Reshaping the Audit with Blockchain and Artificial Intelligence: An External Audit Chain for Close to Real-Time Audit Reporting

Presented by Andrea Rozario
Introduction

• Advances in technology have enabled a ‘real-time’ world in which economic transactions are processed electronically

• Expectation gap: auditors’ procedures vs. expected audit procedures

• Innovations complement each other and have great potential to disrupt the external audit profession

• Explore how an external audit blockchain could enhance audit quality by executing automated internal control tests and analytics
Blockchain Ecosystem

Dynamic AI

Revenue Big Data Analytics

Smart Controls & Smart Analytics

PBC Audit Ecosystem

Public Parties

Network Administrator

Audit Committee

PBC Business Ecosystem

Bank

Supplier A

Auditor

Customer B

Network Administrator

Customer A

Bank

Supplier A

Auditor

Customer B

Network Administrator

Customer A

Client

$
External Audit Chain Ecosystem – Revenue Example

- Auditor Risk Assessment
  - Fictitious or unauthorized or erroneous sales contracts are entered into the system
  - Goods shipped are not recorded completely, accurately and in the correct period based on shipping terms

- External Audit Chain Ecosystem for Revenue
  - Risk Assessment
  - Substantive Testing
  - Internal Control Testing

- Smart Control is configured to automatically match initial smart-client contract code to current smart-client contract code
- Smart Analytic is configured to predict benchmark for current weekly sales using sales, locational, and temperature data from previous months
- Smart Control is configured to match location of goods that are being delivered to expected location of goods
- Smart Control is configured to automatically match sales orders, invoice, and shipment amount from the client’s blockchain
<table>
<thead>
<tr>
<th>Risk</th>
<th>Assertions</th>
<th>Risk Assessment</th>
<th>Substantive Analytics</th>
<th>Tests of Controls</th>
<th>On BC?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fictitious unauthorized or erroneous sales contracts are entered into the system</td>
<td>E/O, A/V</td>
<td>Cognitive analytics is used to read and analyze terms of physical client-contracts, such as amount, approvals, contracting parties</td>
<td>Rules-based system is configured to automatically match the terms of physical client-contract to the terms in client-smart-contracts</td>
<td>Not applicable</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Smart Control is configured to automatically match initial smart-client contract code to current smart-client contract code</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td></td>
<td>Smart Control is configured to automatically match the access level of customer node</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td></td>
<td>Smart Control is configured to automatically match smart-client contract customer name to active digital wallets</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Smart Control is configured to automatically match sales, invoice, and shipment amount from the client's blockchain</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Revenue transactions are not recorded in the correct period</td>
<td>C, C/O</td>
<td>Not relevant, the record of the transaction and transaction event itself are triggered at the same time</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Cash receipts are not accurately recorded or posted in the correct period</td>
<td>C/O, A/V</td>
<td>Not relevant, reconciliations occur as transactions are validated and then posted</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Goods shipped are not recorded completely, accurately and in the correct period based on shipping terms</td>
<td>E/O, C, A/V, C/O</td>
<td>Smart Analytic is configured to predict benchmark for current weekly sales using sales, locational, and temperature data from previous months</td>
<td>Smart Control is configured to automatically match location and temperature of goods that are being delivered to expected location and temperature of goods</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Smart Control is configured to automatically match date goods were shipped does not exceed date of delivery per contract</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Smart Control is configured to automatically match sales, invoice, and shipment data from the client's blockchain</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
## Why Blockchain?

<table>
<thead>
<tr>
<th>ERP / Data Warehouse / Software Providers</th>
<th>Blockchain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of management override</td>
<td>Lower risk of management override</td>
</tr>
<tr>
<td>Separate databases for endogenous and exogenous data</td>
<td>One depository for endogenous and exogenous data sources</td>
</tr>
<tr>
<td>Laborious data standardization</td>
<td>Less laborious data standardization</td>
</tr>
<tr>
<td>Automated audit analytics packages exist but not integrated to a platform</td>
<td>Provides a platform for deployment Smart Controls Tests and Smart Analytics and close to real-time reporting</td>
</tr>
</tbody>
</table>
Conclusion

• There are synergies from Blockchain and AI to be exploited in auditing

• Envisioned how the financial statement audit paradigm will evolve

• Insights from this study can be used by vested parties to inform the debate on the use and impact of technologies in financial statement audits