



Insurance Lapse Prediction

i Introduction

Customer retention is one of the biggest factors which drives a business. Be it any sector or industry, this is a factor which can help the business sustain or lead to its downfall. Insurance is one such of a sector which is entirely dependent on customer retention. If the firms are able to reactivate the policies of the customers, which are on the verge of expiry, their business will keep running on the safe track. Hence a solution was required to help the insurance firms achieve this objective.



The solution helped the client in predicting the insurance cover of customers. Also, it helped in identifying the risky segment of customers at which the company shouldn't waste its time & resources.



Customer

The client is one of the biggest insurance firms in India. With more than 30 years of experience, it has expanded its roots in almost all the tier 1, tier 2 and tier 3 cities of the country. It handles the country's largest customer base, capturing almost 60% of the market. It provides insurance policies in various verticals like health care, life term, automobile, etc. Due to rising competition in the market, the client desired to lay its emphasis on customer retention while focusing on the customer acquisition as well. To help the client achieve this objective, a cover prediction solution was developed.



Requirement

Since Insurance is a diverse domain, various meetings were organized with the client to get the exact requirements on the table. After thorough discussions, the team pin pointed the key requirements as :

- ▶ Identifying the ongoing policies and those on the verge of expiring
- ▶ Predicting behaviors of customers
- ▶ Predicting cover duration
- ▶ Creating a database containing data on payments, transactions, claims, credit score and financial background of all the customers.



Challenges

Predicting cover duration requires too many data variables. Collecting that data from the client's database and organizing it in a form which can be accessed by the algorithm was a tedious task. Also, choosing the relevant data with respect to different queries from the abundant heaps of data was a challenging task which the team faced.



Solution

Solution for insurance lapse prediction was developed by the Winjit's Machine Learning team. A value addition of identification of segment of risky customers was implemented in the solution which helped the client in many ways. The solution was developed using a standard system and the software tools used, were R language and python.

A data set of historical rates was developed to predict the current behaviors of the customers. This was done by building behavioral metrics of customers which included the duration of their cover, previous

claims, recovery, etc. Then these metrics were used to predict the cover duration of a policy. Also, these metrics helped in identifying the customers with bad behavior, that is, the risky segment.

Data was acquired from the client's internal databases. It was then organized and distributed to maintain the consistency in the attributes. It was done to ensure that high accuracy was achieved in the results.

Feature engineering was performed for generation of new metrics based on the present metrics. Various machine learning algorithms were applied in addition with feature selection, for training the data and the one with the most appropriate result was selected.

By tuning the hyper parameters, optimal parameters for best result were achieved. This helped in minimizing the deviation between the predicted and actual value.



Achievements & Benefits

- ▶ Accuracy of about 80% was achieved in the results
- ▶ Execution time of less than a second was achieved
- ▶ Deviation between the actual and predicted values was not more than 10%
- ▶ The solution helped the client on focussing on the potential customers by segregating the risky segment from the existing segment of customers



Conclusion

The solution helped the client in predicting the insurance cover of customers. The stats helped the client in identifying the potential customers from where business can be obtained by reactivating their policies. Also, it helped in identifying the risky segment of customers at which the company shouldn't waste its time and resources.

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