HAYSTACK ACADEMY

Alchemy Risk Solutions Inc.

Broker Segmentation Case Study

Evaluating & Predicting Customer Performance

Version 1.0

Corporate Background

Alchemy Risk Solutions Inc. (Alchemy) is a US based carrier that writes in all fifty states. Based in New Jersey with operations centers in Princeton, NJ and Portland, OR. These operations centers house non-sales, customer focused operations (Claims, Billing & Collections, Servicing, Associated IT, and miscellaneous IT services). They have six regional offices from which they conduct their customer facing operations (Sales, Marketing, Product Development, UW). All corporate and back office functions are located in Princeton, NJ (including Accounting, Financial Planning & Analysis, Actuarial, Data Analytics, Corporate Offices, Reinsurance, Strategic Services, Corporate Marketing And Shareholder Services).

Alchemy has been a profitable carrier, that has built shareholder value consistently over the course of its history. Alchemy's origins date back to Hoboken, NJ. In 1949 two brothers, David and Saul Doniberg started the Doniberg Insurance Agency just after their exit from the U.S. military following the conclusion of World War II. During that time, the north eastern U.S. had been going through a period of adjustment. U.S. soldiers leaving the military after the war, were looking for ways to integrate back into society, and the working world. This lead to a sharp increase in small businesses being started during that time. The Greater NY metropolitan area saw expansive growth across many facets of it's economy which translated into new businesses of many types springing into existence. The Donibergs saw this as an opportunity to provide insurance services to those businesses. Their aim was to provide commercial insurance to these new businesses, helping those owners protect their investments, and meet the demands of a quickly changing business landscape. To do this, the brothers committed to a deep understanding of the products they offered to their clients, helping new and growing businesses to find the right coverage for their needs, no matter how diverse they may be. As a result, The Doniberg Agency became a leader within the Specialty E&S marketplace, helping clients (both retailers, and insureds) find the right insurance to meet diverse needs.

Corporate Background Continued

For the next 15 years, the Donibergs grew that Agency into a thriving business, with a footprint that covered NJ, NY, CT, PA, and MA. In 1955, the Agency began a period of transformation that would last for several years, beginning with a series of acquisitions that would ultimately extend their geographic footprint through New England, the Mid West and into California. In 1957, they shifted their focus from being an insurance agency, to becoming an insurance carrier. In spring of 1957, the Doniberg Insurance Agency was a profitable business. Who merged with Rohan Insurance, a family owned insurance company that had been in business for over 50 years. The CEO of Rohan Insurance was William Rohan III, and have been acting CEO for the last 15 years. Rohan expected to remain CEO for the next several years, but after his tenure it was unclear who would take over. This lack of succession prompted Rohan insurance to seek a partner. The Donibergs had been working with Rohan Insurance for a long while and had developed a "unique chemistry" that had been valuable to both organizations. It was this "unique chemistry" that drove the two organizations to discuss forming a new venture together, and it was clear that a merger would help both organizations continue to grow and prosper. Therefore, the collective leadership, created a new insurance company, transforming their agency into a risk bearing organization, and the Donibergs and Rohan went on to pilot Alchemy Insurance together for the next decade.

Through the 70s and early 80s Alchemy continued to grow its portfolio of products, and used its experience as a broker to build strong partnerships within the brokering community. As time went on they continued to innovate in the product space, now delivering products to the market that they would underwrite directly. This combined with their strong network of relationships through out the brokering community enabled a period of significant growth.

Corporate Background Continued

Their agency experience positioned them to be keenly aware of what the market demanded, and how to create value for their agent partners. This in turn enabled them to learn from their partners to find segments of the insurance marketplace that were underserved allowing for favorable margins and meaningful solutions for their insureds. Acquisitions became a central part of their strategy, buying companies that added to their capability in one way or another. Acquisitions led to more diversified products, increased distribution, and greater capital requirements over time. In order to fund this growth, Alchemy went public in 1985 as Alchemy Risk Solutions Inc.

As of 1993, Alchemy was a $2B insurance carrier, with operations across the U.S., writing business in all 50 states, and across Canada. Alchemy's business began to transform once again in 1994, as they continued to acquire other insurance carriers. This transition was driven by both market dynamics, and their need to improve efficiency. With new technology looming, and new leadership taking the helm, Alchemy looked to transform once again, and leverage the emerging technology to drive new opportunity across it's operations.

In 1995, Alchemy purchased a small technology company to help them implement new systems and transform itself. This acquisition brought with it, the first true underwriting system for Alchemy. The Alchemy Insurance Management System (AIMS) was born and the migration of operations to AIMS began and continued throughout the 90's. Through the 90's to 2007 Alchemy continued to acquire new companies (big &small), while seeking to leverage technology, increase its efficiency and develop new products. The company's focus on acquisitions and integration of many of those businesses, led to a loss of market awareness and the decreased emphasis on new product development. By 2008, Alchemy was at $6B in annual premium, across many product lines spanning the insurance market. The majority of their business was written through brokers and roughly split equally between the E&S and Admitted markets, but Alchemy was becoming more diverse with every purchase.

Corporate Background Continued

Their business spanned North America, and they had operations spread across 18 different offices. Likewise, Alchemy's business was spread across more than a dozen policy management and claims management systems. It had become clear to management, that the Company would need to revisit it's operations if it were to continue its growth while enjoying a continued history of profitability.

In 2008, under the leadership of a new CEO, James Hedge, Alchemy underwent a significant reorganization, to streamline insurance operations, simplify its distribution and product offering, and build a technical strategy that would support the new business model. Alchemy continued to grow, but its profitability was trending behind historic levels. In order to improve profitability, Alchemy decided to under take several system related projects which would transform it's operations into a more cost effective business model. These projects were designed to transform both business processes and systems, so that Alchemy could reduce the number of systems that were in place as well as the number of people that were involved in supporting their operations. From 2008 to 2011, the number of systems was significantly reduced, collapsing into 4 major policy management systems, and 2 claim handling systems. At the same time, operations were consolidated to two North American operation centers (Portland and Princeton). Sales and marketing functions were reorganized around six regions across the U.S. and 2 regions covering Canadian business.

Over this same period, Alchemy restructured its product offering to align with its brand strategy of being responsive to its partners and the markets they serve, drastically altering their product offering. While Alchemy continued to serve the E&S and admitted markets through various distribution channels, they streamlined their products which ultimately coincided with the organizational and systems transformations that were underway. The result was a much simplified product portfolio being managed by fewer product managers who represented the best talent from the various acquisitions it had executed over the course of the previous decade.

Corporate Background Continued

Since that time, Alchemy has been continuing to refine it's products, systems and strategies. In 2012, Alchemy invested heavily in "data and analytics" spending millions on new systems, and technology. These investments have not clearly paid off however. While improvements have been made in how data is being captured and managed, there have been few clear "wins" in the analytics space. Their CEO, James Hedge, has brought in several new leaders to help Alchemy further refine their business by helping Alchemy become more "data driven". Hedge wants to be able to double Alhcemy's gross written premium by 2020, and believes strongly that this growth will be generated organically, rather than from acquisition. He also has pressed existing management to use data to grow, while maintaining their profitability. Therefore each new leader has been provided clear and consistent business goals, and has been encouraged to leverage data to achieve those goals. This is where you come in….

Assignment Overview for Data Scientists

You are consultant working with Alchemy Insurance. Alchemy insurance is an insurance carrier that has operations all across the United States, Canada and Europe. While they underwrite several lines of business through multiple channels, Alchemy is currently focused on growing its commercial property business. Alchemy has had a long and robust history in underwriting commercial property across the United States. This business is marketed through agents and brokers that are located all over the US. While this line of business has performed profitability over its history, the results have begun deteriorating over the last few years. As a result of this trend the new VP of Marketing, Emily Mathews, has launched an initiative to evaluate this business so that Alchemy can find ways to improve its results.

Your team has been contracted to analyze Alchemy's brokers so that they can better manage them and revise incentive compensation plans for their brokers as needed.

Your are an analyst who has been tasked with evaluating and predicting broker performance based on historical performance. You will need to work with Alchemy to complete the following objectives:

1. Segmentation Analysis – analyze historical data to evaluate the performance of each broker over the previous three years. Define a set of measures based on what Alchemy values (in terms of its broker partnerships) to apply to the broker population annually and arrive at a value determination (segment) for each broker.

2. Based upon the data provided build a model to predict if in the next year a given producer's gross written premium will increase or decrease.

3. Based upon the results of the model you have built, and the results in year four, refine your model to again predict if broker premium will increase or decrease in the following year.

Assignment Overview for Data Scientists

Your team leader has asked you, to work with Alchemy marketing to identify which key performance measures are used by the company to evaluate broker performance, and to understand how (if at all) segmentation has been done by Alchemy in the past. Through a series of conversations and analysis you have come to understand the following:

Broker Performance Measurement

- Historically Alchemy has measured brokers by their gross written premium (GWP) volume for a given year. This measures the revenue that each broker represents for Alchemy.

- Since GWP volume has been a critical measure, Alchemy has historically considered growth in GWP as an important additional measure. However this was not always instantiated as a metric, as growth was considered to be driven by several things which were more difficult to quantify (the market, national property values, the appetite of Alchemy's underwriting, and the number of quotes being generated by Alchemy).

- Submissions are generated by a broker sending in a risk to be considered by Alchemy to determine if it is a risk they would like to quote. Generally, if a risk is within Alchemy's underwriting appetite, then they will quote it.

- Each submission may generate a number of quotes by Alchemy, this is because a range of features and prices exist for Alchemy products. Once a quote is accepted by an insured (a broker's client) then it is "bound" and becomes a policy on Alchemy's book of business.

- A renewal represents business that is covered by a carrier for a second (and subsequent) year. Changes to the policy may occur, with corresponding changes in GWP. Each renewal is "submitted" by a broker each year, despite the fact Alchemy may have provided that risk insurance in the previous year.

Assignment Overview for Data Scientists

Broker Performance Measurement (continued)

- Submissions represent potential value to Alchemy, however a submission will only be valuable if it represents a risk that the company is willing to underwrite (provide a policy for), it is quoted by Alchemy, and accepted by the insured. Therefore, Alchemy measures the following operational metrics.

  - **Quote Ratio** – this is the number of quotes generated for a broker over a given period of time (years), divided by the total number of submissions generated by a broker. This is a "level of effort" measure for Alchemy, which provides some measure of how hard Alchemy is working to address the business being submitted by a given broker.

  - **Hit Ratio** – this is the number of policies that are bound divided by the total number of quotes generated by Alchemy, as they seek to win the business submitted by a broker. This measure is calculated periodically, but has been measured for the year within the data provided.

  - **Success ratio** – this is the total number of policies bound divided by the total number of submissions generated by a given broker over a period of time. This is a cumulative measure that looks to take into account both the quality of risks being submitted by a brokers as well as the level of effort required to quote and win the business.

- Total Insured Value (TIV) – represents the value of the underlying property being insured. This is provided by brokers to Alchemy and is driven by commercial real estate values associated with the property and marketplace of the risk.

Underwriting Process Overview