

Application of Big Data Analysis in Credit Risk Control of Commercial Banks

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Abstract

Big data has revolutionized the access to and management of credit. The use of big data is significantly related to reduced credit risk as it is more effective a means to assess the creditworthiness of loanees and reduce loan default rates. This study integrates the use of both primary and secondary data collection plus a linear regression analysis and correlation analysis to assess the change in credit risk as a bank adopts the use of big data. Such assessment would also consider other bank and household-based factors that could affect credit risk such as debt to equity ratio and debt to income ratio respectively.

Keywords

Big Data; Credit Risk; Commercial Bank.

1. Introduction

The credit system is an invaluable aspect of any market economy and financial industry [1]. Credit risk control is thus quite essential for banks given the good consumer environment that a sound credit system help creates [1]. Nevertheless, the conduct of credit risk control is continuously infusing more data as the market economies expand and the level of consumers seeking credit increases. Banks as primary credit offering entities must infuse the use of Big Data to enhance their credit control systems. Such data is crucial in understanding consumers and reducing the levels of defaults on any loan while also ensuring that the credit instruments are effectively used. Credit risk is thus the chance that a bank borrower or counterparty will not dully fulfill their financial obligations as per the terms of the agreement. Consequently, the banks may stand to lose out on a given loan or associated interest payments. To avert a credit crisis and a chance of a credit crunch, banks must increasingly manage their structured and unstructured credit data sets to reduce any chance of defaults and losses as a result of mismanaged consumer data.

2. Specific Content and Discussion

Banks have a profit maximization goal and thus must maintain their risk exposure within acceptable levels. The proper risk management enhances the bank's chance of maximizing its brisk-adjusted rate of return and keep it competitive. In so doing, they must reduce the chance of any defaults by a borrower or a counterparty [2]. Such defaults have significantly increased in the past year as the world struggles to contain the novel coronavirus. The lockdown measures under the coronavirus pandemic have resulted in increased levels of job losses, reduced levels of disposable incomes, and increased levels of defaults on bank losses [2]. An assessment of the credit risk control measures is thus essential for banks as they recover from the economic blows of the pandemic and seek to build a robust and sound financial system going forward [2]. Such success is attainable given the use of Big Data. Big Data has lowered the cost of acquiring, managing, and analyzing data-enhanced considerable and continuous steps

in risk management. Big Data is useful in informing quality business decisions and enhancing credit risk control in commercial banks.

More banks are adopting the use of Big Data in making informed credit control decisions. More business has acknowledged that to do better business they need to make better decisions and such would only precede from the use of Big Data to make data-driven decisions [3]. With more data as the financial systems expands and the number of transactions also increase, a Big Data system is the ideal choice for many banks to find and analyze data about their customers and make informed lending decisions [3]. With the increased adoption of big data analytics, more banks continue to invest and make complex risk management decisions that enhance their survival and growth. Big data is continually used by banks to understand their consumers and market the right loan products to them based on their creditworthiness. Based on in-depth market segmentation and using big data, the banks can then offer structured or non-structured loans to deserving customers.

The main aim of banks in their credit risk should be guided by their understanding of the customer, and ways through which they can curb the rate of defaults. The primary objective of this study is to depict the value of big data in helping reduce the level of loan defaults across American banks. The secondary objective is to show a link between increased adoption of Big Data in the financial sector and an increased level of credit risk control across the banking sector. In understanding the value of big data, customer segmentation is essential. Using customer segmentation and behavior analysis, banks can develop a set of data that they can use to assess the suitability of a customer for a given type of credit. The use of big data is also crucial in understanding the kind of credit services that consumers are looking at or need. Based on such a knowledge of the marketer, it then becomes easier to develop a credit instrument that increases the net returns to the bank but reduces any chance of financial loss. The credit-control process also needs to factor in the relationship that the customer has with the bank. Banks are businesses that aim to maximize their returns and thus need to continuously monitor their relationship and keep their creditworthy customer. The banks also must monitor the relationship that they have with the consumers to ensure that they maintain the demand for the loan products. The risks associated with the customer's industry, business, and management are all crucial data that necessitate an investment in Big data to increase the efficiency of credit analyses and control with the commercial banks.

A quantitative study of various banks and their credit data will be used to assess the application of big data in credit risk control. Using secondary sources from the bank reports on credit management, this study will show the rate of default on the loans, the debt-to-equity ratio of the banks, the number of banks that have adopted the use of big data, household income, household debt to income ratio, and employment status of the loanees. These features are selected to inform the level of credit that banks across the United States offer as compared to their level of equity, the default rate based on household income, the level of household debt as compared to their income, and the general state of credit borne by the various banks. Additionally, the assessment of the adoption of big data use across the banks will inform how banks that have implemented such technology compare against those that have not adopted such technology.

3. Conclusion

Big data is crucial in the development of a collaborative and multidirectional risk assessment within the banks. By using Big Data, there is increased efficiency in the analysis of customer records, credit history, the bank's debt-to-equity ratio, and the consumer's debt-to-income ratio to inform the successful disbursement of any loan. Such technology increases the ease of processing credit and assessing a customer's records. Compared to the manual risk assessment,

the integration of Big Data is bound to be an added advantage to companies as they process more data and work to manage their credit data. Financial risks in the processing of credit due to mismanaged records or inadequate assessment of a customer credit history are further eliminated with the adoption of Big Data.

Big data have been implemented across various American organization at a relatively lower rate. Its use in the banking sector is still in its primary stages. Across the economy, it has been applied to organizing processes, predicting criminal behavior, cancer treatments, and reducing traffic congestion. The impeccable success in such application of big data informs its value in other sectors such as the banking sector. In this age of a data-driven society, big data can help banks comply with legal and regulatory requirements in integrity risk and credit risk control. Automated client data analysis can help credit departments flag down high-risk transactions and clients and thus reduce the default rates.

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