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Actuarial & Insurance Solutions

Analytics Applications in the Reinsurance Industry of Caribbean & Bermuda

Combining high quality data management with process excellence provides superior decision-making capabilities

Analytics in the Cayman market

At the core of the reinsurance industry is the reliance on data to develop an understanding of risks, costs and opportunities. These understandings drive decisions that have significant business impacts. Whether that be decisions related to the pricing of reinsurance products, performing the reserving of claims liabilities, or designing a new product/solution, organizations are in a constant state of desire for high quality insights. The quality of an organization's data and the excellence of their processes are the keys to unlock these insights.

Prudential regulatory bodies outside of Cayman have recognized the importance of data quality and integrity by issuing practice guides on managing data risk for regulated entities. The benefit of implementing these guidelines transcends the notion of governance and compliance and provides additional foundations for successful decision making.

Insights from the Bermuda Market

In 2022, the BMA released their findings of a survey about the adoption of machine learning (ML) and artificial intelligence (AI). These findings included the following:

- 62% of respondents currently do not use AI and ML systems in their operations
- Of these respondents, 23% stated that they intended to adopt AI/ML in the next 5 years
- The applications of AI and ML that are currently adopted include cybersecurity threat detection, underwriting processes, claims management, risk management, stress testing and financial reporting

As growing (re)insurers step up their analytical capabilities, the competitive landscape will pose a risk to (re)insurers that fail to gather pace on their analytical maturity. (Re)insurers with more accurate and reliable data will be able to justify having more confidence in their decision making; (re)insurers with better processes and more advanced methods will be able to gain knowledge and insights about itself and its customers that they would not have otherwise known without analytics.

What are the "Benefits" of utilizing analytics?

An uplift in analytics capabilities can lead to an improvement in a range of operations that stakeholders can benefit from:

✓ Reserving
- Coupling efficient data pipelines and processes with more advanced methods to reserve with greater speed and precision

Portfolio Management
- Identify earlier trends in portfolio performance by performing analyses with greater frequency and identifying trends quicker than with annual and quarterly assessments

✓ Risk management
- Dashboards can help risk exposures and identify underperforming portfolio segments

✓ Expense management
- With improved datasets clarity can be sought on the root cause of excessive expenses

Deloitte's Actuarial Analytics Services

Deloitte is recognized as a market leader in insurance, reinsurance, and captive industries, and our team is comprised of members that have serviced clients that span the globe through engagements and secondment placements.

Deloitte's Actuarial & Insurance team (AIS) is proficient in a range of programming languages such as SQL, SAS, Python and R. The actuarial team also has experience in dashboarding and analytical insights for clients, and we describe some case studies on the next page.
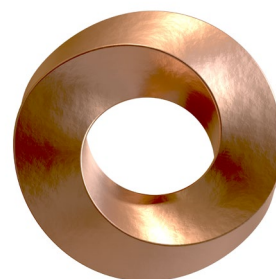
Successful Approach to Insurance Analytics

Our Deloitte Approach

Deloitte's approach to implementing analytics capabilities for reinsurance clients considers three core components:

1. **Data Management**: data is the basis of decision making in an analytical approach. The quality of the data is paramount for a successful solution

2. **Model Development and Process Improvement**: developing models that are accurate and reliable ensure that decisions will be made on the best available insights

3. **Model Implementation and Reporting**: The deployment of models enables the insights to be communicated to decision makers. The best data management and models can be redundant without a suitable deployment

Data Management

Quality data management is a key foundation to the success of analysis and informed decision making. In the age of modern databases decisions should not have to be made on unreliable or inaccurate data. This is an unnecessary risk that can be taken out of the equation. Whilst tactical fixes can be made to data issues, it is a short-sighted approach to the development of a business' greatest asset. The quality of data management should be commensurate with the gravity of the decisions that will be based on that data.

As new datasets are attained by virtue of the acquisition of new portfolios this can require experience interacting with different data environments and understanding how to maintain the integrity of data. Our team has experience working in large data warehouse environments and has the actuarial expertise to understand how the data will be used by your company.

Case Study

A large bancassurer was facing issues with developing operational efficiencies. They had no data to observe the performance of their operation. The client engaged with Deloitte to develop an application in R that was used by each member of the operational team, enabling the collection of data in a central database and provided management with the means to track operational performance.

Model Development and Process Improvement

Model development seeks to use advanced models and automate processes. Machine learning methods are being implemented in insurers to accurately price products. Organizations are replacing manual processes with automation to reduce the opportunity for human errors. Two key examples of model development in reinsurance is the development of pricing and reserving models.

Pricing

By performing higher level statistical analyses using generalized linear models and machine learning models readily available in Python and R, reinsurers are able to maximize their profitability.

Reserving

The reserving function can become more advanced with the introduction of machine learning into these methods. A machine learning approach to reserving would allow for a greater sophistication and frequency of reporting on a/an (re)insurer's reserves.

The IFoA performed a survey in mid 2020 which found that of 13 respondents 6 were already actively developing machine learning methods for reserving and 2 were actively planning to develop.

Case Study

A P&C insurer engaged Deloitte to develop models that would validate the pricing of personal lines products. The models were developed in a combination of SQL and R and identified where their pricing had risks of deficiencies.

Model Implementation and Reporting

The aim of the deployment stage is to ensure that the insights from the data and models can be communicated effectively to stakeholders and decision makers. This stage is critical to the analytics lifecycle. Model implementation can take multiple forms:
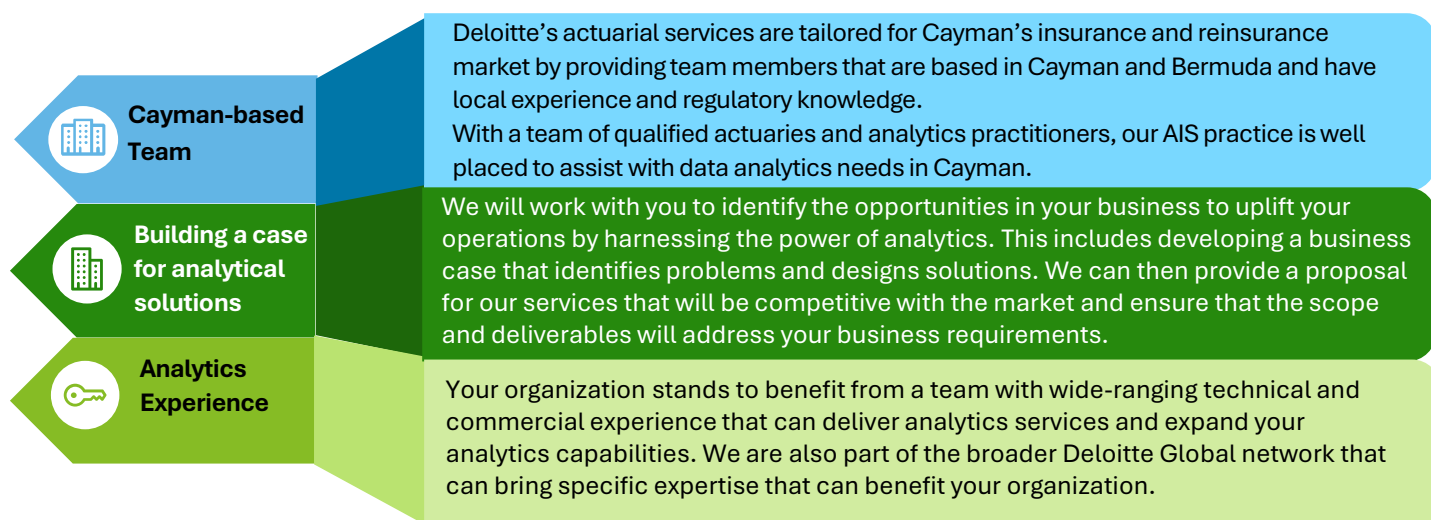
- Tactical and Visual Dashboards
- Automated Reporting
- Derivation of Business Rules
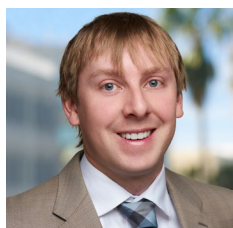- Sample Outputs from Models

Case Study

A life insurer engaged Deloitte to implement the business rules relating to commissions and perform independent calculations of commissions that were to be paid on policies. Dashboards were developed in Tableau to identify segments of policies where commissions had been overpaid to agents.

Developing Analytics Capabilities

Deloitte understands the varying needs of captives and other insurers

Cayman-based Team

Deloitte's actuarial services are tailored for Cayman's insurance and reinsurance market by providing team members that are based in Cayman and Bermuda and have local experience and regulatory knowledge.
With a team of qualified actuaries and analytics practitioners, our AIS practice is well placed to assist with data analytics needs in Cayman.

Building a case for analytical solutions

We will work with you to identify the opportunities in your business to uplift your operations by harnessing the power of analytics. This includes developing a business case that identifies problems and designs solutions. We can then provide a proposal for our services that will be competitive with the market and ensure that the scope and deliverables will address your business requirements.

Analytics Experience

Your organization stands to benefit from a team with wide-ranging technical and commercial experience that can deliver analytics services and expand your analytics capabilities. We are also part of the broader Deloitte Global network that can bring specific expertise that can benefit your organization.

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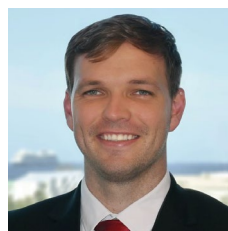
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