Opportunities for Predictive analytics implemented for deeper insights over insurance policy databases: A review

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Abstract : Insurance sector plays crucial role in the economy of India. Some of the impacting key factors of insurance industry is Rising awareness, Accessibility, Affordability, Regularity reform and Economic growth. Insurance sector has picked fast growth in India. There are many life insurance companies in India which safeguards an individual's life with benefits. Among these, Life Insurance Corporation of India (LIC) plays a leading role in insurance sector. This study aimed to analyse insurance risk coverage of selected target population to determine their preferences, determination of key indicators, identifying the main factors influencing the preferences towards insurance products using data mining. This deeper learning will help to predict future customers preferences to design innovative product and better management of the LIC.

Keywords: Insurance schemes, Data Analytics, Pattern Discovery and Deep Learning.

I. INTRODUCTION

Life insurance corporation is one of the most prominent insurance firm of India. It is the most trusted corporation celebrating more than sixty years of faith, loyalty and assurance of people. It is also known as pension provider of India. The primary objective of Life insurance corporation of India is to provide life insurance policies to all the domain of the community and to provide life insurance services and financial cover to the low-income segment at an affordable cost in rural areas of the country. It is the largest life insurance firm in India. The headquarter of LIC is in Mumbai. It has 8 zonal offices in India. LIC has 113 divisional offices with 2048 branch offices in India. It has 1408 satellite communication branches, and all offices are connected by a vast network which is enabled to ensure the payments of premium anywhere across the nation. It also consists of 54 customer zones and 25 metro area service hubs located in different cities of India. LIC has crossed many milestones and has set unprecedented performance records in various aspects of life insurance business. [1]

Insurance is really process related business handling claims on the sales side you need to make sure that it doesn't waste time and don't waste resources. Insurance industry hold massive information of customers. Predictive analytics helps correlate data to significant action by bringing out a valid conclusion about current circumstances and future situations. Insurance providers have access to huge amounts of information. Predictive analytics harnesses this data solve problems, improve performance and drive better business outcomes. Data mining is a powerful new technology with great potential to help insurance firms like LIC to focus on the most important information in the data they have collected about the nature of their potential customers. Data mining assist insurance sector in predicting needs, choice, preferences, considerations and predicting the customer's pattern which customer will buy new policies. [2]

II. INSURANCE SCHEMES

The insurance sector in India has come to a position of very high potential and competitiveness in the market. LIC is the biggest public sector company providing their services to millions of people in India. The insurance sector is divided into life, health and non-life insurance. There are lots of insurance schemes in India some of them are government schemes and non-government schemes. The insurance schemes are administered by various Central Ministries through insurance companies. For most schemes, the role of insurance companies is limited to settling claims forwarded to them. The responsibility of implementing the scheme lies either with the State Government or Central Government. The implementing agencies act as links between the targeted groups and the insurance companies. Both public and private sector insurance companies are involved in operating the insurance schemes. In most schemes, the notable exceptions being health insurance schemes, the public sector insurance companies dominate the operations. In health insurance schemes, the three private sector insurance companies are also important players along with the public sector insurance companies.[5]

In most schemes, financial support by the Government of India is in the form of premium contribution. The government's insurance schemes, Pradhan Mantri Jeevan Jyoti Bima Yojana and Pradhan Mantri Suraksha Bima Yojana are likely to see an upward revision in premiums in the upcoming financial years. There are two broad categories of insurance policies - life and general. Insurance policies can be purchased online and offline. Insurance provides us with a financial shield against the various uncertainties of life. While you can take health insurance to safeguard yourself from financial difficulties arising out of health problems, an accident cover can help cover monetary loss arising from accidents. It is imperative that you choose the right type of insurance to secure yourself and your family from financial risk. With the right combination of policies, you can insure almost all of your assets and live worry-free.[5]

III. DATA ANALYTICS

Analytics is an essential skill for running any kind of business successfully. Common applications of analytics include the study of business data using statistical analysis in order to discover and understand historical patterns with an eye to predicting and improving business performance in the future. Analytics is the technique of cracking the problem into simpler factors and using theories based on data to make conclusions. Analytics is neither a tool nor technology, preferably it is a way of thinking and acting. Business Analytics identifies application of analytics in the sphere of business. Today Analytics is used for strategic, operational and tactical decision making across industry verticals such as Retail, Health care, Education, E-commerce, Banking and Finance, Sports, Telecom, Manufacturing and Retail. Analytics can not only help companies but it can add value to other marketing functions as well, by gathering data across all marketing channels and consolidating it into a common marketing view. It helps measure, manage and analyze marketing performance to maximize its effectiveness and optimize return on investment. [8]

Data analytics is the science of analyzing raw data in order to make conclusions about that information. Many of the techniques and processes of data analytics have been automated into mechanical processes and algorithms that work over raw data for human consumption. Data analytics plays important role in data mining. Data analytics techniques can reveal trends and metrics that would otherwise be lost in the mass of information. This information can then be used to optimize processes to increase the overall efficiency of a business or system. Data analytics is used in many industries to allow companies and organization to make better business decisions and in the sciences to verify or disprove existing models or theories. Data analytics is distinguished from data mining by the scope, purpose and focus of the analysis. [7]

IV. TYPES OF DATA ANALYTICS

4.1 Descriptive analytics

Descriptive analytics looks at past performance and understand that performance by mining data to look for the reasons behind past success or failure. It also captures and qualify relationship among factors to allow assessment of risk or potential association with a regular set of conditions and guiding decision making. It can be utilized to develop further analysis that can stimulate large number of individual agents and predictions. Descriptive analytics is to describe or explore any kind of data. Data exploration and data preparation is essential to rely heavily on descriptive analytics. [9]

4.2 Diagnostic analytics

Diagnostic analytics focuses more on why something happened. It looks into the cause of a problem. Diagnostic analytics helps you understand the underlying causes for the observed data. This involves more diverse data inputs and a bit of hypothesizing. Diagnostic analytics identifies factors and cause from historic data. This analytics characterized by techniques such as drill-down data, data mining and data discovery. [7]

4.3 Predictive analytics

Predictive analytics uses data to determine the probable future outcome of an event or a likelihood of a situation. It encompasses a variety of statistical techniques from modelling, machine learning and data mining that analyse current and historical fact to make predictions about future events. In business, predictive models exploit patterns found in historical and transactional data to identify risks and opportunities. Predictive Analytics functions by observing patterns and chronological data and also using statistics to make presumptions about the future. At a very simplistic level, we try to fit the data into a particular pattern and if we believe the data is pursuing a certain pattern then we can expect what will happen in the future. [8]

4.4 Prescriptive analytics

Prescriptive analytics synthesizes data, mathematical sciences, business rules and machine learning to make predictions and suggests decision options on how to take advantage of a future opportunity or mitigate a future risk and illustrate the implication each decision option. It is not only anticipates what will happen and when it will happen, but also why it will happen. Prescriptive analysis can continually process new data to improve prediction and provide better decision options.[9]

V. PATTERN DISCOVERY

Patterns, actually are a set of items subsequence or substructures that occur frequently together in a data set we call this strongly correlated. Patterns usually represent intrinsic and important properties of data. That's why Pattern Discovery is the process try to uncover, try to mind patterns from massive data sets, it has many interesting applications. The discovered method must have the capability to resolve the additional data difficulties and let the customers practice at least exertion to find the data they require. The emerging tools for user pattern discovery use sophisticated techniques from AI, data mining, psychology, and information theory, to mine for knowledge from collected data. Data Mining involves an in-depth analysis of data, discovery in databases and model-building. Analysts need to possess an in-depth knowledge regarding association and clustering of data to form relevant data patterns before drawing any conclusion. There may be alterations on identifying data sources and formats even after analysts reach at any outcome.[3] [6]

VI. DEEP LEARNING

Insurers are seeking different ways to enhance the customer experience. Deep Learning can vividly improve interaction experiences at different customer touch-points. Deep Learning provides a set of tools and techniques that take in humongous amounts of data, process it, and consolidate the results such as customer data, insurance claim, membership data, premiums and benefits provided, etc. This outputs precise results and reduces the losses incurred by executing the required set of actions, which

in turn helps in fraud detection at an incredible rate. Deep learning is being applied for insurance applications and how it can help automate a large amount of processes including customer onboarding by digitizing documents and automatically extracting information from big data. [10]

Deep Learning can help in forecasting customer trends (cross-buying) that affect the company's income in the future. It helps in conducting assessments to check whether a customer is a potential asset to the company or not. When Deep Learning models come into the picture here, they process these inputs and provide the customers with their matching preference, and thereby, puts the customers on the hook all along. Deep Learning can be used to train a model with possible to be fraudulent claims, extract the insights, and stop the further possibility of undetectability of the fraudulent claims. Insurance fraud usually occurs in the form of claims. A claimant can fake the identity, duplicate claims, overstate repair costs, and submit false medical receipts and bills. Mostly because of disconnected information sources, Insurers fall victim to fraudulent activities from customers. Now, here's the challenge, how to unify different data sources, which, to date, even include offline receipts and manually scanned documents. Depending solely on human intelligence might not give accurate results, however, a machine can quicken the process of identifying fraudulent actions, and henceforth, avoids the possibility of falling into the trap.[4]

VII. CONCLUSION

This review paper elaborates that how data mining is useful in big data such as Insurance sector where we need to extract data, segregate data. Mainly this paper focuses on customers and develop new products as well as increasing the product plans and improving service levels using advanced data mining techniques. It can enhance an insurance business process. This paper only reviewed on Life insurance corporation of India and on their policies as well as on customer review.

VIII. ACKNOWLEDGEMENT

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