Cognitive decision making in insurance

From art to science

Data, data everywhere

The speed at which data becomes available and depreciates, its sources, types and trustworthiness all play a critical role in reaching informed, accurate decisions. Although the amount of data available may be a looming "pot of gold," more data isn't necessarily better. Data volume alone isn't a sufficient prerequisite for excellence in decision management in the insurance industry. To contextualize, organize and draw true meaning from data, insurers are turning to artificial intelligence (AI) and cognitive computing to augment the capabilities of their business experts.

The art of intuition

Gathering information and curating data are two keys to effective decision management. However, the ability to operationalize data for decision making is the crucial capability insurers need to survive in a world of heightened competition and changing risks.

The insurance industry has always had to balance seeking additional information while not asking for more than customers and prospects can bear. This dichotomy has created an environment where information has been challenging to obtain and made risks more difficult to assess. As a result, insurance decisions are typically made as much from experience and intuition (art) as they are from empirical evidence (science).

The "art" of insurance decision making comes from using learned associations and experience to account for missing data:

– For underwriters, using prior experience to account for unknown risk details has been central to decision making.

– Actuaries have been conducting reviews of sampled data, developing correlating hypotheses and making decisions by analyzing several years of actual loss outcomes.

– When settling claims, adjusters predict likely outcomes based upon their experience, which is employed to reduce claim costs and avoid unexpectedly large settlement amounts.

Switch versus dial

Decision bias is a drawback to over reliance on the art of intuition in decision making. In lieu of looking for missing case data or information and performing fact-based assessments, managers are finding that decision makers are applying the broad parameters of corporate policy. At times, use of policy guidance leads to simple yes or no decisions when a more nuanced decision based on risk and pricing could drive new business (see Figure 1).

Figure 1
Risk tolerance in underwriting

With intuition
Binary choice

With AI augmentation
Dynamically adjust program to risk
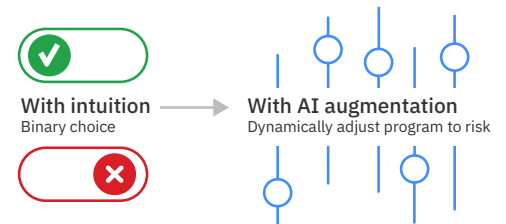
More nuanced decision making

Cognitive systems can help agents anticipate and improve customer experiences. For insurance decision makers, these systems can help eliminate routine, rote work, which gives decision makers more time to focus on complex tasks that require creativity and empathy.

Ultimately, improved data in decision making helps insurers develop and deploy much more highly personalized customer responses. Aggregating more available knowledge about the customer from internal and external information sources can speed creation of tailored products and enable more individualized service at scale. And in doing so, it can also help customers with their own decision management.

Customer focus
Consider when a small commercial account calls an insurer's service center to inquire about adding auto coverage to their policy. This call can be a signal that the customer's business is growing or changing its business activities. A review of external data, such as the organization's website, may suggest the account's insurance coverage needs are changing as well. The insurer can then reach out and more fully address the customer's needs. Another example may be data that indicates the last service center interaction a customer had with a representative turned hostile. As part of the service commitment, the insurer can plan an intervening strategy to reapproach that customer with a more empathetic representative to regain trust.

Better and more current data is yielding new business models and new products. For example, parametric insurance covers losses from catastrophic events based on triggering parameters. When a specific covered event occurs, such as a flood, hurricane or earthquake, payment is automatically triggered if parameters such as water levels, wind speeds or event magnitude are exceeded. Even the amount of the payment is predetermined, which eliminates the need for claims adjustment after the event occurs.[4]

Human aids, not humanoids

In a 2016 IBM Institute for Business Value (IBV) survey of more than 1,500 C-suite insurance executives, 56 percent said reducing underwriting risk was a high business priority, second only to improving operational efficiency. More than 40 percent said one of the benefits of adopting cognitive computing would be reduced risk.[1]

Cognitive computing helps analyze unstructured data in ways traditional computing systems cannot. With an understanding of natural language, more data can be ingested, which can then validate hypotheses with facts and learning and improve the results of analysis with experience. Cognitive computers mimic human capabilities with much greater speed and scale.

AI and cognitive computing relate to insurance in four ways:[2]

Understanding. Cognitive systems understand images, natural language and other unstructured data. For insurance decision making, systems can read the handwritten notes in application forms and doctors' letters, parse freeform claims reports and incorporate weather and other externally available data.

Reasoning. Cognitive systems can reason, grasp underlying concepts, form hypotheses, and infer and extract ideas. They can discover patterns in historical insurance claims and track them over time. By using alternative past underwriting policies, systems can analyze counterfactual claims outcomes and help leaders fine tune policy.

Learning. Cognitive systems learn from experience. When assessing a risk or a claim, the ability of some cognitive systems to read the equivalent of 800 million pages per second gives them unprecedented capabilities to review similar cases and make improved recommendations.[3]

Interacting. Cognitive systems interact with humans using human language, not code. This ability gives office insurance staff more access to specialized expertise in the form of systems that augment human insurance experts. These experts are then free to concentrate on extraordinary cases and to train the cognitive systems even further.

Decisions, decisions

Consider two of the decision-making processes in operational insurance.

1. Actuarial assessments involve loss development trending and pricing projections. Actuarial development of aggregated information into data identification of segments can be grouped for predictability. Pricing can then be developed that responds to that predictability. Integrating cross-company and cross-geography information can provide better data, including the unstructured data found in claims case and third-party data.

2. Underwriting program decisions are first informed by the actuarial guidance on risk segmentation. The pricing is then refined based on any extra data or information that provides an underwriter with a clearer sense for the risk. Better decisions can be made by following a consistently accessible way to deliver extra data to the decision maker.
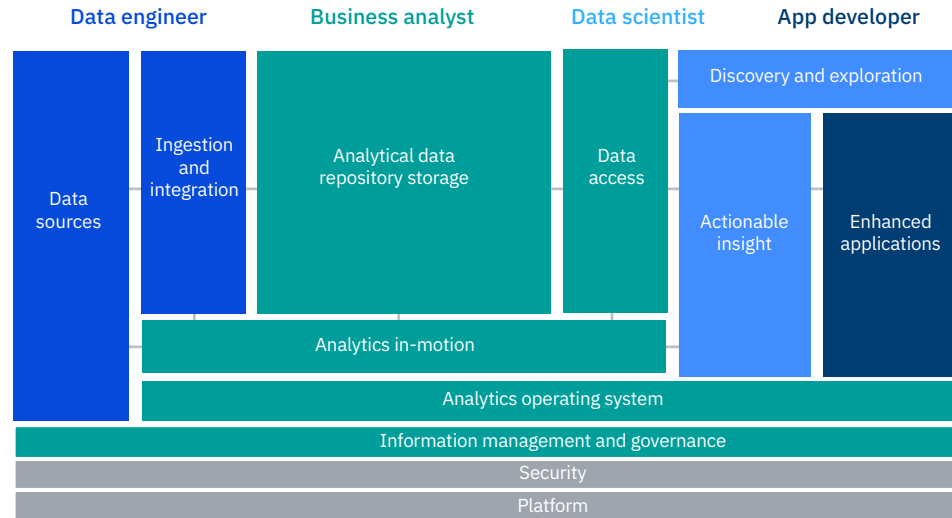
"Improved data in decision making helps insurers develop and deploy much more highly personalized customer responses."

Enterprise data governance

To help avoid missteps, the best implementations of cognitive decision making also improve how data is governed, data architecture is used and how related solutions are implemented (see Figure 2). It's common for each line of business (LOB) in an enterprise to create its own data and store it in their own repositories within the company's enterprise data repository. Each LOB may have its own data definitions and guidelines for how and where to store data. Accordingly, an urgent need exists to also establish company-wide agreements and other data governance standards and procedures.

Figure 2

| Data engineer | Business analyst | Data scientist | App developer |

- Data sources
- Ingestion and integration
- Analytical data repository storage
- Data access
- Discovery and exploration
- Actionable insight
- Enhanced applications
- Analytics in-motion
- Analytics operating system
- Information management and governance
- Security
- Platform

Getting started

In the IBV survey, 71 percent of executives at top performing companies said their enterprises have started embracing cognitive technologies, compared to 45 percent for average performers and 16 percent for under performers.[5] Time remains to engage to maintain a cognitive competitive edge, but the window is closing.

Improving how a company manages decision making isn't as simple as throwing a switch. It requires broad agreement on the "sources of truth" from which reliable data is gathered for populating the data lake or data warehouse. The data then must be made easily accessible to users for analytics and decision making.

To begin the journey, here are clear steps insurers can take:

– Review your current decision management processes. What information do you think users should have access to? Does it fit timing expectations?

– Recognize that data depreciates. How timely is authenticated data released relative to its intrinsic value? What governance process does it follow? Is it structured? Holistic?

– Determine and acquire new sources of data and internal and external information that can aid decision making.

– Establish what forms of unstructured data you can access and how it can be used to enable aggregate and transactional decisions.

– Assess employees' skills and capabilities to use new decision-management tools. Recruit, retrain and reshuffle employees to put the right skills in the right place at the right time.

Facilitate executive buy-in in the C-suite. This support is essential to help make sure investments are sustainable and initiatives can be strategic, systemic and enterprise-wide.

Experts on this topic

Kishore Ramchandani

Insurance Industry Executive, IBM Cloud and Cognitive Transformation Team
Member of the IBM Industry Academy
IBM Global Markets
kramchan@us.ibm.com
linkedin.com/in/
kishore-ramchandani-33a9a64/

John Anderson

Insurance Industry Executive
Financial Services Market
IBM Global Markets
jcanderson@us.ibm.com
linkedin.com/in/johnanderson2010/

Notes and sources

1 Bieck, Christian, Dr. Andrea Cornelius, Sandip Patel and Hirosuke Uramatsu. "Rethinking insurance: How cognitive computing enhances engagement and efficiency." IBM Institute for Business Value. November 2016 https://www-935.ibm.com/services/us/gbs/thoughtleadership/rethinkinsurance/

2 Ibid.

3 Greenwald, Michelle. "Way Beyond Jeopardy: 5 Marketing Uses Of IBM Watson." Forbes. September 20, 2016. https://www.forbes.com/sites/michellegreenwald/2016/09/20/way-beyond-jeopardy-5-marketing-uses-of-ibm-watson/#7adad89f4a76

4 Johnson, Denise. "Experts See Expanding Role for Parametric Insurance, Including for U.S. Disasters." Insurance Journal. November 22, 2017. https://www.insurancejournal.com/news/national/2017/11/22/472010.htm

5 Bieck, Christian, Dr. Andrea Cornelius, Sandip Patel and Hirosuke Uramatsu. "Rethinking insurance: How cognitive computing enhances engagement and efficiency." IBM Institute for Business Value. November 2016. https://www-935.ibm.com/services/us/gbs/thoughtleadership/rethinkinsurance/

IBM