Executive Summary/Abstract: It is obvious to say that data quality management must be a major concern in all industries. Strategies for customer relationship management (CRM), and business intelligence (BI), for example, can only be as good as the quality of data. Both internal and external data stores should have quality standards defined, measured, analyzed, and improved, to succeed.

Insurance companies are challenging to the implementation of data quality management. This presentation is the result of a project at Cosesp, a large insurance company in Brazil, and covers, as much as can be disclosed, several issues of real world data quality management implementations.

Objectives of this presentation

- Contribute to the research on Information Quality (IQ), providing information about a real world implementation in a challenging scenario
- Analyze this scenario under the perspective of Total Data Quality Management (TDQM)
- Identify contributions of TDQM to the insurance business
- Move towards a replicable methodology for TDQM in insurance

Scenario

Brazilian Insurance Value Chain: Insurance companies cannot sell directly to the customer. All sales must be intermediated by brokers

Most insurance companies choose to delegate customer care, assistance, and other insured services / coverage to third-parties

- Manage phone calls
- Support emergency services, such as tow-cars, repairs, ambulances
- Support filling claims and directs them to the insurance company
- Keep databases on assistance, and replicate to the insurance company when necessary

Insurance companies

Assistance Companies

Insured person claims

How bad data can corrupt good information

**Methodology**

- **Unique Customer View (UCV)**
- **Data Reengineering**
- **Key Performance Indicators (KPIs)**

**Results**

- Fraud / Anomalies Detection
- Analytical Results & Opportunities

**Further work**

- What’s next?

**Overview & Results**

- Goal: Operation
- Data Model: Integrity constraints
- Quality: Unique Customer View
- Unique Customer Identification
- Customer record must be unique, and preserve relationships with sales channel and assistance data, merging accordingly to reliability

**Methodology**

- **Unique Customer View (UCV)**
- **Data Reengineering**
- **Key Performance Indicators (KPIs)**

- **Customer record must be unique, and preserve relationships with sales channel and assistance data, merging accordingly to reliability**

**Customer record must be unique, and preserve relationships with all related entities from internal and external sources.**

* Instituto Brasileiro de Geografia e Estatistica (Brazilian Institute of Geographics and Statistics)
**Methodology**

**Steps Towards UCV in Insurance**

1. **Structure Customer View**
   - Understanding IP consumer needs, and business strategies.
   - Modelling the necessary data structures to support them.

2. **Information Integration**
   - Mapping different schemes, building and propagating keys to link external data sources.
   - Extract, transform, and load operational data, into the UCV.

3. **Quality Improvement**
   - Merge-and-merge.
   - Enrichment with external data, inference, and validation.

4. **Predictive Models**
   - Predictive models built with data mining, and applied to the whole customer database.

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**Methodology**

**Information Integration**

Implement ETL (extract, transform, and load) to populate UCV and related entities.

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**Methodology**

**Predictive Models**

Predictive models built with data mining, and applied to the whole customer database.

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**Methodology**

**Structure Customer Unique View**

Conceptual model and quality requirements to support strategy and decision making.

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**Methodology**

**Quality Improvement**

Supporting IQ with Go Digital’s Go Quality:

1. **Software support** for quality requirement definition, corrective data quality (cleansing) and real-time data quality management.

   - Standardization / Cleansing
     - Abbreviations, prefixes and suffixes
     - Addresses (ZIPs, cities, states, streets)
     - Phone numbers (Intern. and local codes)
     - Gender inference
     - Company / person name detection
     - Dirty word detection
     - House / household differentiation
     - URL / Email syntax validation

   - Enrichment (Statistics, Post office databases, Research data)
     - Deduplication supported with multiple weighted matchcodes, approximate matching, and phonetic algorithms

   - Data Quality operations and standards available through API (application programming interface)

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**Methodology**

**KPIs and Predictive Models**

Consistent, unique, and enriched data support analytical processing.

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**Performance per customer, per product and per channel**

![Performance chart]

*Products and numbers changed for privacy.
Costs not shown according to non-disclosure agreement.
**Scenario**
1. Value chain, culture, and technology
2. IP suppliers and Quality Evaluation
3. Corrupted Information: an Example

**Methodology:** Unique Customer View (UCV)
1. Measuring and Analyzing Data Quality
2. Data Reengineering
3. Key Performance Indicators (KPIs)

**Results**
1. Fraud / Anomalies Detection
2. Analytical Results & Opportunities

**Further work**
1. What’s next?

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**Contents**

**Results**

Increased Analytical Power
Abnormal behaviors and outliers in the KPIs raise "red flags", and can reveal potential frauds

Some actual discoveries:
- Regions – a specific state had very poor results
  - Distortion in policies adopted for that particular state
- Insured good – specific brand of auto with very high rate of accidents
  - Potential fraud or anomaly in a large fleet of cabs
- ... 

**Further work**
- What’s next?

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**Contents**

**Results**

Increased Analytical Power
Treatment and enrichment of customer data plus Data Mining, revealing more than US 10 M in cross-sales opportunities just for the active customer base.

- Discovery of more than 100 business rules with data mining
  - Customer demographics & current products → future purchase
- Assessment of active customers using discovered rules:

<table>
<thead>
<tr>
<th>Product</th>
<th># Opportunities</th>
<th>Avg Price ($)</th>
<th>Addressable ($)</th>
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<tbody>
<tr>
<td>Insurance 1</td>
<td>12,623</td>
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<td>Insurance 5</td>
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<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* Actual products and numbers where changed due to non-disclosure agreement

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**Contents**

**Results**

On-line Data Quality
Integrate Data Quality operations with Assistance Call Center
  - Company website
  - Operational applications

Value-added information in the touch-points with the customer
Integrate KPIs, predictive models, and differentiated policies
- Call center
- Website
- APIs (application programming interfaces) available as services to banks and financial services partners

**Further work**
- Next Steps
  - Assessment, measurement, analysis, cleansing, and enrichment were large steps, but it is just the beginning.
  - More value could be added through data quality management.

- On-line Data Quality
  - Integrate Data Quality operations with Assistance Call Center
    - Company website
    - Operational applications

- Value-added information in the touch-points with the customer
  - Integrate KPIs, predictive models, and differentiated policies
    - Call center
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    - APIs (application programming interfaces) available as services to banks and financial services partners
References