Fighting fraud with Analytics
People and processes

Bjørn Broum
Senior Advisor
Digital Insights

People matter. Results count.
Could the Nordea fraud case happen again - to others?

20. juli 2010:

UTRO TJENERE BAK SKRANKEN

Bankansatt bak tidenes bedrageri i Norge

89,2 millioner.

Nærmere 63 millioner kroner er altså fortsatt i gale hender. Takket være en utro tjener bak skranken med kriminell god kundeservice.

Faksimile:

http://www.klikk.no/produkthjemmesider/vimenn/reportasje/article715096.ece

Ettor å ha forandret litt på utseendet sitt, går igjen inn i bankfilialen på Tveita nordøst i Oslo. Hun har innatt rollen som en 65-årig millionæreraning. På slet har hun mannen som skal tømmre kontoen til offret. © Arkip
Transformation recommendation, one step at a time*

1. Value Discovery
   Comprises a capability assessment and a vision workshop to build senior management alignment around the end state, a roadmap to get there and the indicative business case. This phase enhances your understanding of what is possible and points out key gaps in capability and where to start. It identifies the focus for a pilot to further strengthen the business case.

2. Pilot
   Puts the value proposition to the test and identifies initial returns within a six month timeframe. The pilot is focused on a particular type of fraud. It starts to build internal capability to use the new tools and it identifies wider implications for the new operating model.

3. Target Operating Model
   We define the end state capabilities, processes and procedures, technical and data architecture and organization structure and governance required to deliver reduced fraud.

4. Solution Implementation
   Following detailed design, the capabilities required to deliver benefits are put into place in successive releases.

5. Assurance
   This can be carried out at any point in the program. For example our tried and tested methodology allows us to assess whether the business and IT architecture is robust and future proof. Will it deliver the required business outcomes?

We recognize that every agency is at a different stage in its transformation journey. That’s why our solutions offer a phased approach to transformation based on five distinct steps.

* From – Capgemini : Yield and Anti-Fraud Protection - Uncover insights you never thought were possible.
Value Discovery, Pilot and Assurance
Value Discovery enables clients to understand how to use analytics to improve business performance

**Typical issues facing clients**

- I have a lot of customer-related data but don’t know how to use it
- I don’t know how to drive value from my data
- I have heard of “big data” but don’t know what it means for me
- I need to understand how to improve my customer interactions
- I have problem with fraud
- I don’t seen to be able to drive value from my technology investments
- I don’t know if we have the skills to use analytics

**What “Value Discovery” will deliver**

- **Proof of Concept** based on using a technology to analyse your data
- **Business Case** quantifying the value that analytics can deliver for your business
- **Assessment of current Capabilities** using our Analytics Maturity Model and Benchmarking tool
- **“Discover the future”** showcase to demonstrate the art of the possible to the business
- **Future Vision and Roadmap** providing a clear plan for delivering value from analytics

**Value Discovery** - a six-to-eight week programme demonstrating the scope and scale of business analytics and providing a roadmap for driving out value
By using a proven methodology, Capgemini will be able to show how Business Analytics provide business value

**Value**

**Identify value**
Key stakeholders in the organization have a unified vision for how Business Analytics will provide business value.

**Realize value**
Agree on a specific delivery model that will ensure that the client possesses the competency and capacity to implement value from Business Analytics and Big Data.

**Establish objectives**
Create a culture and a commitment for continuous improvements using Business Analytics.

Using Business Analytics efficiently will result in lasting competitive advantages
Target operating Model
How to achieve the best Business Intelligence and Analytics?

**Information strategy**
- Supports/promotes effective use of Business Intelligence to drive business strategy

**Organization, people & processes**
- The organizational structure should support the company strategy
- Need for alignment between overall strategy and management decisions on areas such as budget, reporting and mandate

**Production**
- The business information can be reliable and quickly accessible for the organization if it is aligned throughout the organization
- The quality, cost and efficiency of the production depend on the preceding steps

- The company strategy sets the precedence for which value drivers and activities to prioritize
- It is critical that the business strategy and IT strategy are aligned

The quality, cost and efficiency of the production depend on the preceding steps
A Centre of Excellence will enable ownership and competency goals

**Maturity Assessment**

**Objective:** To get a clear and unified picture of strengths and improvement areas

- Decision making process
- BI strategy
- Data quality
- BI competency
- Project management
- BI architecture
- User adoption
- Business ownership and involvement
- BI processes and methodology
- BI quality

**Vision and targets**

**Objective:** To identify the main objectives for the CoE and the overall BA-organization

**Roadmap**

**Objective:** Create the strategy and make priorities for the CoE implementation plan

**Ownership and Governance Centre of Excellence – Business Case**
Target BI architecture and Analytical Sandox
Example of Requirement to target Architecture - Data analyses

**PEOPLE**

*Data Acquisition*
- Meet With the IT organization to align on the right data
- Look at the live data before exporting it for quality

*Data Analysis*
- Workshop the first few projects to build capability
- Be expansive in your thinking

*Scripting*
- At the end of every project decide if any analysis could or should be performed at a later time

**PROCESS**

*Identify the processes or areas*
- Low hanging fruits
- With the highest risk of fraud in the business

*Select a high risk process or area and identify how fraud could occur:*
  - How can someone perpetuate fraud?
  - How can fraud be concealed?

*Determine what the fraud would look like in the data*
- Decide on the data needed and analyses to perform

**TECHNOLOGY**

*Capture all data*
- Organize data and ad capacity so entire data population could be analyzed

*Preserve data Integrity*
- Preserve information security

*Preserve information security*
- Ensure audit trail and logging

*Easy import of new data*
- Sand box
- Apple easy – Google fast

*Requires minimum IT support for data access*
- Easy acces for joining and comparing data

**External view:** Mega trends, analyze firms like Gartner, Forrester etc, innovators like eBay, Capital One.
Look externally for trends – eBay: Building on the analytical ecosystem

Bob Page, vice president of Analytics Platform & Delivery at eBay points to four analytical trends of key importance

“The future will be multi-platform, no one system can handle the entire set of analytical needs.”

1. Enterprise Data Warehouse
2. “Enhanced SQL-like system for transactional + behavioural data”
3. “Hadoop for everything”

“The future will be self-serve”

1. Get the answer yourself
2. “an unexpected benefit: innovation”
3. “analytics sandbox with one click”

“The future will be collaborative”

1. Connect people
2. “DataHub – a one-stop shop for all things data”
3. “Portal and a Social network”

“The future will be live”

1. Interactive visualization
2. “Yesterday’s world ran on monthly or weekly sales reports, or even daily flash reports”
3. New tools are getting mature enough to change business

Høynivå referansearkitektur

Datautnyttelse

Innsikt, regulatorisk rapportering, kundedialog

STRUKTURERT DATALAGER

FORRETNINGS-REGLER (automatisering)

SPECIALISERT DATAMOTTAK

UTFORSKING OG ANALYSE

Analytisk Sandbox

INFORMASJON GOVERNANCE

Datakvalitet og MDM

Datafangst

GENERELT DATAMOTTAK

KANALER
Analytical Sandbox

– an example
Back to the starting question
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Sampling vs entire population
Sampling vs entire population
Sampling vs entire population

DID YOU SEE THE NEEDLE IN THE HAYSTACKS
Sampling vs entire population
The graphic below illustrates a conceptual description of a fraud management solution. This can be used to understand the possibilities for what can be achieved in the area of internal fraud detection.

Advanced solution is to implement Predictive / scenario based analysis and Case management functionality. This is illustrated by the two boxes to the right in the graphic.

An important feature of such a solution is to minimize the amount of false positives and false negatives. This will increase the likelihood of detecting fraud while at the same time minimizing the need for manual investigative work.
Responsiveness

Reactive

Paper-based & Limited
Electronic testing
(Sampling)

Proactive

Data Analytics
(100% coverage, ad hoc
Electronic testing)

POL - data
No method will guarantee a perfect result for detecting fraud. However, a scenario approach would probably be the best way to tackle the challenges

- A scenario approach will identify behaviour that deviate from the norm.
- Pure statistical models will be less effective in the case of internal bank fraud as there are a very limited number of known cases available to benchmark against.

An outlier in a set of employee activities can be identified without having any knowledge about the characteristics of fraudulent behaviour beforehand, as illustrated above.

To be able to classify and categorize employee activities in a data set, as illustrated above, you need to be able to distinguish the activities from each other. In this example you would need to know why the ‘Z’s are different from the ‘O’s. However in detecting internal bank fraud this is generally not the case.
Looking at evidence from several different angles

- An employee activity cannot be identified as fraudulent by solely analyzing one single aspect of the activity. This is why a library of scenarios should be built to score an employee activity on several different aspects.
  - The key for the employer will be to find what aspects are best analyzed in order to identify internal fraud.

- As described in the case of Oslo Universitetssykehus* an activity should be scored based on the characteristics of the activity itself (e.g. the time of the activity) and based on the characteristics of the employee and the customer (e.g. cross-departmental activity)\(^1\)
  - There might be a need for including other entities in the data set than those identified in this preliminary study. This should be investigated later in the process.

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1. Source: Oslo Universitetssykehus / SAS institute
Applying the right weighting model

- To achieve good results a weighting model need to process the results from the scenario scoring. This should be done in two ways:

1. Deterministic weighting of some scenarios higher than others (e.g. timing might be weighted higher than cross-departmental activity)

2. Higher weighting of extreme outcomes as illustrated in the figures to the right.
   - The sum of the scenario scores might be the same for Activity x and Activity y but when the extreme outcomes in Activity y are taken into consideration this activity will be seen as more suspicious.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average scenario score</th>
<th>Average weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity x</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Activity y</td>
<td>15</td>
<td>55</td>
</tr>
</tbody>
</table>
Contact Info

Bjørn Broum  
Senior Advisor  
Phone: +47 900 22 715  
email: bjorn.broum@capgemini.com
About Capgemini

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