Big Data Analytics' Involvement in Enhancing the Efficiency Lending and Marketing of Nigerian Lending Firms

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ABSTRACT

This research investigates the impact of big data analytics on efficiency and marketing of lending firms in Nigeria. The study adopts a review method to investigate the key issues facing lending firms in Nigeria. The study further investigates how data analytics help lending firms in overcoming these issues in term of risk management and lending decision making. Case study analysis of lending firms who have adopted data analytics in their business models shows how effective and sustainable their practices has been. Findings shows that firms utilise and invest heavily in big data analytics. Findings also revealed that there is statistically significant positive relationship between big data analytics and risk management, as well as lending decision making. Findings reveals that firms faces challenges such as data quality and government policies. The findings concludes that big data analytics is significant in not just lending firms but all financial institution in the country. The study therefore recommends among others that Nigerian financial lending firms should invest in developing integrated data management systems that consolidate data from multiple sources. By so doing, there will be readily available data for analysis whenever a borrower shows up and submit their bank verification number. An integrated system can provide a comprehensive view of customers, reducing data silos and enhancing insights for lending decisions and marketing strategies

INTRODUCTION

The advent of big data analytics has revolutionized how businesses operate across various sectors, including finance. Big Data refers to a vast and complex volume of structured, semi-structured, and unstructured data generated from various sources at a high velocity, with a magnitude that exceeds the capabilities of traditional data processing methods (Davenport,2013). Chen (2014) defines big data as data sets that are so large and complex that traditional data processing applications are inadequate to deal with them. These data sets often exceed the capacity of conventional database systems and require innovative methods and technologies to store, manage, and analyze the information effectively (Magnin, 2016). Big Data is characterized by its volume, velocity, and variety, and it plays a crucial role in generating valuable insights, supporting decision-making processes, and facilitating innovation across various domains.

In Nigeria, the application of data by banks and other financial institutions has evolved over the years owing to new and emerging technology that has helped to improve business processes and create value for customers (Wang et al., 2016). Organisations that offer financial services have to analyse data to get results before they make decisions. different areas of data analysis application by lending and financial firms are risk management/assessment, predictive analysis, and customer segmentation as shown in figure 1.1 below (Philip, 2023)

Figure 1.1 Areas of data analytics by lending firms in Nigeria (Philip, 2023).

In Nigeria, where access to credit is vital for economic development, lending firms leverage data-driven strategies to improve service efficiency, customer targeting, and risk assessment. In recent years, the financial services industry has witnessed a paradigm shift due to the emergence of big data analytics. By analysing extensive datasets, businesses have derived actionable insights that help them make really smart and improved decision concerning finances (McKinsey, 2018). The Nigeria lending firms have over the years faced significant challenges such as difficulty in retrieving their money from debtors. The high default rates, operational inefficiencies, and lack of robust client data over the years has affected many firms in Nigeria.

The Nigerian lending landscape is characterized by a diverse range of financial institutions, including banks, microfinance institutions, and fintech companies. The integration of big data analytics can revolutionize these lending firms by optimizing strategies in credit assessment, market segmentation, and risk management (Eguavoen & Nwankwo, 2020). The marketing and lending criteria of these firms are essential in determining their success and sustainability in the competitive Nigerian market (Adeyemi, 2017).

Concept of big data

Big data analytics involves the extensive examination of data to uncover hidden patterns, correlations, and trends. This process often relies on sophisticated tools and technologies capable of processing vast datasets in real time (Katal, Wazid, & Goudar, 2013). Big Data is characterized by the four Vs - Volume, Variety, Velocity, and Veracity. It refers to large, diverse datasets that are generated at a high speed, and can be both structured and unstructured. The challenge with Big Data lies not only in its size but also in the ability to extract valuable insights and knowledge from it (Bughin, 2011).

It is the vast volumes of structured and unstructured data generated from various sources, including social media, transaction records, and IoT devices (Gartner, 2019). Big data analytics involves the utilization of advanced analytical techniques to process and analyze this data, leading to actionable insights (Mayer-Schonberger & Cukier, 2013). The 4 Vs of big data - Volume, Velocity, Variety, and Veracity - are central to understanding its implications for business operations (Goes, 2014).

The application of big data analytics offers various advantages to lending firms, such as enhanced credit scoring, improved risk assessment, personalized marketing, and efficient resource allocation (Mishra & Nayak, 2021). By leveraging customer data, lending institutions can make informed decisions that ultimately foster business growth and customer satisfaction.

Overview of leading firms in Nigeria

The Nigerian lending sector has evolved, with an increasing number of organizations adopting technology to meet the burgeoning demand for credit. However, challenges like inadequate infrastructure and regulatory constraints persist (Olufemi et al., 2021).

Lending firms in Nigeria have traditionally faced challenges such as limited access to credit, high default rates, and inefficient marketing strategies (Ogunleye, 2020). The Nigerian financial system is characterized by a dual banking structure, comprising formal and informal institutions, with the latter often lacking robust data management systems (Adeyemo et al., 2016). With a burgeoning population and increasing internet penetration, big data offers a solution to these long-standing challenges.

Devi (2013) states that one of the foremost problems of any entrepreneur is finance. Availability of adequate finance at reasonable costs at the required time is the need and expectation of any entrepreneur, including the owners of small-scale industries. In the same vein, Adams and VonPischke (1992) argue that lack of fund is always perceived as the most important problem for the micro entrepreneurs rather than product price, modern input costs, low yield, etc. because it is easier for donors and government to give credit than provide other forms of support. This is the dominant reason behind the launch of so many micro-credit programmes. They also believe that reliable access to small and short-term loans is more important for poor small entrepreneurs than large and long-term loans.

There is a strong relationship between bank loan and the performance of SMEs. The lack of access to credit and

capital is a major barrier to the development of SMEs. It prevents them from acquiring the new technology that would make them more productive and more competitive (Devi, 2013). Micro finance credit assists SMEs in the area of accounting, financial management and entrepreneurship that comply with national accounting standards, requirements and best practices. This will improve the performance of SMEs (UNCTAD 2002). Okpara and Wynn (2007) argue that only firms with the potential to graduate from micro to small and medium enterprise can be considered as entrepreneurial and businesses that are merely surviving to sustain a family and are not able to demonstrate any growth are not entrepreneurial. Kuzilwa (2005) clearly established the relationship between credit and expansion of business, thereby supporting the need for credit for entrepreneurial activity. Small enterprises often operate on short term cycle and that is why there is need for short-term loan in small amounts for them. In order to run their businesses, they require sufficient amount of capital constantly and on time.

Marketing by lending firms in Nigeria

In the old times, marketing was done traditionally but has far gone into the digital space in recent years. Marketing is a restless, changing, and dynamic business activity (Bala and Verma, 2018). The role of marketing itself has changed dramatically due to various crises - material and energy shortages, inflation, economic recessions, high unemployment, dying industries, dying companies, terrorism and war, and effects due to rapid technological changes in certain industries. Such changes, including the internet, have forced today's marketing executive to becoming more market driven in their strategic decision making, requiring a formalized means of acquiring accurate and timely information about customers, products and the marketplace and the overall environment.

Many firms use digital space for their promotion and interaction. Lending firms in Nigeria employ various marketing strategies to attract customers and promote their services. Findings from the study of Ogunleye (2019), shows that the most common marketing strategies used by lending firms in Nigeria include advertising, social media marketing, referrals, and partnerships with other financial institutions. Stanbic IBTC Bank, Kuda, Branch, Zenith Bank, and many other banks in Nigeria have leveraged social media platforms to promote their lending services, increasing their online presence and customer engagement (Stanbic IBTC Bank, 2020; Zenith Bank, 2020). Guaranty Trust Bank (GTB) has however partnered with popular Nigerian musician, Wizkid, to promote its lending services (GTB, 2019). This partnership helped to increase brand awareness and appeal to a younger demographic.

Other than the discussed marketing strategies, lending firms uses personalized digital marketing campaign. Results from the study of Shah, (2021), personalized email campaigns can lead to a 29% higher open rate and a 41% higher click-through rate compared to generic campaigns. Occasionally, lending firms like Okasha, palm pay, and fair money uses personalized marketing in their digital marketing campaigns. Big data analytics empowers lending firms to segment their customer base with precision. By analysing customer demographics, behaviour, and preferences, firms can create highly targeted marketing campaigns, increasing conversion rates and customer satisfaction (Choudhury et al., 2021). This targeted approach is particularly crucial in Nigeria, where cultural and socioeconomic diversity necessitates tailored marketing strategies.

Big Data analytics impact on firm's lending

Risk Mitigation

Risk management is a crucial aspect in the issuance of loans to customers (Dhar, 2013). Historically, banks relied on traditional scoring systems, such as credit scores, to assess the creditworthiness of potential borrowers. Ayodele and Alabi, (2014) in their analysis of Nigerian banks, gave their findings that risks in the form of fraud and forgery, operational risk, market risk, and system risk abound in the Nigeria banking operations which needed to be managed appropriately to improve performances and profitability of the banks. Fraud and forgeries also play an adverse role in daily banking operations. Big data analytics enables lending firms to incorporate diverse data sources, including social media activity and mobile payment histories (Khandani, Kim, & Lo, 2010), presenting a more comprehensive view of a borrower's creditworthiness (Jagtiani & Lemieux, 2018). This not only improves the accuracy of credit assessments but also expands access to credit for underserved populations.

Firms are increasingly using data analytics to enhance their risk management strategies. By analysing historical

data, organizations can identify potential vulnerabilities and mitigate risks accordingly. Financial institutions employ analytics to detect fraudulent activities in real-time, as seen in the practices of JPMorgan Chase, which utilizes big data to assess transaction patterns and flag anomalies (Ghosh & Reilly, 2019). In Nigeria, an analysis of the data reveals a staggering 1,784.94% increase in the total amount involved in fraud cases from Q1 to Q2 2024, with the sum escalating from ₦2.9 billion to approximately ₦56.3 billion (FITC, 2024).

Big data analytics provides lending firms with tools to establish early warning systems (EWS) for potential loan defaults and fraudsters. These systems rely on real-time data monitoring and advanced analytics to detect warning signs that may indicate an increased risk of default (Bunn & Redwood, 2018). Big data analytics aids in understanding customer behaviour, enabling firms to design personalized engagement strategies that enhance loyalty (Alhassan & Liu, 2018). Predictive models can identify customers likely to default, prompting pre-emptive measures such as tailored financial advice or restructuring options. Through big data analytics, potential loan defaulters are closely monitored, limiting their access to large sum of money, thereby reducing the risk involved.

Lending Decision making process

Big data analytics allows firms to optimize their processes by identifying patterns and trends that might not be apparent through traditional analysis. One area where data analytics has had a significant impact in Nigeria's FinTech industry is in credit scoring. Credit scoring is an essential aspect of lending, and it allows lenders to assess the creditworthiness of potential borrowers. By analysing data on a borrower's credit history, income, and other factors, FinTech companies in Nigeria can use data analytics to develop more accurate credit scoring models. This has enabled them to make better lending decisions, reduce the risk of default, and improve the overall efficiency of their lending operations (Chen et al., 2012). Data analytics enhances decision-making by providing a factual basis for choices across various levels of an organization. Leaders can utilize analytics to assess market trends, consumer preferences, and potential risks. This reliance on quantitative data facilitates more accurate predictions and minimizes the impact of cognitive biases (Bihani, 2021). For example, companies like Netflix use data analytics extensively to recommend content to users based on their viewing habits, significantly refining user experience and engagement (González-Bailón, 2019).

The lending decision of lending firms in Nigeria vary depending on the type of loan and the borrower's creditworthiness which is determined only through data analytics. Findings by Afolabi (2018), the most common lending criteria used by lending firms in Nigeria include analysis of credit history, analysis of borrower's income level, analysis of the debtor's collateral, and loan repayment history. First Bank of Nigeria requires borrowers to have a minimum credit score of 500 to qualify for a personal loan, and to also have daily in-flow of finance in their account (First Bank, 2020). All of these criteria are confirmed only through analysis of historical data of customer through various sources. In addition to these criteria, lending firms in Nigeria also consider other factors such as the borrower's employment history, business plan, and industry trends. For example, Access Bank requires small and medium-sized enterprises (SMEs) to provide a detailed business plan and financial projections to qualify for a loan (Access Bank, 2020).

Several other lending firms in Nigeria have been successful in implementing effective marketing and lending strategies. Stanbic IBTC Bank launched a digital lending platform, which allows customers to apply for loans online and receive instant feedback (Stanbic IBTC Bank, 2020). Known as the quick loan initiative, this platform has increased the bank's loan disbursement and reduced the processing time for loan applications. Stanbic has placed each customer their qualified loan amount on their mobile banking app. This amount is carefully calculated and the decision for the amount the customer is qualified for is made.

Also, the Lagos State Employment Trust Fund (LSETF), which provides loans to SMEs and start-ups in Lagos State. The LSETF uses a unique lending criterion that considers the borrower's business plan, industry trends, and social impact (LSETF, 2020). This approach has helped the LSETF to support over 10,000 businesses and create over 100,000 jobs in Lagos State.

Case study analysis

As earlier stated, many banks adopt the data analytics in different ways like mitigating risk and making lending

decisions. Stanbic IBTC Bank launched a digital lending platform, which allows customers to apply for loans online and receive instant feedback (Stanbic IBTC Bank, 2020). Known as the quick loan initiative, this platform has increased the bank's loan disbursement and reduced the processing time for loan applications. Stanbic has placed each customer their qualified loan amount on their mobile banking app. This amount is carefully calculated and the decision for the amount the customer is qualified for is made.

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Paylater, a fintech firm, employs big data analytics for automated credit scoring. By utilizing alternative datasets such as mobile phone usage and social media activity, they have streamlined their lending process and reduced default rates (Paylater Case Study, 2021). Kuda integrates big data analytics in personalizing marketing campaigns. Through data-driven insights, they enhance customer engagement and improve marketing ROI (Kuda Bank Press Release, 2021). Carbon uses machine learning algorithms to enhance credit assessments, contributing to quicker loan approvals and improved customer service (Carbon Insights, 2021). Branch combines local demographic data with individual credit scores to create personalized loan offerings, enhancing customer satisfaction (Branch Case Study, 2020). Migo utilizes big data analytics for dynamic loan limits, allowing them to adjust borrowing capacities in real time based on user behaviour (Migo Business Overview, 2021). Ren money integrates customer feedback into its product offerings, analysing customer service data to pivot marketing strategies (Ren money Performance Report, 2021). Easy Credit uses big data analytics to conduct market research, allowing them to stay competitive in changing economic conditions (Easy Credit Strategic Overview, 2021). The case studies illustrate that big data analytics plays a transformative role in enhancing the efficiency of lending and marketing within Nigerian lending firms.

Issues in the lending firms in Nigeria

Despite the success of lending firms in Nigeria, there are several challenges and limitations that affect their marketing and lending strategies. According to a study by Olaleye (2019), the most common challenges faced by lending firms in Nigeria include high interest rates, lack of collateral, data quality, data availability, and limited access to credit information. For instance, the vibrancy of a credit bureau in Nigeria makes it difficult for lending firms to assess the creditworthiness of borrowers (CBN, 2020).

Data quality is one of the foremost challenges facing loan companies in Nigeria. Many financial institutions struggle with incomplete, outdated, or erroneous data, which hampers effective risk assessment and decision-making (Adeyemi, 2021). The informal nature of certain sectors further complicates data collection, as many potential borrowers lack formal financial records (Igwe & Agbo, 2020). Those who are defaulters in other loan companies do not have accurate data or any digital information for other lending firms to analyze. This has made many lending firms to keep repeating same mistake over and over because of the inadequate data and its quality. Even for situations where there is data for proper analysis, the lack of skilled hands in carrying out this analysis has become a challenge to many firms (Chinedu & Uyi, 2023).

Regulatory issues are one other challenge identified in this research (Nwankwo, 2022). CBN has enacted a law stating that borrowers who have defaulted their repayment will be subject to automatic deduction of their money in any other bank, provided their Bank Verification Number matches the account with money (CBN, 2020). However, the enforcement of this regulation is a big issue. Many defaulters are allowed to go away with that act, making it challenging for lending firms to recover their money.

METHODOLOGY

This research study uses quantitative research study, with 5 selected firms in Nigeria. The firms are Okasha, Kuda, Palm pay, Stanbic IBTC (Easy loan), Branch microfinance banks. These firms were randomly selected

for the purpose of this research. The researcher gave out questionnaires to 25 staff of each company, making a total of 100 staff. Only management staff and data management staff were sampled. This is done in order to ensure credibility and reliability of our findings because only these people have the knowledge of big data analytics and its practical experience. Questionnaires is distributed to understand the extent of big data adoption, impact on key performance indicators (KPIs), and the challenges associated with implementation. Surveys will utilise Likert scales and closed-ended questions. Descriptive statistics (mean, standard deviation, percentages) is used to summarize questionnaire data and secondary data. Inferential statistics (regression analysis) is employed to examine relationships between big data implementation and relevant KPIs (Risk mitigation and Lending decision making). Statistical Software (SPSS) is used.

FINDINGS AND DISCUSSION

The information obtained from this study is displayed in tables. The IBM SPSS is used to conduct analysis of the data collected.

Results on the Extent of big data adoption

This section evaluates the extent to which lending firms adopt big data analytics. With 3.0 as the computed mean, given that, any factor with a mean 3.0 and above may be regarded as positive while others with mean below 3.0 is regarded as a negative lie not a factor as perceived by the respondents. The results is presented in Table 1.

Table 1 Descriptive result for the extent of big data adoption for lending firms in Nigeria

	N	Mean	Std. Deviation
My organization currently utilises big data analytics in our lending processes	100	4.50	.513
Our organization has invested sufficiently in big data infrastructure.	100	4.65	.489
We regularly review and update our big data analytics strategies	100	4.75	.444
Valid N (listwise)	100		

Source: Researcher, 2024

Table 1 shows the mean analysis of the level of big data adoption among lending firms in Nigeria. It was shown however that all lending firms utilises big data analytics, investing heavily in it and regularly reviewing and updating their strategies. This was confirmed through data analysis which shows that all mean values in the variables are above the decision mean score of 3.0. This explains the extent to which these firms use big data analytics and how significant it has been to the growth of the organizations. This research confirms the literature above where case study analysis was carried out. Literature showed that both Stanbic, Kuda, and other lending firms have fully utilized big data analytics (Stanbic IBTC Bank, 2020; Kuda Bank Press Release, 2021).

Impact on key performance indicators (KPIs)

This section of the research finds out the impact of big data analytics on risk mitigation and lending decision making for lending firms in Nigeria. However, the results obtained is further analysed using linear regression. If a P-value is greater than 0.05, it will be deemed to be statistically insignificant, but if it is less than or equal to 0.05, the result is statistically significant, showing that the null hypothesis is rejected. Results is tabulated in table 2.

Table 2 There is significant impact of big data analytics on lending firm's risk mitigation and lending decision making process in Nigeria lending firms.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.858	2	.929	5.865	.012[b]

Residual	2.692	17	.158		
Total	4.550	19			
a. Dependent Variable: Our organization has utilized and invested sufficiently in big data infrastructure.					
b. Predictors: (Constant), Big data analytics has helped us in making decisions, Big data analytics has helped us in risk mitigation					

In the table 2, the results shows that the p-value of .01 is less than .05. this means that the result is statistically significant. This means that there is a statistically significant relationship between the big data analytics adoption and performance indicators (risk mitigation and lending decision making process) at lending firms in Nigeria. In simpler terms, we can conclude with confidence that the heavy investment in big data analytics by organization is influenced by how much big data analytics has helped in decision-making and risk mitigation. Therefore, the null hypothesis is rejected while the alternative is accepted.

This finding agreed with the study of Jagtiani & Lemieux, 2018) who said that big data analytics enables lending firms to improve the accuracy of credit assessments. Ghosh & Reilly, 2019) said that lending firms utilizes big data to assess transaction patterns and flag anomalies. Literature also shows that big data analytics help identify loan defaulters (Bunn & Redwood, 2018). With these findings, it is good to conclude that big data has been significant to financial institutions in Nigeria. Through analysis, customers who do not have high in-flow in their bank accounts are given a loan only based on the calculated inflow percentage. By so doing, many firms reduce the risk of loan defaulters in Nigeria.

The challenges associated with implementation

This section intends to find out what has been the challenges associated with big data analytics and its usage among lending firms in Nigeria. Just as the previous section, wwith 3.0 as the computed mean, given that, any factor with a mean 3.0 and above may be regarded as positive while others with mean below 3.0 is regarded as a negative lie not a factor as perceived by the respondents. The result is therefore tabulated in Table 3.

Table 3 Result showing challenges of big data effectiveness among lending firms in Nigeria.

	N	Mean	Std. Deviation
Government policies have over the years affected our firm	100	4.85	.366
Concerns about data privacy and security have limited our use of big data.	100	4.60	.503
Our organization faces issues of lack of proper data from customers to be analysed.	100	4.40	.503
Valid N (listwise)	100		

Source: Researcher, 2024

Table 1 shows the mean analysis of the challenges associated with big data analytics adoption among lending firms in Nigeria. It was shown however that all lending firms faces challenges of data quality, data availability, government policies. This was confirmed through data analysis which shows that all mean values in the variables are above the decision mean score of 3.0. These findings align with the works of Adeyemi, (2021) who noted that many financial institutions struggle with incomplete, outdated, or erroneous data, which hampers effective risk assessment and decision-making. Igwe & Agbo, (2020) and Chinedu & Uyi, (2023) also affirms that many potential borrowers lack formal financial records. This has made many lending firms to keep repeating same mistake over and over because of the inadequate data and its quality.

RECOMMENDATIONS

Based on our research findings, the following recommendations are made:

For data quality and availability, Nigerian financial lending firms should invest in developing integrated data management systems that consolidate data from multiple sources. By so doing, there will be readily available data for analysis whenever a borrower shows up and submit their bank verification number. An integrated system can provide a comprehensive view of customers, reducing data silos and enhancing insights for lending decisions and marketing strategies (Kumar et al., 2020).

Financial and lending firms in Nigeria should also implement predictive analytics models that incorporate big data techniques to enhance credit scoring processes. This will help firms to better understand customers, predict their repayment possibility and their loan amount (Adebayo, 2017).

Lending firms must leverage big data analytics for improved fraud detection and risk management. These firms have to invest in machine learning algorithms to achieve this. It will help the firms take proactive measures in times of suspected fraud activity (Akpan et al., 2021). This is crucial in maintaining trust and reducing financial losses.

CONCLUSION

Big data analytics presents an unprecedented opportunity for Nigerian financial institutions to enhance their operational efficiency and marketing strategies. By leveraging diverse data sources, these institutions can make more informed risk assessments, streamline processes, and customize marketing efforts. However, to fully capitalize on these advantages, challenges related to data privacy, infrastructure, and human capital must be addressed. By implementing the recommendations outlined in this study, these firms can better manage risk, optimize customer acquisition and retention strategies, and ultimately improve their competitive positioning in the market.

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