SAPIENS

REVOLUTIONIZING INSURANCE:

The Imperative of Data-Driven Decisions in a Dynamic Market

Executive Summary

In today's rapidly evolving insurance landscape, the strategic adoption of data-driven decisions is not just advantageous but imperative. This white paper explores how data analytics, artificial intelligence (AI), and digital transformation are reshaping the insurance industry. Insights gathered from various sources highlight that data-driven innovations are optimizing risk assessment, claims processing, and customer interactions. By leveraging advanced analytics, insurers can mitigate risks more accurately, streamline operations, and enhance customer satisfaction.

Digital transformation plays a pivotal role, enabling insurers to integrate cutting-edge technologies that improve efficiency and operational accuracy. Moreover, the move towards digital and data-driven operations is future-proofing insurance companies against market uncertainties.

Embracing generative AI and automation further enhances capabilities across the insurance value chain, fostering innovation and operational excellence. Ultimately, this white paper underscores the critical importance of embracing data-driven decisions as a means to thrive in a dynamic market environment.

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Introduction: The Dawn of Data-Driven Insurance

In a world filled with data from various touch points in our lives, there is no escaping that it would eventually affect insurance business practice. In the business world, no one has mastered the art of big data quite like Amazon. Using data, Amazon personalizes the shopping experience, streamlines their operations and customer service and optimizes their entire supply chain.

Insurers, in particular, have an enormous amount of data that they acquire from interactions with customers, agents, and third parties such as medical records and telematics. This data is then used for underwriting, risk assessment, setting premiums, processing claims and personalizing insurance products. In a data-driven insurance model, insurance companies use their data to develop new solutions, create value-added services for their customers, and produce unique insights to better understand risks.

What are the factors influencing this data-centric approach?

AI and Machine Learning (ML)
AI is a critical pillar in the use of data information. For data analytics, the integration of AI enables predictive analytics and intelligent business decision making.

IoT (internet of things)
IoT is a major resource for real-time big data. It can help with preventative maintenance for homes and businesses along with the efficient management of resources and optimized operations.

Cloud Computing
With scalable computer power and storage, cloud computing is leading the way for the handling of infinite amounts of data.

AI-Driven Automation
Robotic Process Automation (RPA) automates repetitive, mundane tasks therefore, reducing human error. Automation in customer service takes shape as chatbots and virtual assistants, increasing customer satisfaction and efficiency.

All these factors directly impact the insurance industry and how it does business. Recent research by Celent says that more than 62% of P&C insurers are acting on data initiatives. Digital acceleration, a key differentiator for Life insurers, is underpinned by a new era of data production coming from a variety of sources according to Celent.

What can data do in the insurance industry?

1. Risk Assessment
2. Predictive Analytics
3. Claims Automation
4. Personalize Customer Journey
5. Improve Customer Experience
6. Enhance Communication
7. And more...

We'll dive deeper into each of these topics later in the paper, but as illustrated here, data is impacting every corner of the insurance landscape.

One of the biggest areas where data will affect the insurance industry is in decision making.

> *"The only way to realize the full potential of data science is to use it to systematically shape the what and the how of decision making, thereby redefining roles and reshaping organizational cultures."*
>
> Murli Buluswar, Boston Consulting Group

Data-based decision making does not replace the human element but rather supports it and leads to more precise decisions across functions. For instance, the automation of underwriting increases straight-through processing (STP) for business and renewals by reducing the number of policies sent to manual underwriting and rationalizing rules for greater consistency. Claims automation allows a customer experience that builds loyalty and increases first day settlements by automating decisions. Businesses can respond faster to changes in market conditions, regulatory updates, and even weather-related perils by managing business logic and decisions independently.

The Current State of the Insurance Industry

Technology wasn't always there for insurers. In the past, decisions were made manually with minimal information provided by the client or agent. The amount of information that underwriters and claims handlers had was minimal compared to what they have today. Insurers adapted technology to manage policy administration without the possibility of integration with data intelligence solutions.

These legacy systems are encumbered with old technology, a shrinking workforce, and data silos. On average about 70% of an insurer's annual IT budget is spent on maintaining its legacy systems, according to PWC. Deferring the upgrade of legacy technology creates technical debt which leads to more costly and complex migrations in the future. The longer a company waits, the harder and more expensive it becomes to rid yourself of technical debt.

Cybersecurity, a top concern for insurers due to the amount of data they amass, is imperiled by legacy technology. The technology operates on old security protocols, leaving companies at risk of costly data breaches and tarnished reputations. Solutions are created off-platform and business is being conducted on spreadsheets rather than the legacy system. An EMC study states that this is estimated at a cost of $1.7 trillion a year.

> *"For insurance firms, seamless integration of data and systems is crucial for providing efficient services and valuable analytics. Legacy systems risk creating silos of data, hindering collaboration between departments and obstructing opportunities for innovation. Combined, this can hamper a firm's ability to respond rapidly to market changes and evolving customer demands."*
>
> Insurance Edge

This means that without innovation, insurance organizations are left behind when trying to compete for new business without the use of AI, machine learning, real-time reporting, the benefits of the cloud, APIs and more.

The Need for Data-Driven Decisions Tools

The need for in-depth data analytics is helping to empower data-driven decision making which, in turn, leads to streamlined operations and enhanced efficiency for insurers. By harnessing the power of data, insurance companies can significantly improve the accuracy and speed of their decision-making processes. Through advanced analytics and machine learning algorithms, insurers can gain valuable insights into customer behavior, risk assessment, and market trends.

For example, insurers can use customer data to identify high-risk segments and tailor their underwriting processes accordingly. By analyzing historical claims data, they can develop more accurate pricing models and avoid underpricing or overpricing risks. Additionally, machine learning algorithms can be employed to detect patterns of fraudulent claims, enabling insurers to take proactive measures to prevent losses.

Real-time data analysis allows for swift responses to changing market conditions and customer needs. For instance, insurers can use data to monitor economic indicators and adjust their pricing strategies accordingly.

The insurance industry has increasingly recognized the transformative potential of data-driven strategies. By leveraging vast amounts of data, insurers can gain deeper insights into customer behavior, risk assessment, and market trends. This leads to improved decision-making, enhanced customer experiences, and increased profitability.

Here are some key statistics and insights highlighting the benefits of data-driven strategies for insurance companies:

A study by McKinsey & Company found that top performing insurance companies in EMEA using advanced analytics have seen an average 10-20% increase in profitability. But still, most companies don't describe themselves as analytics driven companies. In fact, recent research shows that up to 75% of in-house data is not being accessed and used by insurers.

According to a survey by EY, only 25% of insurers are significantly relying on advanced analytics while the other 75% understand they need to expand their use of advanced analytics to stay competitive. The same survey states that 58% are using advanced data analytics for underwriting, pricing, churn and up-selling.

These statistics demonstrate the significant value that data-driven strategies can bring to the insurance industry. By harnessing the power of data, insurers can gain a competitive edge, improve their financial performance, and deliver better outcomes for their customers.

Key Areas of Transformation

1 Underwriting Process

Traditional underwriting heavily relies on historical data and manual assessment. When an insurer can determine the value of a set of assets across the underwriting chain, it is easier to set the correct premium based on client risk factors. A data-driven environment and real-time data collection equips underwriters with better control over processes. Without quantifiable data and the means to extract it, underwriting is more complex, less efficient and not as accurate.

With predictive analytics, powered by machine learning (ML), insurers can forecast risks with greater precision. For example, telematics collected from cars can provide real-time information about driving behaviors, enabling insurers to tailor premiums to individual drivers. IoT devices in homes can provide advanced warnings of possible hazards like fire or water leaks, making for proactive risk management and prevention.

2 Claims Journey

The use of automated, data-driven processes using AI and ML can speed up the claims journey and also reduce the potential for errors and fraud. To meet the customer's desire for claims that are settled quickly and efficiently through a hassle-free experience, data-driven decision making allows insurers to rapidly process an influx of data and extract the data needed to process claims. Advanced data models equip claims teams to make informed decisions, transforming the workflow and enabling the automatic extraction of critical information to settle claims quickly and efficiently.

3 Customer Engagement

Data analytics allow insurers to communicate with customers more effectively. Tailored communication strategies, powered by predictive analytics, powered in turn by data-driven insights, ensure that customers receive relevant information and offers at the right time and even in the right place. For instance, insurers can send individualized alerts and reminders about policy renewals, coverage options, and risk mitigation tips based on customer profiles. This approach improves customer engagement and fosters long-term relationships. GenAI can provide customers with a summary of their policy and their claim, simplifying the claims and renewal process.

By using customer data such as browsing and purchase history, demographic information, and social media activity, businesses can deliver relevant offers that are useful to the customer. To balance privacy concerns and regulations, insurance organizations must focus on data that is relevant to the customer's experience and act in an ethical and transparent way.

4 Risk Management

Advanced risk modeling leverages sophisticated analytical techniques to quantify and predict potential risks. By analyzing vast datasets, insurers can identify patterns, correlations, and underlying trends that traditional methods might overlook. Insurers can:

Improve underwriting accuracy:
Data-driven models can assess the risk profiles of individual policyholders more precisely, allowing insurers to offer more tailored pricing and coverage.

Enhance risk selection:
Insurers can use predictive analytics to identify potential high-risk segments and adjust their underwriting criteria accordingly.

Optimize pricing:
By analyzing historical claims data and market trends, insurers can develop more accurate pricing models, preventing underpricing or overpricing risks.

Data-driven mitigation strategies focus on proactively addressing potential risks to minimize losses. This involves predictive maintenance to identify potential equipment failures before they occur, preventing costly claims. Data-driven tools can help insurers identify emerging risks, such as cyber threats or climate change, allowing them to develop strategies to address these challenges.

Advanced analytics facilitates real-time data analysis of IoT devices for individual and continuous premium design in usage-based insurance products and when applied to situational and real-time data, AI techniques generate contextual intelligence to be used for real-time risk assessment.

Technological Enablers

1 AI and Machine Learning

AI and ML are revolutionizing the insurance industry. Together, they can optimize and automate risk assessment processes and analyze complex data sets faster and more accurately than any human. AI-driven algorithms can evaluate risk factors to provide underwriters with precise risk scores for better pricing and mitigation. The effectiveness of AI is tied to the quality of the data it processes. Insurance companies must prioritize quality data from credible data sources to prevent biases and inaccuracies in AI-driven decisions. By ensuring a strong foundation of customer data, companies pave the way for reliable and unbiased AI outcomes.

AI has the power to transform the way the insurance industry operates. Specific use cases across the value chain in the insurance industry include support for administrative tasks in P&C. Using AI, ML and Natural Language Processing (NPL), insurers or their customers can obtain a copy of a policy or find content on a webpage, automated chat capability, handling property first notice of loss (FNOL) claims and claims intake, and requesting photos and video, reducing the time to inspect.

Complex claims, like complicated auto claims, catastrophe claims, and specialty claims can be processed quickly by AI and ML using text analysis. Increasing connectivity through APIs to coordinate different systems can capture, analyze, document and store critical claims data.

2 Big Data Analytics

This critical data, coming from all different points of collection, requires the vast amount of data to be handled by specialized analytics for big data. Once the data is collected, AI and ML can extract meaningful patterns from the data. These patterns can be used for fraud detection among other things. Traditional fraud detection systems rely on rule-based approaches, historical data, and predefined thresholds to identify fraud. While these methods are valuable, they have limitations. Shift AI, a Sapiens partner, helps to identify fraud through analyzing data from various sources including social media, public records and insurance claims. AI models can train for anomaly detection through synthetic data, adapt to new fraudulent patterns, augment data using synthetic data of fraud transactions, learn unsupervised patterns and analyze transaction behaviors. By reducing fraud, insurance companies reduce their losses and improve their profitability.

Predictive analytics can also be used to identify fraudulent claims, and to provide valuable insights into customer behavior, risk assessment, optimize pricing and react quickly to market trends. Predictive analytics can identify which customers are at risk of lapsing or switching to a competitor. By analyzing big data, insurers can engage with at-risk customers using personalized services or offers. Big data expands the pool of information for insurers which can help set premiums that reflect actual risk profiles.

Business intelligence (BI) that uses data to analyze and visualize for better decision making, helps insurers track KPIs, monitor operational performance and uncover trends that impact profitability. BI can also help segment customers into more granular groups to create tailored products and marketing strategies for specific segments. To streamline operations, BI and big data can be used to identify inefficiencies across the insurance value chain including underwriting and claims processing. STP can be increased by analyzing workflow data to identify bottlenecks and thus accelerate time-to-market for new products.

3 Cloud Computing

Insurance companies are often dealing with large volumes of structured and unstructured data. Cloud computing offers almost unlimited storage capacity and can be scaled up or down depending on need. Insurers may need more power after a natural catastrophe when data use is high for processing claims and then are able to scale down afterwards. The stored data, through the power of the cloud, is processed faster, reducing the time it takes to transform the data into actionable insights.

Actionable insights drive multiple outcomes for insurers and when real-time data is collected on the cloud, data silos are broken down and data is centralized. Everyone in the organization can access the same up-to-date information, improving collaboration and decision making. Of course, the cloud eliminates the need for on-premise hardware which can be expensive. This reduces IT overhead and frees up internal resources to focus on strategic initiatives.

These strategic initiatives can be accelerated with the use of a cloud-based platform. These platforms and their infrastructure can rapidly test, analyze and deploy solutions to accelerate the development of data-driven products, keeping insurers one step ahead.

4 AI Decisioning

In an era where data-driven decision-making is altering the insurance landscape, AI Decisioning software solutions, like Sapiens Decision, have emerged as a vital technological tool for insurance businesses. This advanced system leverages AI, ML, and business user defined decision models to automate and enhance decision-making across various insurance functions, ensuring greater speed, accuracy, and consistency.

AI Decisioning solutions play a crucial role in transforming vast amounts of structured and unstructured data into actionable insights. By empowering businesses with the capability to define their objectives, AI Decisioning platforms enable insight to action and are the bridge between data and analytics and business value and impact. By integrating real-time data sources, insurers can create fastest-path customer journeys and launch products faster with improved efficiency.

When combined with other key technological tools—such as AI, agentic AI, big data platforms, and robotic process automation (RPA)—decisioning software becomes a powerful enabler of automated, data-driven operations aligned to business strategy. It facilitates seamless data flow across insurance ecosystems, allowing insurers to:

- **Automate Claims:** By automating adjudication decisions, you can increase first day settlements for claims FNOL and give your customers a superior customer experience
- **Automate Underwriting:** Increase straight-through processing for new business and renewals by reducing the number of policies sent to manual underwriting and rationalizing rules for greater consistency
- **Improve Business Responsiveness:** Respond quickly to changes in market conditions, regulatory updates and even weather-related events by managing business logic independently
- **Transform Policy Admin System:** Decouple your business rules from your policy admin system to achieve greater flexibility, transparency and performance

In underwriting, decisioning software enables instant risk assessment by analyzing thousands of data points, leading to faster policy issuance and higher customer satisfaction. In claims processing, automated decisioning can detect fraudulent activities with high precision, reducing loss ratios. Additionally, it empowers insurers to offer dynamic pricing models, adjusting premiums based on real-time risk assessments. Importantly, AI Decisioning platforms combine machine insights with human in the loop control and explainable, auditable decisions.

Challenges and Solutions in Adopting Data-Driven Strategies

Successful data-driven strategy adoption requires a holistic approach that balances technological innovation, regulatory compliance, talent development, and customer-centric thinking. Insurers must view data not just as a technological challenge but as a strategic opportunity for transformation.

Below are some of the challenges faced by insurers in adopting a data-driven strategy and suggested solutions.

Data Quality and Integration

- Implement master data management (MDM) solutions
- Create standardized data collection and integration protocols
- Establish data quality assessment and improvement processes

Technological Infrastructure

- Invest in cloud-based platforms
- Utilize advanced analytics and machine learning tools
- Adopt scalable, flexible data management systems
- Leverage APIs for seamless data integration

Regulatory Compliance and Data Privacy

- Develop transparent data usage policies
- Implement strong cybersecurity measures
- Ensure GDPR and regional compliance
- Create ethical AI guidelines
- Establish clear data anonymization processes

Skills Gap and Organizational Change

- Recruit data science professionals
- Develop cross-functional teams
- Establish data-driven performance metrics
- Promote a culture of continuous learning and innovation

Case Studies

Success Stories of Data-Driven Transformation

A tier-one insurance company was looking to modernize their data infrastructure and seeking an insurance platform that delivered five essential attributes: future-proof, AI-based, open, modular, and integrated. The insurer's business teams were keenly aware that to accelerate technology adoption, reduce costs and stay ahead in a competitive market, they needed an industry-leading solution that innovates with intelligence. Their immediate goal was to migrate their current data platform to Amazon Web Services (AWS) and provide an enterprise-wide, consolidated view of data. By structuring and consolidating data, they wanted to improve performance, productivity, security, and user experiences, and drive tangible business benefits.

The insurer selected Sapiens DataSuite enterprise edition for their data platform, including the implementation of Databricks with Sapiens' proprietary data warehouse and data mart to structure and consolidate data across the tech landscape. Sapiens also delivered its proprietary reports and dashboards to provide insight across various functions including sales and distribution, claims, policy, and quotes.

A solution, like Sapiens DataSuite and its enhanced data processing capacity, enables the insurer to:

- Process, transform, and load more than 50 billion records within 40 hours
- Perform a daily incremental load of more than 70 million records
- Seamlessly process complex transformations
- Enable faster insights to deliver greater business value

Sapiens integrated, out-of-the-box solution, stands out for its ability to produce actionable insights to maximize the value of data for smarter decision-making.

Future Trends in Data-Driven Insurance

Although it may seem that technology cannot go further than what it already has, there is new tech on the horizon that will impact insurers. Quantum computing is a revolutionary approach to computation that uses the principles of quantum mechanics to process and store information. It can assist insurers with complex risk modeling, has enhanced simulation capabilities, faster data processing and more accurate predictive analytics.

Other trends that will impact insurers in the realm of data are of course, AI and machine learning that will provide advanced predictive analytics, automated claims processing and personalized customer journeys. The integration of IoT continues apace and will aid in real-time risk monitoring, usage-based insurance and proactive risk mitigation. Cybersecurity will become a large part of insurer's digital strategy, especially when it comes to enhanced data protection, advanced encryption, and AI-driven threat protection.

Data analytics will continue to evolve and advance with capabilities such as granular customer segmentation, predictive maintenance models, behavioral risk assessment and hyper-personalized insurance products.

> *"There is also a growing trend toward developing data products, which means establishing a data environment to support use cases such as pricing optimization, fraud detection, segmentation, churn, and lifetime value."*
>
> *Deloitte*

These trends suggest a future where insurance becomes more personalized, proactive, and technology-driven, with a strong emphasis on data-informed decision-making.

Embracing the Data-Driven Revolution

Data-driven decision-making represents a transformative approach for the insurance industry, offering unprecedented opportunities to enhance operational efficiency, risk assessment, and customer experience. By leveraging advanced analytics, artificial intelligence, and comprehensive data strategies, insurers can move beyond traditional models to proactive, predictive, and personalized insurance solutions. The benefits extend far beyond operational improvements, enabling more accurate pricing, faster claims processing, reduced fraud, and the creation of tailored insurance products that meet customer needs with remarkable precision.

The future of insurance is tied to data and technological innovation. A transformation is taking place, where insurance will evolve from a transactional service to an intelligent, predictive, and deeply personalized ecosystem. Emerging technologies like artificial intelligence, IoT, and advanced analytics will enable insurers to anticipate risks, prevent losses, and provide services that extend far beyond traditional coverage. The most successful insurance companies will be those that view data not as a tool, but as a strategic asset that drives innovation, customer understanding, and competitive advantage.

The time for incremental change has passed. Insurance companies must embrace a holistic, bold approach to digital transformation that puts data at the core of their strategic vision. This requires more than technological investment—it demands a fundamental cultural shift towards data literacy, innovation, and customer-centricity. Leaders must commit to breaking down organizational silos, investing in talent and technology, and creating flexible, adaptive strategies that can evolve with rapidly changing technological landscapes. Delay is the greatest risk; those who hesitate will fall behind in an increasingly competitive, data-powered insurance marketplace.

Sapiens Insurance Platform
A future-proof, AI-based, open and integrated insurance platform, which accelerates innovation, delivers sustained value and empowers insurers to grow, differentiate, and stay ahead. **Learn More >>**

About Sapiens

Sapiens International Corporation (NASDAQ and TASE: SPNS) is a global leader in intelligent insurance software solutions. With Sapiens' robust platform, customer-driven partnerships, and rich ecosystem, insurers are empowered to future-proof their organizations with operational excellence in a rapidly changing marketplace. We help insurers harness the power of AI and advanced automation to support core solutions for property and casualty, workers' compensation, and life insurance, including reinsurance, financial & compliance, data & analytics, digital, and decision management. Sapiens boasts a longtime global presence, serving over 600 customers in more than 30 countries with its innovative SaaS offerings. Recognized by industry experts and selected for the Microsoft Top 100 Partner program, Sapiens is committed to partnering with our customers for their entire transformation journey and is continuously innovating to ensure their success.

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