Big data & advanced analytics—Does it matter for insurance? Opportunities and threats

The Boston Consulting Group

13rd Annual Roundtable of Chief Risk Officers (ART of CROs)
“Risk Management beyond Solvency II”

14-15 April 2016, Copenhagen
Big data & advanced analytics—Does it matter for insurance?
Opportunities and threats

April 15, 2016
BCG Team with strong expertise in Big Data and Risk

**Experience**

- Deep Data and Global Leadership experience in:
  - Data Strategy
  - Data Governance
  - Data Management
  - Business Intelligence
  - Regulatory Risk Data
  - Data Tools

Nic Gordon
Associate Director
London

Ofir Eyal
Principal
London

**Experience**

- Over 12 years of practical experience in working for CFO's and CROs of leading insurers
- Extensive experience in organizational design of Risk Management functions, incl. reporting lines, roles & responsibilities, committee structure, and approach to risk appetite
- Qualified Actuary
Major technology trends are dramatically changing industries and services businesses

**Pfizer** moves supply chain to cloud for better information of all partners

**Cleverbot** is a chatterbot that’s modeled after human behavior and able to hold a conversation.

**Tracking** (location & temperature) of refrigerated shipping container

**Mitsubishi** uses Epson Moverio for guided maintenance

**ABB** Human collaborative robots working side-by-side with workers

**Google** updates calendar based on traffic info

**Siemens** Prosthetic hand assembled from printed titanium parts

**Augmented Reality**

**The Cloud**

**Autonomous Robots**

**Big Data & Analytics**

**The Industrial Internet of Things**

**Simulation/3D Vision**

**Cyber Security**

*Source: BCG experience*
Big Data is having profound impact on insurance industry

<table>
<thead>
<tr>
<th>Digital Trend</th>
<th>Implications for Insurers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone users growing with 46% per yearly to 2.3B in 2018</td>
<td>&quot;Mobile-first&quot; design of new entrants offers superior customer experience</td>
</tr>
<tr>
<td>Today 73% of global internet users are on social networks</td>
<td>Enables distribution via affinity groups and peer-to-peer insurance</td>
</tr>
<tr>
<td>Number of connected devices increasing with 41% per year</td>
<td>Internet of Things enabling new insurance models (e.g. &quot;connected home&quot;)</td>
</tr>
<tr>
<td>Data growing exponentially, 90% created in the past two years alone</td>
<td>Data analytics enables customizing of offers, price differentiating &amp; risk mgt.</td>
</tr>
<tr>
<td>Rise of digital ecosystems</td>
<td>Enables disruptive propositions that challenge traditional business models</td>
</tr>
</tbody>
</table>
Some challenges are evident compared to other Industries
First challenge: insurance relatively immature in data collection

Transactions are the most important sources for Big Data applications...

...with very few transactions in insurance¹

1. transactions defined as customer contacts
Source: BCG analysis; IBM "Analytics: The real-world use of Big Data*
Second challenge: existing data models complicate insight generation due to missing data consolidation and consistency

Current data model

Customer

Insurance

Third parties

Typical issues

1. No consolidation of customer data over all lines

2. No updates of customer data using standard requests (e.g. call center contact, online...)

3. Many relevant data (calls, emails, claims) remains unstructured due to manual handling by team with low manpower

4. No access to data of external insurance agents

5. Seldom purchase of data from outside providers

---

1. Leading to incomplete customer data, e.g. information on marital status for only 20% of customers (German insurer); information on product interactions for only 28% of customers (US insurer)

Source: BCG case experience
### Third challenge: structured customer data is often incomplete or unreliable

<table>
<thead>
<tr>
<th>Data category</th>
<th>Multiliner (Germany) Revenue: €15bn</th>
<th>Multiliner (US) Revenues: €10bn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>75%</td>
<td>90%</td>
</tr>
<tr>
<td>Bank account</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Nationality</td>
<td>65%</td>
<td>N/A</td>
</tr>
<tr>
<td>Position</td>
<td>50%</td>
<td>N/A</td>
</tr>
<tr>
<td>Product interactions</td>
<td>30%</td>
<td>28%</td>
</tr>
<tr>
<td>Profession</td>
<td>N/A</td>
<td>90%</td>
</tr>
<tr>
<td>Marital status</td>
<td>25%</td>
<td>N/A</td>
</tr>
<tr>
<td>Property ownership</td>
<td>20%</td>
<td>N/A</td>
</tr>
<tr>
<td>Agent contact</td>
<td>0%</td>
<td>Only for own policies</td>
</tr>
<tr>
<td>Other policies</td>
<td>0%</td>
<td>Only available</td>
</tr>
<tr>
<td>Household income class</td>
<td>0%</td>
<td>90%</td>
</tr>
<tr>
<td>Children in household</td>
<td>0%</td>
<td>90%</td>
</tr>
<tr>
<td>Household asset class</td>
<td>0%</td>
<td>90%</td>
</tr>
</tbody>
</table>

- **Multiliner (Germany)**: Revenue: €15bn
  - Age: 75%
  - Bank account: N/A
  - Nationality: 65%
  - Position: 50%
  - Product interactions: 30%
  - Profession: N/A
  - Marital status: 25%
  - Property ownership: 20%
  - Agent contact: 0%
  - Other policies: 0%
  - Household income class: 0%
  - Children in household: 0%
  - Household asset class: 0%

- **Multiliner (US)**: Revenues: €10bn
  - Age: 90%
  - Bank account: N/A
  - Nationality: N/A
  - Position: N/A
  - Product interactions: 28%
  - Profession: N/A
  - Marital status: 90%
  - Property ownership: 90%
  - Agent contact: 90%
  - Other policies: 90%
  - Household income class: 70%
  - Children in household: 90%
  - Household asset class: 90%

---

1. Demographic data only estimated by insurer – limited accuracy and usefulness
   Source: BCG case experience

---

Scoring relevance:
- Available
- Estimated data
- Not available

---

Age data inconsistent for different products (e.g., insured versus policy owner)—90% overstates amount of usable data

Only collected for self-service customers. Limited tracking and aggregation over time.
Trust will become a key competitive weapon in data usage

Create internal data stewardship

Clear principles for data collection and use
- Creates common understanding and commitment internally

Translate principles into codes of conduct
- Specific enough to be monitorable
- Focus on permissions for use

Processes to ensure compliance
- Clear metrics to monitor staff performance
- Control mechanisms to ensure data access and use in line with agreed upon rules

Engage consumers

Mechanisms to obtain consumer permission based on internal rules
- Implied consent, opt-out or opt-in

Ongoing communication to consumers
- Help understand how data about them are being used

Track & measure consumer trust over time
- Define and agree key elements of trust footprint and develop set of metrics
- Track degree to which increased trust leads to increase in opportunities to use data
Data Alliances will grow rapidly in the next 3 years

The rise of Digital Ecosystems is leading to structural changes...

- Network of providers and customers cooperating for mutual value
- Enabled by a standard technical platforms which allow products services, applications and data to work together more easily
Technology and big data impacting the entire insurance value chain

Underwriting & pricing
- Competitive forces require use of new sources of data (social media)
- Technology lead products and underwriting process
- Real time pricing (like airlines)
- More sophisticated analytics in a wider scope of LoB

Sales and distribution
- Digital customer journey
- Change to client portfolio mix
- Integrated customer experience (omni-channel strategy)
- Impact on agent network

Administration
- More frequent client interactions
- Data storage on consumer’s devices
- Cyber risk (hacking, data theft)
- New forms of payments (electronic wallet)

Claims
- Digital claims administration
- Use of technology for assessment and evidence gathering
- New types of fraud and new forms of fraud assessment
Motor, Household, Health and SME are the most affected lines of business by technology and big data

**Motor**
- Telematics
- Car sharing economy
- Autonomous cars/ ADS

**Property**
- Telematics
- Geo-analytics for U/W
- Crowd sourcing for repairs

**Health**
- Wearable devices
- Remote access devices
- Disease prevention/ cure optimization

**SME insurance**
- 'Motor insurance' like pricing
- Social media data
- Tailor made insurance

**Large Corporate**
- Use of technology in U/W
- Risk packaging/ trading
- Analytical U/W
Customer journey changes offer new opportunities of customer engagement and risk profiling

First contact
- Customer downloads app
- Customer sends Telematics/personal data to insurer

Renewal
- Customer reminded of contract end, and new offers
- Renew in click of button

After sales
- One button road assistance call
- Crowed sourcing of tradesman/garages
- Parking tips, car sharing, etc

Prospecting

Purchase

Renewal

Customer

Ownership

Claim

Acceptance
- One click acceptance
- Documents sent to smartphone
- Customer joins social groups

Underwriting
- Customer allows social data/telematics use
- Price calculated on few questions and social data

Claims filling
- One button to notify of an accident (FNOL)
- Evidence and claims tracking via

Customer alerts
- Customer receives alerts, and propositions to minimize risk
- Optional Facebook upload of driving scores

Source: BCG
Insurance risk profile is rapidly changing due to the availability of new technologies and data

<table>
<thead>
<tr>
<th>Risk category</th>
<th>Key questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>• Risk that my business will be disrupted</td>
</tr>
<tr>
<td></td>
<td>• Investing in the right technological developments (backing the right horse)</td>
</tr>
<tr>
<td></td>
<td>• Changes to customer preferences and needs</td>
</tr>
<tr>
<td>Technical</td>
<td>• Adequately using all available and relevant data in pricing and claims</td>
</tr>
<tr>
<td></td>
<td>• Client mix changes resulting from new rating capabilities and omni-channel</td>
</tr>
<tr>
<td></td>
<td>• Incorporating of the above in our risk models</td>
</tr>
<tr>
<td>Operational</td>
<td>• Transformational program proceeding to plan/ delivering right outcome</td>
</tr>
<tr>
<td></td>
<td>• Soundness of technological infrastructure selected</td>
</tr>
<tr>
<td></td>
<td>• Vulnerability of new digital platforms to internal/ external fraud</td>
</tr>
<tr>
<td>Compliance</td>
<td>• Ensuring data protection and privacy across multiple legal jurisdictions</td>
</tr>
<tr>
<td></td>
<td>• Continue to deliver on our AML and restricted entity requirements</td>
</tr>
<tr>
<td></td>
<td>• Use of big data to identify compliance hot-spots</td>
</tr>
</tbody>
</table>
## Impact on insurer's Risk Management

**Opportunities to gain operating model efficiency**

<table>
<thead>
<tr>
<th>Driver</th>
<th>Examples</th>
<th>Topic</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Data aggregation and access | • Multi-structured data  
• Big Data platform as "single source of truth" | Evolve risk capital calculation | • Develop more advance modeling  
• E.g. Credit risk rating leveraging banking credit view and external data |
| Integrated modeling and analytics | • Integrated cross functional system (Finance, Capital, Investments) | Set up smarter alerting systems | • Early identification of upcoming risks/ deviation from plan and remedial actions |
| Risk-based strategic reporting | • Strategic decision making with business oriented risk reporting | Strengthen advisory capabilities | • Identify and prevent fraud  
• Real time customer monitoring and alerts to actively manage risk profile and prevent claims |
Thank you