THE IMPORTANCE AND IMPACT OF DATA AND DIGITAL TOOLS IN THE COVID-19 LANDSCAPE

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Associate Director, Internal Audit
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TODAY’S AGENDA

✓ About Me

✓ Next Generation Internal Auditing and Trends

✓ Application of Analytics into your Changing Business Environment

✓ Process Mining Introduction and Background
  ✓ Key Benefits
  ✓ How Does it Work?
  ✓ Use Cases and Real Life Examples
ABOUT ME

Gregg Wishna, Associate Director, CISA – Atlanta, GA

2015

Data and Analytics

July 2020

Internal Audit

Atlanta
OVERVIEW OF DATA ANALYTICS
DEFINING DATA ANALYTICS - WHAT IS IT?

The science of examining raw data with the purpose of drawing conclusions about that information. Data analytics is used in many industries to allow companies and organizations to make better business decisions and in the sciences to verify or disprove existing models or theories.

Data analytics capabilities are becoming an essential part of the “internal audit toolkit” for many organizations. Leveraging data analytics can also provide significant benefits for both the internal audit department and the broader enterprise.

Data analytics can be used to support a number of different internal audit activities based upon the overall objectives of the data analytics program.

The application of these tools ranges from ad hoc analysis to support a specific audit objective, to enhancing repeatable automated procedures, and even to enabling continuous auditing and monitoring.
CURRENT STATE OF DATA ANALYTICS IN INTERNAL AUDIT
INTERNAL AUDIT NEEDS TO EMBRACE ANALYTICS…FAST

Internal Audit Capabilities and Needs

• Data analytics will be a game changer for the internal audit profession.

• Not surprisingly, the ability to utilize data analytics and “big data” to achieve competitive advantage and manage operations and strategic plans ranks among the top risk issues for board members and C-suite executives worldwide.

01 The overall maturity levels of analytics activities within internal audit groups remain relatively low.

02 Based on the survey results, many audit functions are likely using analytics tools as point solutions as opposed to part of a broader initiative to leverage analytics throughout the audit process.

03 Internal audit functions in Europe and Asia-Pacific region appear to be more mature in their use of data analytics than internal audit groups in North America.

04 There is a correlation between the level of audit committee interest in the use of analytics and the amount / level of information shared with the committee about the use of analytics to support the lifecycle of audit activities.
OUR VISION FOR NEXT-GENERATION INTERNAL AUDITING

The specific governance structures, methodologies and enabling technologies that next-generation internal audit groups introduce vary. However, nearly all of the transformations Protiviti has supported have addressed most, if not all, of the following competencies, qualities and components in three broad categories:

- Next Generation Internal Audit
  - IA Strategic Vision
  - Organizational Structure
  - Resource & Talent Management
  - Aligned Assurance
  - Dynamic Risk Assessment

- Next-Generation Internal Audit
  - Methodology
    - Continuous Monitoring
    - Advanced Analytics
    - Robotic Process Automation (RPA)
    - Process Mining
  - Enabling Technology
    - Machine Learning (ML)
    - Artificial Intelligence (AI)
    - Advanced Analytics
    - Continuous Monitoring

- Governance
  - High Impact Reporting
  - Agile Audit Approach
APPLICATION OF ANALYTICS INTO YOUR CHANGING BUSINESS ENVIRONMENT
### WHY USE DATA ANALYTICS?

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Transform a flood of data into meaningful information</td>
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<tr>
<td>2</td>
<td>Facilitate risk identification, measurement and profiling – answer important business questions</td>
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<td>3</td>
<td>Increase testing quality and insight:</td>
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<tr>
<td></td>
<td>• Test 100% of populations instead of sampling</td>
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<td></td>
<td>• Provide true error rates rather than error estimates</td>
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<td></td>
<td>• Highlight trends and factors that may not be noticed through conventional audit techniques</td>
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<td></td>
<td>• Identify interesting subsets of the population for testing and <strong>new unseen relationships</strong></td>
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<tr>
<td>4</td>
<td>Increase productivity and efficiency</td>
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<td>5</td>
<td>Deliver value-added suggestions and/or provide ongoing analytics tools to management</td>
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INTERNAL AUDIT DATA ANALYTICS

Internal Audit Uses

**Risk Assessment**
- Analytics to assess key risk indicators to be used as an input into annual audit risk assessment process
- Refreshing these analytics on a regular basis can be used to evaluate changes in the risk environment and for timely updates to the Annual Audit Plan

**Discrete Audits**
- Analytics in the planning and execution of individual audits in the Annual Audit Plan
- Enables better identification of targeted risk areas for an audit and analysis of full populations vs. traditional sample-based audit testing.

**Continuous Auditing**
- Automated analytic routines that can be run at defined intervals to provide regular insights into the effectiveness of controls and potential risk areas.
- Allows more timely visibility into significant risk areas that may require immediate attention.
HOW TO IDENTIFY POTENTIAL FOR ANALYTICS

**Repetitive Audit Procedures**
Audits repeat across business units, locations, geographies, or time (e.g., annual SOX testing, location-based audits, etc.)

**Information Exists In Unstructured Data**
Information is captured in unstructured data format that is difficult to mine/report on

**System Processing/Data Integrity Issues**
System processing or data/report integrity issues are suspected or have existed in the past

**High Transaction Volumes**
The area audited includes high transaction volumes that are retained over meaningful periods of time

**Common Process Areas**
Audit of a process where analytics are frequently applied

**Manual Audit Procedures**
Traditional audit procedures in the area are extremely manual, time-consuming, and/or tedious to perform

**Inadequate Management Reporting**
Business or management reporting in the area audited would not sufficiently identify risks or process breakdowns
FRAUD RISK FACTORS: COVID-19 CRISIS CONSIDERATIONS

ATTITUDES AND RATIONALIZATIONS
People can more easily rationalize, or justify, committing fraud based on personal circumstances, state of the internal control framework, perception (right or wrong) of company’s fraud philosophy, and “desperation or desire to keep business in business.”

OPPORTUNITY
Refers to the ability of an individual or group to “actually acquire, use or dispose of assets, which may be accompanied by altering the company’s records.” Often driven by thought that activities will be undetected, opportunity is created by diluted segregation of duties, weak control and monitoring activities, poor management oversight, and management override of control.

INCENTIVES / PRESSURES
Incentives to commit fraudulent acts (“save job / company,” qualify for government aid, defer debt, etc.) or pressures that result in the intentional loss of assets, fraudulent reporting or corruption (i.e., preserve / generate income, reflect “new” sales / contracts, attract new investors, etc.).
It’s unsettling, but fraudsters around the world are taking advantage of the COVID-19 crisis. It’s easy to be a “click away” from a fraud risk event. Fake notices from government organizations, spoofed e-mails from business colleagues and fraudulent requests from customers to change banking information are just a few that may show up in your e-mail. Further, a crisis can push even the most trustworthy employee into making desperate decisions and poor choices. During these times, it is critical to consider risk factors that drive fraud as well as the preventive and detective controls designed to mitigate such risk.
PRIMARY INTERNAL CONTROL WEAKNESSES THAT CONTRIBUTE TO OCCUPATIONAL FRAUD

- Lack of internal controls, 32%
- Override of existing internal controls, 18%
- Lack of management review, 18%
- Poor tone at the top, 10%
- Lack of competent personnel in oversight roles, 6%
- Other, 6%
- Lack of independent checks / audits, 5%
- Lack of employee fraud education, 3%
- Lack of clear lines of authority, 2%
- Lack of reporting mechanisms, <1%

Access the full report at: www.acfe.com
ASK THESE QUESTIONS...

Where are the weakest links in the system’s controls (i.e., comprised segregation of duties, monitoring, etc.)?

How are off-line transactions handled and who can authorize these transactions?

What would be the simplest way to compromise the system (i.e., phishing, SMiShing, malware, spoofing, ransomware, etc.)?

What deviations from conventional good accounting practices are possible?

What control features in the system can be bypassed in the “remote” work environment?

What impact does the COVID-19 crisis have on organizational culture?
**OBSTACLES TO SUCCESS**

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<tr>
<th>Issue</th>
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<tr>
<td>Data access and quality issues</td>
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<td>Creating a silo rather than awareness</td>
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<td>Focusing too much on the tool versus the outcome</td>
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<td>Insufficient planning</td>
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<td>Narrow thinking</td>
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<td>Uninspired reporting</td>
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TECHNOLOGY ENABLEMENT:
PROCESS MINING
PROCESS MINING – DEFINED

Process mining analytics helps us identify new variations, exceptions or transaction types in process, thereby helping us understand when processes have actually changed (versus a belief that they have or have not changed). It uses data to create a picture of all processes – as they are actually executed.
## CAPABILITIES OF PROCESS MINING (1/2)

<table>
<thead>
<tr>
<th></th>
<th>Models of processes, exceptions and process instances</th>
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<tbody>
<tr>
<td>1</td>
<td>Automated discovery of process models, exceptions and process instances together with basic frequencies and statistics</td>
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<tr>
<th></th>
<th>Support for customer interactions, customer journey maps and related analysis</th>
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<tr>
<td>2</td>
<td>Automated discovery and analysis of customer interactions, as well as alignment with internal processes</td>
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<tr>
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<th>Real-time dashboards with support for KPIs</th>
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<td>4</td>
<td>Real-time or near-real-time connections to continuously monitored and adapted KPIs in dashboards for specific roles in the organization</td>
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<tr>
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<th>Conformance checking and gap analysis capabilities</th>
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<td>5</td>
<td>Capabilities to check conformance, not only graphically through overlays, but also through data analysis and performing gap analysis</td>
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<tr>
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<th>Social or organizational mining</th>
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<td>3</td>
<td>Different perspectives on operations – resources perspective (roles, individuals) other organizational constructs such as partners, channels or departments</td>
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<th>Predictive analysis, prescriptive analysis, scenario testing and simulation</th>
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<tr>
<td>6</td>
<td>Advanced analysis capabilities that use contextual data</td>
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</table>

Source: Gartner
CAPABILITIES OF PROCESS MINING (2/2)

7. **Intelligent support for process model enhancement**
   Enhancing or extending existing or apriori process models by using additional data from the recorded logs.

9. **Combining different processes on a single process mining canvas**
   Different processes (not instances of the same process) that interact with each other at the same workstation.

8. **Data preparation and data cleansing support**
   Different ways of data preparation.

10. **Support for the visualization of how processes contribute to business value**
    Contextualization of processes such as business operating models.

Source: Gartner
Process mining is the missing link between model-based process analysis and data-oriented analysis techniques.

Process mining is a process management technique that supports the analysis of business processes.

Process mining can analyze your process in an upside-down fashion.

You do not need to have a process map to analyze the process flow – **Process Mining uses historical data from your IT systems.**

Your IT system currently records all steps of your process in execution. With process mining, you get a process map based on that data.

This way, **your real process** and actual business rules can be discovered automatically.
WHY PROCESS MINING?
QUESTIONS FOR EXECUTIVES

When choosing a process optimization approach, some useful questions to ask are...

- How do we detect and resolve harmful bottlenecks, costly inefficiencies and compliance issues?
- How fast do we get insight into our processes?
- Have process owners paid close attention to whether the organization’s control environment is functioning effectively?
- Do we know the root causes well enough to tackle the issues successfully?
FIVE KEY BENEFITS OF PROCESS MINING

Higher quality, with more accurate and valuable results

Reduce cost and variation, become more lean

Find more effective ways to reduce enterprise wide costs without compromising internal controls.

Reduce processing time

Reduce the amount of time spent on routine transaction processing, focusing more on value add business analysis.

Improve quality and stability

By comparing processes beyond KPIs and maintain stability when non-routine situations arise.

Be in control and know what is going on

Give ongoing assurance that the organization is in full compliance with complex regulatory requirements.

Deeper and faster insights

Provide more insightful, timely information for decision-making in an environment where the volume of data is vast and ever changing.
WHAT’S REQUIRED?
HOW DOES PROCESS MINING WORK?

If you need to know what actually happens, wouldn't it be great to have an x-ray view of your process?

**Activity**
- Invoice
- Volume
- Purchase Order
- FX rate
- Vendor
- Postings
- Costs
- Contracts
- Etc

**Key Parameters**
- Activity
- Activity ID
- Time Stamp

**Process Map**

**IT-based work**
Every task supported by systems like SAP, Ticketing / Workflow, Transaction Processing

**Digital Footprints**
Process Mining reconstructs digital workflow traces

**Full Transparency**
Actual process flows are visualized in near real time
YOUR REAL PROCESS AT EVERY LEVEL OF ABSTRACTION

See the happy paths
See the core process flow.

Explore deviations
Reveal less common paths and activities. Great for spotting deviations and inefficient loops.

Get the big picture
Data coverage of 100%. Full process transparency.
HOW ELSE CAN WE APPLY IT?
PROCESS MINING IN INTERNAL AUDIT

**HOW IT WORKS**

**STEP 1**
Find out how your process is executed in reality.

**STEP 2**
Identify and eliminate weak spots and violations. Use proactive insights to prioritize actions leading to process improvement.

**STEP 3**
Find your “happy path” and ensure continuous process efficiency, compliance, and quality.

**EXAMPLE**

**PROCESS DISCOVERY & KPIs**
- IDENTIFY CRITICAL CYCLE TIMES
- MISSING APPROVALS
- SEGREGATION OF DUTIES
- ACTIVITIES OUTSIDE NORMAL WORKING HOURS

**INTELLIGENT ROOT CAUSE ANALYSIS**
- MAVERICK BUYING
- IDENTIFY FRAUD
- PROCESS CONFORMITY
- DUPLICATE PAYMENTS
PROCESS MINING IN INTERNAL AUDIT

Process mining tools can fundamentally change the way that we analyze processes and perform audits.

- **Automate the walkthrough process** – replace interviews with advanced analytics and review process based on 100% populations.

- **Data tells us what is actually happening** – automatically reveal process variants and complexities, identifying areas that do not comply with intended process design.

- **Support risk assessment** activities – identify “hot spot” areas, for focus

- **Make findings more impactful** by quantifying the impact of non-conformance and benefits of adherence to consistent process.

Process mining tools can fundamentally change the way that we analyze processes and perform audits.
TYPES OF ANALYSIS

Leveraging transactional data to drive insight and support decision making
PRODUCT AND USE CASE DEMONSTRATION
SUPPLIER FOCUSED EXAMPLE
SUPPLIER FOCUSED EXAMPLE
SUPPLIER FOCUSED EXAMPLE
ACCOUNTS PAYABLE EXAMPLE

Accounts Payable Process

# Invoices: 238,074
Invoice Value: 1.13B €
MONITORING SOD ACTIVITY – COVID IMPACTED

Spot fraud and errors in internal control by monitoring Segregation of Duties

Violated SOD Ratio

18.03 %

The term “Segregation of Duties” is used to describe processes that should include multiple people. It decreases the power one individual person has by ensuring they are only responsible for a limited set of parts in the process, leading to reduced fraudulent activity as a result of the added complexity this entails.

This analysis will assist in detecting potential cases that violate SOD, and importantly allow action to be taken for cases, users and activities that are repeatedly in violation.

Affected PO Value

$175M

Please Select your Activities for your Segregation of Duty Check:

Activity 1: Create Purchase Order Item

Activity 2: Clear Invoice

Development of SOD for selected Activities over time

17 % 12 % 13 % 16 % 22 % 20 % 21 % 24 % 22 % 15 % 12 % 11 %
ACCOUNT PAYABLE EXAMPLE - DASHBOARDS
SOD EXAMPLE
ANALYTICS – WHERE DO WE HEAD NEXT?
IMPERATIVES FOR INTERNAL AUDIT

The following imperatives are based on feedback from members of audit committees regarding expectations of the chief audit executive (CAE) and the internal audit function.

- Focus more on strategic risks
- Align stakeholder expectations
- Elevate stature and perspective
- Think beyond the scope
- Add more value through consulting
- Facilitate effective, high-quality communication
## The Analytics Maturity Model

<table>
<thead>
<tr>
<th>Initial</th>
<th>Repeatable</th>
<th>Defined</th>
<th>Managed</th>
<th>Optimized</th>
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</thead>
<tbody>
<tr>
<td>• No formal analytics approach, procedures or methodology</td>
<td>• Recognized as a value-add</td>
<td>• Enforced Analytics Policy</td>
<td>• Methodology is Institutionalized</td>
<td>• Practices evolved through the first four phases are used to continually improve analytics processes, procedures and results</td>
</tr>
<tr>
<td>• Performed occasionally</td>
<td>• Not yet institutionalized</td>
<td>• Established Analytics Methodology</td>
<td>• Management involved in the ongoing analytics efforts</td>
<td>• Continuous Control Monitoring Tools</td>
</tr>
<tr>
<td>• Tools are not readily available</td>
<td>• Relies on a core group</td>
<td>• Use of Analytics Championed by IA Management</td>
<td>• Management understands business issues and root causes</td>
<td></td>
</tr>
<tr>
<td>• Limited skills and people dependent</td>
<td>• Tools are available but are not applied consistently or correctly</td>
<td>• Quality of Analytics Results are evaluated</td>
<td>• Re-performance of Analytics Procedures</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Understanding of the business meaning of analytics procedures of results</td>
<td>• Advanced Tools are used</td>
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</table>

### Ad-hoc
- Hindsight

### Repetitive and Reusable
- Insight

### Optimized
- Foresight
Q&A
Thank You

Face the Future with Confidence

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