THE POWER TO KNOW®

The Analytical P&C Insurer

Using analytics to optimize business performance

WHITE PAPER

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Executive Summary

Insurance is a tough marketplace. It's fiercely competitive, with consumers shopping around for the lowest premium possible and little differentiation between products. It's more difficult for insurers to retain existing customers and more costly for them to acquire new ones. At the same time they face spiraling operational costs, increasing regulatory pressures and rising loss adjustment expenses.

To add to these pressures, insurers are experiencing a continuing global soft market and uncertainty in the economy. Like any other business in a difficult economic environment, insurers are tightening their expense costs.

This white paper will discuss how property and casualty (P&C) insurers are embracing analytics throughout their organizations to increase their operational efficiency, while minimizing losses and maximizing profits.

Introduction

More than ever, insurance companies need to optimize their business processes. But what does this mean in practice? At SAS, we believe that the "optimized insurer" or "analytical insurer" is one that can integrate analytics into its daily business processes to gain competitive advantage by reducing operational expenses, increasing premium revenue and ensuring regulatory compliance.

There are four main areas where insurance companies could dramatically improve efficiency and enhance business performance, aided by better executive and operational insight (see Figure 1):

- Actuarial analytics.
- Customer analytics and distribution insight.
- Claims analytics.
- Risk analytics and compliance.

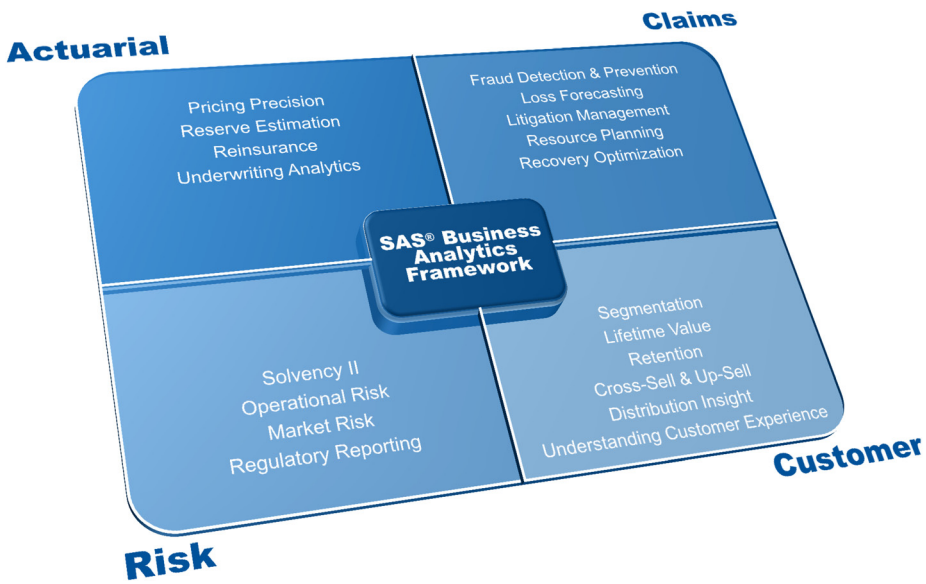


Figure 1: The analytical P&C insurer.

By using the SAS® Business Analytics Framework an insurer can obtain significant benefit and greater insight to its business and gain answers to questions such as:

- How can I reduce loss severity?
- What is the impact if premium rates are increased by X percent?
- How can I manage risk and compliance?
- What if I added a new agent in a given location?
- How can I offer the best mix of products to the market?
- What is the effect with an X percent increase in customer retention?

In order to work effectively and accurately, analytics relies on large volumes of data – and this is something insurance companies have in abundance. However, data on its own is useless without the ability to put it into a form that can help transform the business. This is where SAS Analytics software can add real value – by giving you the power to analyze, forecast and optimize business processes.

The following sections of this white paper cover each of these topics in more detail and answer the question of how analytics can be used to benefit P&C insurance companies.

Actuarial Analytics

The essential key to success and maximizing revenue is the ability to price your products appropriately, and insurance is no exception. A fundamental problem in actuarial science concerns rate setting or the pricing of each policy. The goal is to set rates that reflect the risk level of the policyholder by establishing the break-even rate (premium) for the policy. That is, the lower the risk, the lower the rate.

To gain a competitive advantage, insurance companies have been mining the data to find surrogates that reveal information about the insurable risk. In the past, actuaries have heavily relied on univariate or one-way analysis for pricing and monitoring price efficiency. Today more and more insurance companies are using multivariate statistical techniques like generalized linear modeling for pricing to develop more accurate pricing structures.

The critical question in rate making is: “What are the risk factors or variables that are important for predicting the likelihood and severity of a loss?” For example, in the automobile insurance industry, a significant, positive correlation exists between the likelihood of a claim and the policyholder’s closeness to a large urban area. Actuaries might use this knowledge to specify automobile rates by postal codes for a given policyholder profile. As a result, a 30-year-old male having one driving violation in the past three years is likely to pay a higher rate if he lived and drove in a large urban area. Although many risk factors that affect rates are obvious, subtle and nonintuitive relationships can exist among variables that are difficult if not impossible to identify without applying more sophisticated analyses. Modern data mining models can more accurately predict risk; therefore, insurance companies can set rates more accurately, which in turn results in lower costs and greater profits.

Data is fundamental to any actuarial analysis, and the amount of available data is growing at exponential rates. While data quality is often cited as a challenge for accurate pricing, so is data accessibility. Often actuaries have relied on using just a subset of historical data to run their pricing models, since the time taken to prepare the data and run the appropriate analytical models is too long. To combat this problem, insurers are turning to in-database and high-performance analytics to provide faster processing on growing volumes of data.

Advances in technology have dramatically increased the amount and type of data available to insurers to build pricing models. Today, some insurers are incorporating data from credit scoring, social media (e.g., Facebook and Twitter), telematics from in-car data recording devices, and geospatial information (like Google maps) in their pricing models. Ultimately, however, there is only one rule with actuarial analysis: "An underpriced risk is the only bad risk." And sending underpriced risks to your competitors is an outstanding method of providing you with a competitive advantage.

FCCI anticipates a 1 to 1.5 percentage point improvement in its combined ratio from being able to choose which businesses and customers to insure, and from pricing products appropriately.

Customer Analytics

"Know your customer" and "Put the customer at the center of everything you do" are key business principles. They are the modern equivalents of what previous generations of executives knew as the "Customer is king" and "The customer is always right."

In a market in which insurance products have become largely commoditized, consumers often choose their insurers purely on the basis of price. The customers have a greater choice than ever for insurance quotations, a problem compounded by the arrival of the Internet and aggregators. With little differentiation between product offerings, it is extremely challenging for insurance companies to retain customers, resulting in poor loyalty levels and increased costs.

In the face of these challenges, companies need to gain better insights into their customers and insurers are turning to analytics to determine customer lifetime value (CLV) when seeking to attract or retain customers. After all, not all customers are profitable ones.

Customer lifetime value is defined as "*the net present value of the likely future profit from an individual customer*" or, more simply, the difference between the total premium revenue received less expenses over the course of the relationship, which in many cases may be more than 20 years.

"In the first quarter after implementing SAS, sales to existing customers jumped from 7 percent to more than 20 percent."

Nagaiyan Karthikeyan
Head of Business Intelligence and Analytics, Max New York Life

But to be really successful, a P&C insurance company must make it a priority to get a 360-degree view of its customers and implement a holistic approach that includes strategies for segmentation, acquisition, retention and cross-sell.

Customer segmentation enables insurers to identify homogeneous groups within their customer base. It provides a strategic view for identifying patterns and customer behavior and helps insurers:

- Price more effectively.
- Focus attention to higher-value segments.
- Develop tactics to improve segment value.
- Retain and serve the customers better.

The most conservative statistics say that it costs five times more to acquire a new customer than retain an existing customer. For the insurance industry that figure easily jumps to 10 times more to generate new business – hence customer retention is extremely important to insurers. Insurers need to mine the vast amount of customer and policy data available to predict which customers are likely to lapse and, most importantly, to design cost-effective strategies to persuade them to stay. Even simple indicators have shown to improve retention rates. For example, customers who pay in full have a higher retention rate compared with those on monthly payment plans.

Cross-sell and up-sell help insurers increase the wallet share of their customers. Cross-sell represents selling or bundling home insurance with auto insurance, while up-sell represents adding additional coverage to an existing policy. Research by JD Power found that insurance companies that bundled homeowners and auto policies together saw their retention rates increase from 83 to 95 percent. By using analytical techniques, such as market basket analysis, insurance companies can predict which is the next best product to offer to the customer.

An insurance company that really does put customers at the center will boost customer confidence and loyalty. This in turn will translate into increased sales revenue and higher profits.

Distribution Insight

The delivery of insurance products to customers has changed dramatically in the past decade with the growth of the Internet, including insurance aggregator websites and social media. The challenge for most insurers is to how to integrate all of these channels so that the insurer has a single customer view, delivers exactly what customers want, and interacts with customers when they want.

Today, most insurance companies have one or more agency management systems. Unfortunately most of these agency management software systems lack analytical capabilities, defaulting to an emphasis on collecting data and displaying standard reports (e.g., sales pipeline). This information is reactive; insurers only react once an agent persistency rate or other KPIs fall below an unacceptable rate. After heavy investments in these systems, companies still cannot answer such questions as, “Which are our most and least valuable agencies?” In addition, what was once considered a good measure – for example premium revenue for a particular line of business – can soon become a bad measure if that particular line of business is unprofitable. Hence if the insurance company is unable to modify and adapt its strategy to a changing economic or competitive environment, it might head in the wrong direction or pursue a flawed strategy for too long.

To achieve distribution insight, insurance companies must incorporate predictive activities into their day-to-day distribution management activities. Only then will they be able to unlock hidden patterns to explain and predict business outcomes and ensure that their products are being sold through the most appropriate and cost-effective distribution channels.

The case for the use of analytics in insurance has never been stronger. By using a business analytics framework insurers can improve the quality of their decisions, such as which customers offer the best opportunity for growth and which channel offers the optimal method to connect with those customers.

Claims Analytics

Claims are by far the biggest expenses within a P&C insurance company. Claims payouts and loss adjustment expenses can account for up to 80 percent of an insurer's revenue. Thus, the way an insurance company manages the claims process is fundamental to its profits and long-term sustainability.

Claims analytics is the process to analyze both the structured and unstructured data at all stages in the claims cycle, including first notice of loss, payout and subrogation. Managing the cost of claims means making the right decision as each new piece of the claim puzzle comes into place. As a claim becomes more complex with additional information – perhaps there is a body injury element or legal considerations – so the cost and loss adjustment expenses accelerate for the insurer. It is therefore crucial to make the right offer, at the right time, to the right people while accurately forecasting the loss reserves in order to mitigate the severity of the claim.

> **"Identifying fraud one claim at a time continues to be important, but being able to detect and react to organized networks perpetrating fraud across multiple claims, jurisdictions and lines of business is where we can have the biggest impact."**
>
> **Tim Wolfe**
> *Special Investigation Unit Director, CNA*

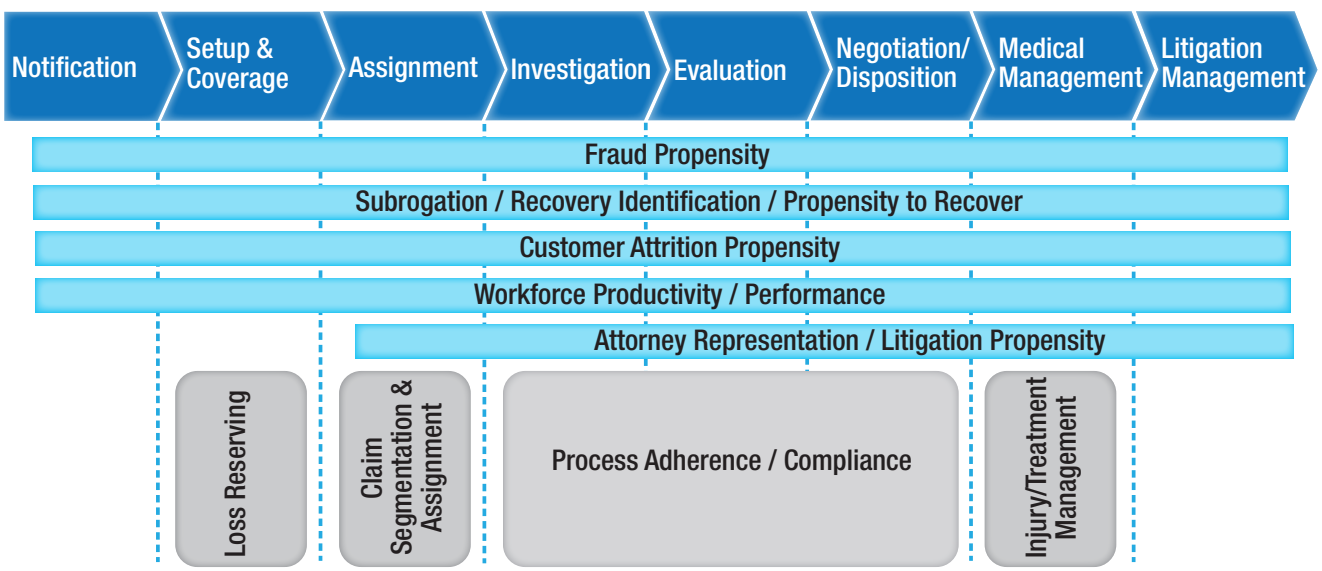


Figure 2: Predictive analytics across the claims process.

Claims fraud is already a widespread problem for insurers, and in a difficult economy it tends to accelerate. The most effective way to combat both opportunistic (e.g., loss padding) and organized claims fraud is to use a combination of business rules, anomaly detection, predictive modeling and social network analysis.

Such a hybrid approach is the only way to combat claims fraud, in particular that associated with organized crime syndicates. Being able to anticipate where the next fraud is coming from is more important in minimizing losses than uncovering existing fraud, as larger losses tend to occur before the fraud is discovered. It is therefore vital to improve the speed to discovery – and to proactively predict fraud before it happens.

Another challenge insurers face today is the inability to accurately forecast the loss reserve and ultimately predict the outcome once the claim has been submitted. Using analytics it is possible to calculate an accurate loss reserve amount and benchmark each claim based on similar characteristics, hence reducing the propensity for loss padding. For example, data mining techniques have helped insurers identify that the size of a claim payout grows significantly based on the number of days between when the claim occurs and when it's reported. In most instances the size of a claim can increase by approximately 50 percent if the insured does not report the claim within the first four days.

Insurers often only receive a fraction of not-at-fault settlement costs because they don't pursue subrogation opportunities. One of the problems is the sheer volume and type of data surrounding a claim. It is estimated that up to three-quarters of claims data is unstructured, including emails, adjuster notes, medical records and police reports. Many recovery opportunities are missed simply because the indicator for a possible recovery is hidden in the claims narrative. Claims analytics help insurance companies find these opportunities by analyzing the textual information, identifying known subrogation characteristics and optimizing associated activities; therefore, loss adjustment expenses are lowered.

Finally some insurers are beginning to use analytics to calculate a litigation propensity score. Claims that involve an attorney often double the settlement amount and significantly increase an insurer's expenses. Analytics can help insurers determine which claims are likely to result in litigation and mitigate those claims to more senior adjusters who can settle the claims sooner and for lower amounts.

As insurance becomes a commodity, insurance carriers need to consider how they can differentiate themselves from their competitors. Claims analytics can deliver the competitive advantage – not only in measurable ROI with cost savings and increased profits, but also in intangible benefits that benefit both the customer and the insurance carrier. Research has shown that a positive claims experience improves customer satisfaction and subsequently increases policy retention.

Risk Analytics and Compliance

The debate on risk management is dominated in Europe by Solvency II, but it is still a critical issue for insurers worldwide. The core business of insurance is managing and carrying risk, but many insurance companies continue to operate as disparate units, which fosters a degree of uncertainty when it comes to understanding their business risk throughout the organization. In addition, the insurance company must effectively monitor its other risk, such as market, counterparty default, and operational and liquidity risk.

All of these risks should be managed through an enterprisewide framework that allows the insurer to identify, measure, manage, report and monitor risks, and then adjust the company's risk profile in line with its business objectives and risk appetite. There must be clear governance so that all employees – from the supervisory board and executive management through to heads of business and compliance – know their responsibilities and the reporting procedures for noncompliance.

Most insurance companies have grown up over a period of time. This has led to a number of risk management regimes, differing models, modeling systems and methodologies. Many companies are using multiple modeling systems simultaneously to handle many of their risk and exposure modeling needs. This leads to a mixture of confused results, ultimately creating the conditions for inconsistent risk output and consolidated results. In addition, risks are often interlinked, and understanding how these links affect the business is important. Unfortunately most insurers lack the ability to aggregate models and correlate risk at a firmwide level.

Solvency is the financial strength of an insurance company to honor its obligations to policyholders when they arise. Insurance supervisors and regulators require insurance companies to maintain a solvency level that is appropriate to the risks in the business (also called risk-based capital). Today insurers are beginning to use economic capital as an internal evaluation of capital requirement. This is different from solvency/regulatory capital because it better reflects risks faced by a company and is based on the risk appetite of management.

SAS provides Dongbu Insurance with a comprehensive solution that handles risk management in its entirety – from managing and converting insurance specific data, generating and analyzing individual risk, to standard and ad hoc reporting.

Effective enterprise risk management is about embedding risk management into everyday processes like finance, business planning and pricing at all levels of the organization. This requires unified, quantitative software that can provide integrated, comprehensive data management; powerful predictive analytics; user-friendly, self-service reporting; and a transparent environment that lets the risk professionals manage the entire process.

Hence a business analytics framework will help an insurer meet solvency regulations by:

- Implementing an enterprise data management platform that will combine asset and liability data from operational applications across all different lines of business, then cleanse and transform that data into a consolidated enterprise view.
- Performing complex quantitative risk analysis calculations, such as the Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR) calculations necessary for Solvency II.

- Complying with regulatory requirements for transparency with a reporting mechanism that gives a clear understanding of the organization's risk position, thus enabling informed, strategic business decision making.

The turbulence in the financial markets stretched insurance companies' risk management policies and procedures. Thus any risk management approach needs to be enterprisewide – it must be formulated at the center, integrated across the organization and applied by the heads of each business line.

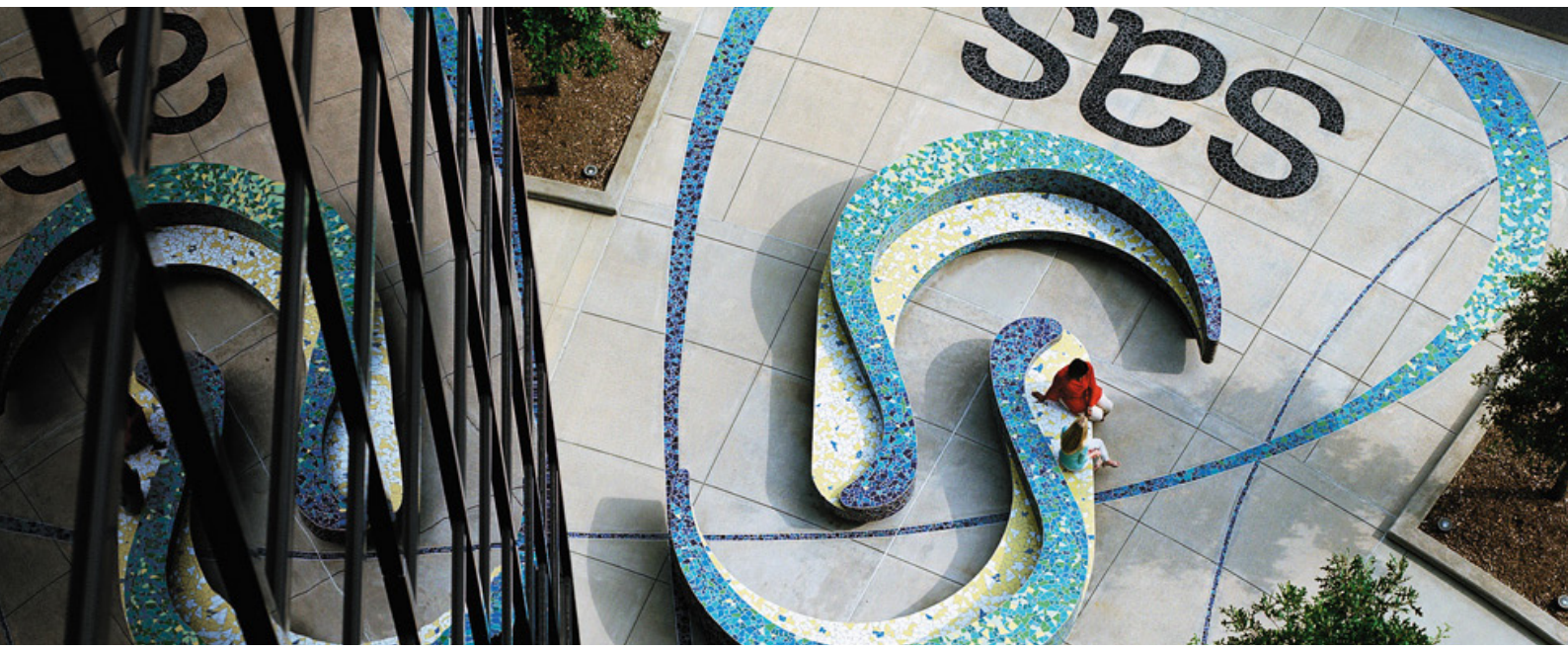
Conclusion

Analytics is certainly not new to the insurance industry. It could be argued that the first mortality tables developed in the 18th century were analytics. However the adoption rate of business analytics within insurance has been slow. Today, predictive modeling and forecasting are used by actuaries for pricing, but few insurance companies have applied analytics in a real-time or near-real-time environment.

In today's highly competitive market, it is vital for insurance companies to minimize inefficiencies and reduce losses to protect profitability. By using data proactively, companies can better understand their business, detect areas for improvement and take remedial action. Analytics is no longer just a nice accessory – it is fundamental for insurers to remain competitive.

About SAS

SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions delivered within an integrated framework, SAS helps customers at more than 50,000 sites improve performance and deliver value by making better decisions faster. Since 1976 SAS has been giving customers around the world THE POWER TO KNOW®.



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