New Era of Credit Analysis

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Abstract

Credit analysis is the evaluation of the credit worthiness of a business or an organisation done through historic data like audited balance sheets, forecasts in the form of budgets and cash flow, ratings given by credit rating companies, analysis of ratios, capital marketisation, share prices and many more benchmarks. However, in today's world, "Big Data" is what is being spoken about by all. Data is collected every second from various sources like social media sites, online and offline purchases and so on. The emerging era of credit analysis is based on consumer behaviour online; their likes and dislikes, preference for the products they purchase and so on. Everything is recorded through "Big Data" and is accessible to judge whether a person is worthy of credit or not. All these are studied through complicated mathematical computations to analyse sequences of information within an ocean of data. These credit scorings can be provided within no time and are equally cost-efficient. The study focusses on the effectiveness of big data for credit analysis.

Keywords: Big data, Data mining, Credit analysis, Credit scoring

1. Introduction

In the 2000's, creditworthiness was based on audited balance sheets, ratio analysis, credit scores by rating companies and any major news about the companies or individuals through the

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internet. The credit also depended on the previous repayment pattern of the customer which was monitored through the company's own accounting system. These were some of the parameters on which the customers were given credit. If the customers failed to make the payment, their creditworthiness scoring would reduce and it would be difficult for them to obtain loans in future.

Traditional credit analysis techniques at banks and financial institutions are becoming less popular in today's era of huge data generation. Millennials are more connected through social networks than ever before. Therefore, all possible data can be retrieved and accessed through technology within no time. This leads to better opportunities when analysing the contents of Big Data. To know the creditworthiness of a person, one no longer needs to assess his/her bank statements or balance sheets, search for a guarantor or ask for surety.

From the past 10 years, banks and financial investors have only increased their use of Big Data tools to analyse the financial ability of their customers. With India going cashless due to the implementation of demonetisation by the current BJP led Government, there has been a tremendous increase in the use of smartphones and automatic modes of online transactions. Every consumer has traceable records of data that creates a digital footprint. This, in turn, is used by financial investors and credit analysts to predict the consumer's creditworthiness (Hurley & Adebayo, 2016).

2. Conceptual review

2.1 Traditional credit rating analysis

Usually, every prospective lender be it a bank or financial institution will review the loan request in detail. This can be done in various ways: The "Five C's" are the basic elements of credit evaluation.

2.1.1 Capacity to pay without any default

If the customer is a company then the financial statements are assessed. The main ratios are calculated for example interest

coverage ratios, debt-equity ratios, return on income, earnings per share and the market capitalisation of the company if it is a listed company. This factor is most critical as every prospective lender analyses the repayment capacity of the customer to avoid default risk.

The Cash flow statement of the company can be analysed from the balance sheets. Other parameters include the client base of the customers and any good business proposals in hand. The lenders also scrutinise the loan proposal on the basis of transactions made in the past for either personal or commercial loan. This would indicate how the customer will make payments in future.

2.1.2 Capital invested by customers

Prospective lenders are always interested to know the extent of capital the customer has already invested from their own assets and the amount of financial risk they have taken up to establish the business.

In case of salaried customers, the prospective lenders would look into the number of years they have been working, the financial backup, property papers in case of house property or mortgage papers in case of the car loan. The creditworthiness in terms of transactions on credit card payments is also verified for any defaults or delayed payments.

2.1.3 Collateral or guarantees

Collateral means that the customer will mortgage an asset he/she owns, such as property, to the lender with an undertaking that it can be sold to recover his loan in case he is not able to pay back the loan amount. A guarantee, on the other hand, is a third party who will give a formal assurance by signing the loan document agreeing to pay the loan himself if the customer defaults in repayment. At times, few financial banks and financial lenders may ask for both collateral and guarantee as a backing for a loan.

2.1.4 Conditions that describe the economic feasibility

The banks and financial institutions will need to evaluate whether the loan borrowed is expended for working capital or for the purchase of fixed assets. The lender will verify the current changes

that affect the share prices of the company, for example, the sensitivity of the share prices to the resignation of key personnel of the company, changes in the management of the company, talks of acquisition or mergers, striking a good deal with suppliers, announcement of marriage ties between two business families and so on.

2.1.5 Character with regard to the responsibility and trustworthiness

Verification of customers' educational background, their experience in business, the references provided by them will have an overall impact on the trustworthiness of the customers. At the end of the day, the lenders or investors make sure that the customers are capable of repaying the interest and instalment and that there are no defaults on repayment.

The above is the traditional way in which loans are provided. It takes considerable time and energy to verify each and every document provided by the customers and the contacts or references given. Despite verification, the lenders or investors are not guaranteed the authenticity of the information provided. But with the advent of technology and Big Data, the 5'Cs will no longer exist.

3. Understanding Big Data

Big Data means a large volume of data. This data can be both structured and unstructured. It can be used to form models and designs, complicated mathematical computations, market analysis, customer preferences that can assist companies to take better decisions and so on. But the relevance of Big Data lies in how the companies make use of this data. Big data can be analysed to interpret data and help companies take better decisions and strategic business moves. Even during the 1950's, data was used and basic analytics was done through the use of a spreadsheet. This was manually examined to analyse the insights and trends. Big Data analytics caught its momentum in the early 2000s because of its ability to work faster, stay agile and give a competitive edge to the organisations in terms of decision making. It further developed

and gained popularity when analyst "Doug Laney articulated the now-mainstream definition of Big Data as the four Vs".

3.1 Volume of information

Organisations gather information from several sources: day to day business proceedings, social networks, and "sensor or machine-to-machine data". Accumulating this data has improved drastically with improved automation like "Hadoop" that has helped to manage data in a big way.

3.1.1 Velocity- The Big Data analytics gained popularity for its exceptional speed and its easy availability. Information about any substance, person, likes and dislikes, and the movement of any commodity or person can be tracked easily. There are many methods of collating data like "RFID tags, sensors and smart metering" which call for the need to manage data in a big way.

3.1.2 Variety- The information can be structured or unstructured. Structured refers to data generated by machines and humans. This includes numeric data, data from medical devices, GPS, trading platforms and the personal details which we give on the internet like name, phone number, the website we visit and many more. Unstructured data does not have any clear format in storage and accounts for more than 80% of the data collected.

3.1.3 Variability- In the process of increasing velocities and diversities of data, information can be highly discordant with cyclical highs and lows. During festivals, mega clearance sales or discounted price reductions, we see a lot of purchases being done as well as exchanges of messages through Facebook and Instagram. The data stack is also event triggered especially with unstructured data.

3.2 Big data's "big potential"

The data gathered and accumulated on a global level is almost unimaginable and it keeps multiplying every second. More than 500 terabytes of data are uploaded on Facebook alone on a single day. So one can imagine the data created through other social networking sites, online as well as offline purchases. This implies that there is a lot of potential for analysis in terms of business

information. As only some percentage of data is only analysed, there are untapped resources for analysing data. Organisations are yet to make use of the data available. Big Data can be used in all sectors and across various industries. In tourism, healthcare sector, manufacturing, finance, and marketing, the list is endless.

3.3 Credit analysis by using Big Data

Before we understand how Big Data is useful in credit analysis, we need to know some terminologies like "Machine learning" and "Algorithm".

Hurley and Adebayo (2016) provides an explanation of the same:

> An algorithm can be described as any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values, as an output. An algorithm is thus a sequence of computational steps that transform the input into the output.

They also provide a detailed description of machine learning. (Hurley & Adebayo, 2016).

> The term machine learning means a set of methods that can automatically detect patterns in data and then use the uncovered patterns to predict future data or perform other kinds of decision making under uncertainty. Once the process of machine learning is complete, the data scientist uses the patterns and insights detected in the data to design a final model (or set of models) that can predict a desired outcome.

3.4 How credit analysis is done?

With the help of Big Data, credit analysts are able to take precedence of a large diversity of non-structured data, including details collected from social networks, the transaction history through online and offline purchases and statistics obtained from social media or taken from various agencies. To manage the huge mass of data, credit analysts have to rely on more complicated mathematical computations and analytical methodologies. With the

data collected, the credit scoring organisations come to know about the spending pattern, behaviour, their living standards and purchasing power (Hurley & Adebayo, 2016).

The credit analysis through Big Data can be done in limited time, unlike the traditional method. Not only is the cost involved lesser in the former but it also gives more accurate information regarding the creditworthiness and the financial history of the consumer. With Big Data, the consumer behaviour pattern can also be assessed and predicted.

4. Scope and effects of using Big Data for credit analysis

4.1 Companies using Big Data

Zest Finance- Incorporated in 2009, Zest Finance is into Big-Data credit-scoring tools. They provide payday loans which are short-term, high-interest loans. They also offer such loans through their subsidiary, Zest Cash. Till now, the company has provided "more than 100,000 loans" (Lippert, 2014).

Hurley and Adebayo (2016) observe that

> Zest Finance uses an "all data is credit data" approach that combines conventional credit information with thousands of data points collected from consumers' offline and online activities. The Zest Finance model takes into account how quickly a loan seeker reads through an online terms-and-conditions document, which in terms of the company's CEO indicates how responsible the individual is. Any traces of a person willing to give up social network connections might indicate that he is an unpredictable or speculative borrower.

4.2 Threats of using Big Data in credit analysis

Every business has its own risk and so does Big Data. A business can fail on numerous grounds: inefficient management, lack of funds, improper implementation, and skill sets. There are always certain risks attached to Big Data with regard to Data Security and Data Privacy.

4.2.1 Data Security- This risk is important when one considers the logistic aspects of data gathering and interpretation. Breach of security is rampant and increasing day by day.

4.2.2 Data Privacy- The inherent risk with violation of data security is the threat of privacy. The confidentiality of data is at stake as there is a large amount of information lying available. If there is a breach of privacy, the reputation of the company is bound to suffer. While ensuring that personal data is safe from data hackers, one needs to be confident that private information should not be revealed. Also, enough measures should be taken to avoid misuse by people who are in charge of analysing the data for credit analysis (Estuate, 2017).

5. Conclusion

The greatest advantage of Big Data is the speed at which data can be collected and interpreted. This remarkably helps in taking quick decisions. Secondly, it is cost effective as the time involved in interpretation is less. The consumer's behaviour sequences can be analysed in no time and can be predicted in terms of their purchase pattern. This helps to interpret the purchasing power of the consumer. Further, it helps in analysing emotions through messages on social networking sites (Newgenapps, 2017).

Big Data is developing in a "Big" way, though it has its own threats to privacy. It is more accurate and less time consuming and leans more towards behavioural analytics. It also defines the attitude of the credit seeker in relation to his emotional quotient that gets reflected in his social media and online and offline purchases. Therefore the Emerging Era of Credit Analysis is "Big Data".

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