</strong></td>
<td>Interview process owners to gain an understanding of the process, identifying risks and controls</td>
<td>Review of financial statements, management reporting, performance and risk indicators.</td>
<td>Key business processes have automated analytics ready for the auditor during planning to scope and focus audit efforts.</td>
<td>IA is connected to the same data and reporting as management and assesses the quality of the data and the analytics monitored by the business.</td>
<td>Procedures verifying the underlying data analysis and reporting at the business level are aligned with the strategic objectives.</td>
</tr>
<tr>
<td><strong>3.4 Reporting</strong></td>
<td>Control testing and investigation of exceptions and observations.</td>
<td>Consideration for sampling, data analysis, and six sigma techniques to reach the audit objective.</td>
<td>Dependencies on IT are minimal given the availability of data and pre-packaged analytics.</td>
<td>Audit programs are aligned and dynamically created from KPIs, KRIs, and audit trigger results.</td>
<td>Audit scope is fluid, focusing on root cause analysis and management's effectiveness at monitoring and responding to risks.</td>
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<td>Audit program is flexible and balances increase scope coverage and efficiencies.</td>
<td>Data analytic enabled audit programs</td>
<td>Automated Auditing techniques achieve several audit objectives based on &quot;exception&quot; auditing.</td>
<td>Audit programs focus on risk management practices backed by analytical depth towards risk management practices.</td>
</tr>
</tbody>
</table>
| | | | | | Automated auditing is focused on management's responses to business anomalies and trigger events.
## Examples: Order to Cash

<table>
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<tr>
<th>Business Risks</th>
<th>Traditional Procedures</th>
<th>Data Analytics Procedures</th>
</tr>
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<tbody>
<tr>
<td><strong>A.</strong> Customer information is not accurate resulting in incorrect shipments</td>
<td><strong>A.</strong> Confirm that recent additions and edits to the customer master file agree to supporting documentation</td>
<td><strong>A1.</strong> Identify duplicate customer records</td>
</tr>
<tr>
<td><strong>B.</strong> Customers credit is not monitored increasing credit risk</td>
<td><strong>B.</strong> Confirm the credit manager sign offs on the weekly credit report</td>
<td><strong>A2.</strong> Identify missing or incorrect key values</td>
</tr>
<tr>
<td><strong>C.</strong> Payments are processed incorrectly leading to inaccurate customer balances</td>
<td><strong>C.</strong> Unapplied cash ledger reconciles to the GL</td>
<td><strong>A3.</strong> Count undeliverable and/or re-shipments</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>B1.</strong> Identify customers over their credit limit with new orders</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>B2.</strong> Identify invoices greater than 360 day that are not written off</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>C1.</strong> Identify and count the number of cash repostings (i.e., cash between customers)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>C2.</strong> Trend the age between date of cash receipt date of customer posting</td>
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</tbody>
</table>
### Examples: Procure to Pay

<table>
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<th>Business Risks</th>
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<th>Data Analytics Procedures</th>
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</thead>
<tbody>
<tr>
<td><strong>A.</strong> Discounts may be missed causing a decrease in cash flow.</td>
<td><strong>A.</strong> Sample invoices from suppliers offering discounts and confirm discounts were taken.</td>
<td><strong>A1.</strong> Summarize vendors and discounts taken</td>
</tr>
<tr>
<td><strong>B.</strong> Goods received may be incorrectly recorded and result in incorrect inventory quantities.</td>
<td><strong>B.</strong> Confirm that receiving records agree to purchasing and packing list documents</td>
<td><strong>A2.</strong> Identify invoices entered more than 30 days after invoice date</td>
</tr>
<tr>
<td><strong>C.</strong> Payment terms may not be consistent with company terms and policies.</td>
<td><strong>C.</strong> Sample payments and confirm payments processed according to supplier contract terms</td>
<td><strong>B1.</strong> Identify receipts without a PO and profile the results by vendor or personnel</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>B2.</strong> Identify PO’s created on the same day as receipt</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>C1.</strong> Summarize vendor master on Payment Terms</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>C2.</strong> Calculate payments processing timing and compare to vendor master payment terms</td>
</tr>
</tbody>
</table>
Contact Details

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