Audit Data Analytics

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Audit data analytics: Agenda

RADAR
- Multidimensional audit data selection
- Process mining
- Visualization as audit evidence

The future
- What could the future hold?
- Other key questions
Audit data analytics – a technique, not a tool

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RADAR
Rutgers AICPA Data Analytics Research Initiative
The RADAR project

Rutgers, AICPA, CPA Canada, and 8 largest firms

Started officially in June 2016

3 projects currently

  Multidimensional audit data selection (MADS)
    o AKA “exceptional exceptions
    o Revenue three-way match illustration

Process mining

Visualization as audit evidence
MADS data analytics illustration: revenue three-way match

Objective: obtain audit evidence over the existence and accuracy of revenue
MADS data analytics illustration: revenue three-way match

Entity ABC has revenue of €125 million generated by 725,000 transactions. The three-way match procedure is executed with the following results:

<table>
<thead>
<tr>
<th></th>
<th>Amount (€)</th>
<th>%</th>
<th>Number of transactions</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No differences</td>
<td>119,750,000</td>
<td>95.8</td>
<td>691,000</td>
<td>95.3</td>
</tr>
<tr>
<td>Outliers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity differences</td>
<td>3,125,000</td>
<td>2.5</td>
<td>16,700</td>
<td>2.3</td>
</tr>
<tr>
<td>Pricing differences</td>
<td>2,125,000</td>
<td>1.7</td>
<td>17,300</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Note: Materiality for the audit of the financial statements as a whole is €1,000,000.

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Multidimensional Audit Data Selection (MADS)

Traditional sampling approach

Advances in data processing ability & data analytic techniques allows auditors to evaluate the entire population instead of examining just a chosen sample.

- BUT, often generate large numbers of outliers.
- Impractical for auditors to investigate all outliers

New approach

Whole transaction data (Entire population)

Auditors’ judgment-based filters – 3-way match procedure

Notable Items

Outlier detection techniques – additional filters

Exceptions

Prioritization

Prioritized exceptions

• Crucial to develop a method that can help auditors effectively deal with massive amounts of data, but also assist them to efficiently handle a large number of outliers
Analytics for internal control evaluation through process mining

Diagram:

1. Create Purchase Order
2. Sign
3. Release
4. Receive Goods
5. Receive Invoice
6. Pay

ERP system
Analytics for internal control evaluation through process mining

Social Network of the 742 Cases Without Sign and in Violation of SOD Controls

Social Network of 175 cases by three individuals violating SOD
Visualization as audit evidence

Objective: Demonstrate/illustrate that visualization can be used as audit evidence

The nature of the research: Demonstration, illustration, proof

Desired outcome: Various types of visualizations generated from exploratory and confirmatory data analysis of a dataset that can be used in external audit

How that outcome will serve to prove (or disprove) the hypothesis: Assess the sufficiency, relevance, and reliability of generated visualizations as audit evidence
Visualization in the audit process

- Understand client’s business and industry
- Assess client business risk
- Risk assessment analytics
- Review subsequent events
- Issue audit report
- Assess engagement quality
- Understand internal control and assess control risk
- Assess fraud risks
- Substantive tests of transactions
- Perform analytical procedures
- Test of details of balances

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Dashboard: investigate the relationship between insured amount and actual payment amount by different coverage codes for the individual claims.
Dashboard: investigate the relationship between insured amount and actual payment amount by different coverage codes for the individual claims.
THE FUTURE
What could the future hold?

- Continuous control monitoring – formalization of controls evaluation
- Continuity equations – structural modeling in continuous auditing
- Evidence from big data – electronic logs everywhere
- Audit data standards – normalizing data to facilitate analytic applications
- Distributed ledger technology, Blockchain
- Machine learning/cognitive computing
Other key questions

- Where in the audit of historical financial statements are these methods to be used?
- How to create an experimentation period where supervised analytics projects are performed in real engagements?
- How to deal with the economic limitations of using data analytic methods in audits?
- How can human competencies be created?
- How can device competencies be created?
- How will data analytics impact regulatory approaches and auditing standards?
Thanks!!
Contact me at miklosv@rutgers.edu
Visit http://raw.rutgers.edu
Resource:
Audit data analytics free on YouTube from the Rutgers curriculum

1. Introduction to audit analytics:
https://www.youtube.com/playlist?list=PLauepKFT6DK8nsUG3EXi6lYVX0CPHUngj

2. Special topics in audit analytics:
https://www.youtube.com/playlist?list=PLauepKFT6DK-PpuseJtSMLly-YBhaV4TH

3. Information risk management:
https://www.youtube.com/playlist?list=PLauepKFT6DK8uxePhPCoHjDf8_DIhRtGS

4. Tutorials for risk management:
https://www.youtube.com/playlist?list=PLauepKFT6DK9Grq8J67NMMyGpYh1AsBb--

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