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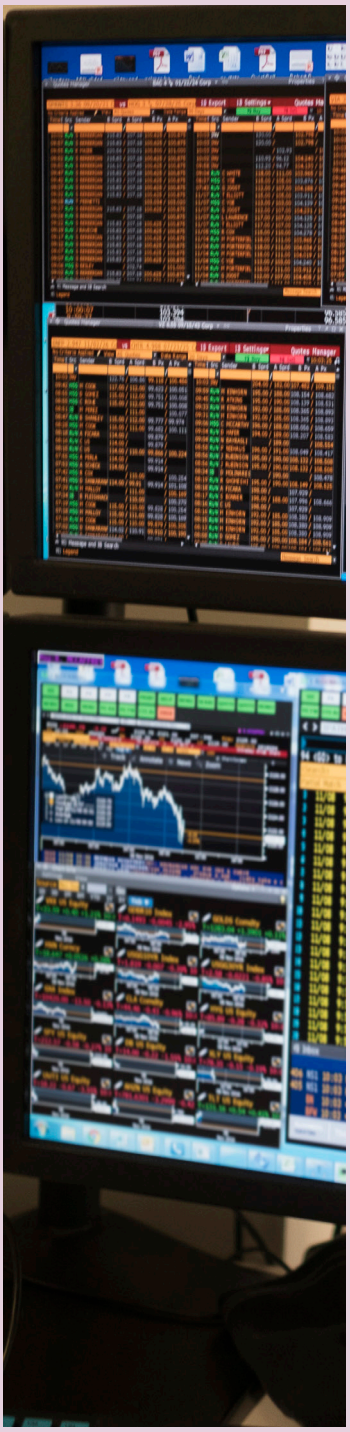

BIG DATA ANALYTICS: IT'S TRANSFORMATIONAL IMPACT ON THE INSURANCE INDUSTRY

The insurance industry runs on data, and the success of its business model is based on analyzing data to evaluate information and take appropriate decisions. Granted, insurers have traditionally been at the forefront of capturing and leveraging data, but we are now in the era of big data, which demands more than just manipulating structured and available data. Big data analytics (BDA), when used knowledgeably to drive business decisions, promises a customer-centric model that can undercut risk, and enhance profitability and customer delight.

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Big data trends in the insurance industry

For decades now, the insurance industry has run on *visible, in-house, and structured data* such as customer data on the policy form, historical behavior and trends, etc. However, new-age technologies can do a lot more with data and, accordingly, demand much more—*available and unstructured data from both within and outside the enterprise.*

This data is aggregated from multiple sources—from emails, claims notes and internal notes, to information gathered by an external third party, to data from social media. Public organizations are also opening up a treasure trove of information by making records of bankruptcies, judgments, foreclosures, criminal records, and the like publically available.

Add to this the comprehensiveness, depth and variety of data that are enabled by technologies such as telematics and call records, and what you have is an avalanche of big data with volume, velocity, and variety. **The proliferation of these external data has drastically reduced the insurer's dependence on internal data.**

Access to such prolific third-party data enables rich insight, when analyzed using the appropriate and sophisticated tools. **BDA allow insurers to understand consumer behavior, and better anticipate preferences and risks, ultimately leading to better claims management and reduced claims leakage.**

In a cutthroat industry that has traditionally competed on price, **big data offers the tantalizing possibility of customer-centric business models by leveraging risk analyses to offer differentiated pricing on products and to different customers.** Naturally then, the ability to both innovatively source data and analyze them in new ways for better insight will prove an important source of competitive advantage over the next few years.

How the internet of things is transforming the insurance industry

Increasingly, the competitive differentiator today for the insurance industry is customer experience, and the Internet of Things (IoT) offers simple ways in which to achieve an enhanced customer experience. The IoT disrupts business by facilitating new and innovative business models. Insurers already collect vast amounts of data, but IoT, by tracking customer behavior in real-time, will enable the integration of historical data and real-time insights, leading to better risk assessment and pricing.

We are now in the era of **Usage-based insurance (UBI)**, powered by data collected from the IoT. The IoT offers insurance organizations real-time and accurate data for enhanced risk identification, better pricing, customization of products and services, the ability to offer discounts and incentives, and the reduction of claim frequency and severity.

Consider the following examples:

- The auto insurance industry is the leading adopter of IoT, with connected cars that use telematics to collect and store data on driving behavior, safety standards, care and maintenance of the vehicle, etc. This data is analyzed to drive decisions on underwriting and pricing. The real-time measurement of driving behavior also facilitates rapid response post-accidents, with forensic data made available for the ensuing investigations. UBI allows insurers to offer discounts to drivers who arewilling to use telematics and share their data; further incentives can be offered to safe drivers. Additionally, the era of driverless cars is almost upon us, forecasting a future where self-driving cars will communicate with one another to avoid collisions. Imagine what this means for insurance premiums!
- UBI has an important role to play within 'smart' homes as well, where sensors that signal potential danger like gas leaks, water leaks, fire, etc. can reduce the cost of premiums and transform insurance products. The industry is already contemplating the use of drones to visit disaster areas and collect on-the-ground information to prevent fraudulent claims.
- Healthcare insurance will also be transformed with telemedicine that dispenses medicine to patients by continuously monitoring vital signs and health. Or fitness trackers that reward wearers when they achieve their daily exercise objective by offering them discounted premiums.

According to McKinsey, the number of devices connected to the IoT is set to grow exponentially (1 trillion) by 2025. This means that insurers need to rapidly build the capacity (if not already built) to analyze the mind-bogglingly massive volumes of unstructured data that will be generated by the IoT. And developing a robust BDA strategy is non-negotiable.

Big data analytics: some use cases

According to Gartner, **advanced, pervasive, and invisible analytics** will be the strategic game-changer in 2015, with increasing volumes of data generated by internal systems being combined with vast amounts of unstructured data flowing in from external sources for in-depth analysis[1].

An Illustration of a use case: Risk-based pricing and premium growth

Some segments, such as auto-insurance for instance, are highly price sensitive and competitive. Customers switch insurers often based on the best price on offer, impacting growth and profitability. By combining unstructured data such as user reviews and ratings gleaned from social media (blogs and auto forums), insurers can establish hitherto unknown correlations and understand customer sentiments in a more analytical manner. These results can be used to categorize the risk status of different models, and thus set varying premiums. This, in turn, will enable the insurer to offer competitive and differential pricing, while improving premium volume by enabling a higher premium ask for riskier products

[1]Top 10 strategic technology trends in 2015 presented in a Gartner Symposium/ITxpo in Orlando, October 2014: *http://www.gartner.com/newsroom/id/2867917*

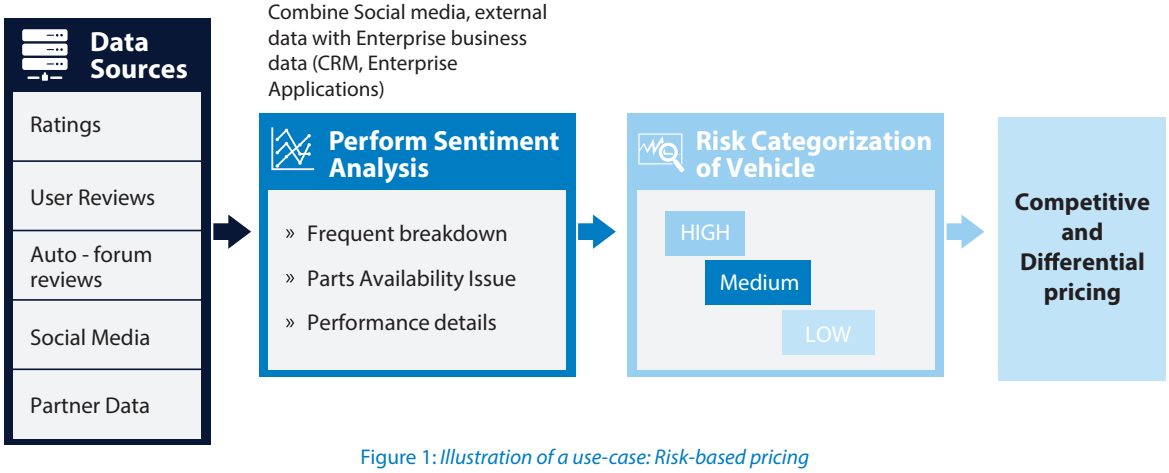

Figure 1: *Illustration of a use-case: Risk-based pricing*

The benefits of big data analytics

- Using BDA leverages valuable data assets that were thus far being underutilized (such as unstructured information in the form of emails, claim notes, etc.), significantly improving enterprise-wide information flow.
- The aggregation of data is a formal recognition of the importance of different and new sources of information. Analytics can be used to effectively leverage partner data, for instance, and allow an enterprise to share processed data with them to improve operational intelligence.
- Despite the lack of face-to-face customer interactions, it is still possible to create an accurate customer profile using data aggregated from various sources, and score this on the basis of demographics, social media, public records, etc.; thus leading to a personalized product offer and risk-based pricing.
- The aggregation of data from across multiple sources allows for a more comprehensive, in-depth, and holistic view of customer preferences, habits, etc. This information can be used to cross-sell by suggesting additional products that could add value to the customer.
- Evidently, the single biggest benefit from BDA is improved fraud detection. Analytics can help put the disparate pieces together to identify patterns at the beginning of the claim life cycle so insurers can protect against fraud.

- **A large appliance firm in USA estimated $5.1 million in the first year of using SAS for predictive analytics[2]**
- **An insurer with an annual premium volume of $200 million can save between $2-$5 million by the use of advanced analytics and predictive modeling[3].**
- **A large property and causality firm increased fraud success rate from 50% to 88%, and reduced the time required to refer questionable claims for investigation by nearly 95%.**

[2]Infosys whitepaper:
[3]Ernst and Young:

How to build, store, analyze, and use unstructured data

However, data is just that—data. How it is aggregated, stored, analyzed, and used is what transforms it into actionable information and puts a value on it. This necessitates the formulation of a **comprehensive data strategy** on the part of the enterprise—a well-defined framework for how to use this unstructured data. The data strategy should essentially cover:

- A clear view of the data that is being aggregated— different sources and locations, and different formats
- A framework to integrate structured and unstructured data to gain insight
- A detailed description of the kind of data required—not all available data needs to be collected and used. Aligning business objectives to data collection and sources to define the goal and the kind of data needed to achieve it will help identify the appropriate data sources and decide what must be archived and what discarded
- Data cleansing to ensure that data is accurate and complete
- The tools that will be used to extract value from the aggregated data
- The presentation of information in a way that people can understand and use
- Privacy concerns and policies around the use of personal data

Implementing big data analytics solutions

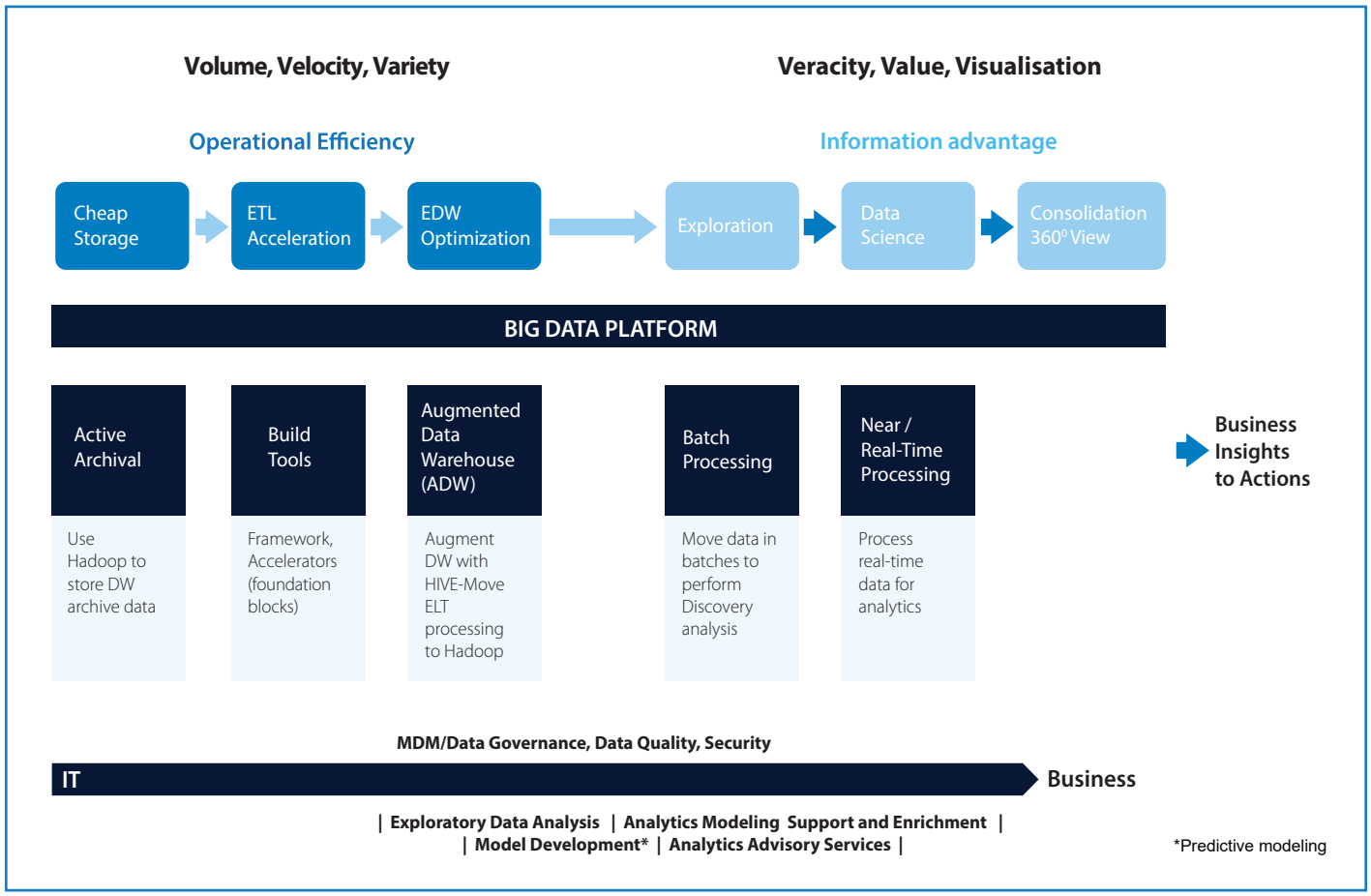

Figure 2: *Big data analytics adoption: an illustration*

Big data technologies can be deployed to target either operational efficiencies in IT or an 'Information Advantage' for Business. In the evolutionary stage, they are best suited to pursue IT operational efficiency, using:

- Hadoop for 'Cheap Storage' and to create an 'Active Archive'
- Augmented data warehouses that offer ETL acceleration and enterprise data warehouse optimization, resulting in efficiencies and cost savings
- Data lakes that use big data / Hadoop to provide a strong data foundation and create a `data factory'

As the use of Big data technologies matures and organizations move towards business transformation:

- Big data is used to manage and process huge data volumes and multi-structured data
- Hadoop 2.0 and NoSQl big data technologies facilitate real-time data processing and BDA through self-service BI
- Emerging data discovery and data visualization tools help create business insights, and enable timely actions and interventions

However, to truly leverage the power of BDA, insurers must optimize the triad of technology, processes, and people.

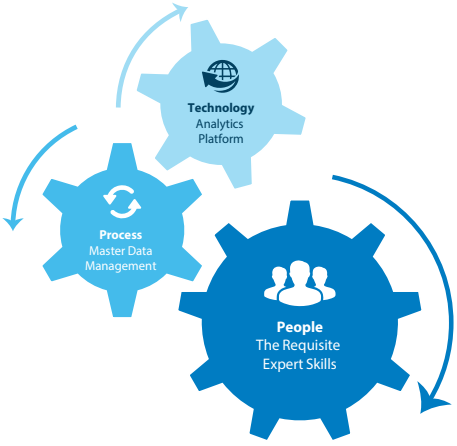

Figure 3: *Optimizing the interaction of technology, processes, and people*

Technology: Analytics platform

Enterprises should be prepared to invest in a specialized high-performing analytics platform that can process large volumes of data records, apply sophisticated analytical algorithms to these, and produce rapid and actionable results.

Process: Master data management

The sophistication of analytical tool notwithstanding, the quality of data that it operates upon is of seminal importance. Data is a valuable asset, and the quality, consistency and comprehensiveness of the data that is fed into analytical models will decide the quality of the insight generated.

An enterprise that has effective master data management in place, comprising the appropriate processes and tools to manage enterprise data, can render data qualitative and consistent.

People: The requisite expert skills

The technology used is only as good as the people who deploy and understand it. Guided by well-documented processes and operating a sophisticated technology platform, highly skilled experts can bring about business transformation. Ideally, the BDA team should comprise resources with advanced technology skills and a good understanding of the business side of the enterprise. This team could be a mix of internal and external resources, which means that insurers should partner with vendors or companies that have a deep understanding of the domain and experience in analytics.

Emerging trends focus on machine learning to automate decision-making. While it is undeniable that a machine's use of predictive modeling and sophisticated algorithms can potentially lead to better and unbiased decision-making, a machine's decisions are influenced by the quality of data that it works with. The importance of human intervention and ability to adapt to changing conditions should not be underestimated.

Conclusion

No insurer today doubts the criticality of big data in changing the way the industry functions, and the competitive advantages that it can confer on players. However, alongside investing in BDA, recruiting and training the right people, and implementing enterprise-wide processes to regulate data aggregation, insurers must also prepare for organizational change. This calls for the ability to be able to manage change. Analytics can no longer be viewed as a mere IT initiative; rather, it is a game-changer that has the potential for business transformation.

About the author

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Vijai leads the Business Intelligence practice overseeing the delivery of business intelligence, big data, and analytics engagements for clients globally in healthcare, insurance, and life sciences business. He has over 18 years of experience spanning delivery excellence, consulting and technology in business intelligence and web-based development. His customer commitment and passion for growth has seen him raise the bar for his team and create value for his clients through constant innovation and operational excellence.

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