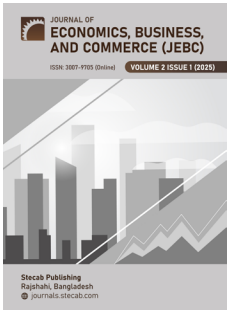

Journal of Economics, Business, and Commerce (JEBC)

ISSN: 3007-9705 (Online)

Volume 2 Issue 1, (2025)

https://doi.org/10.69739/jebc.v2i1.358

https://journals.stecab.com/jebc

Published by
Stecab Publishing

Research Article

Analysing the Effectiveness and Usage Data Analytics in Business Management: A Study of the Banking Industry in Lusaka

*[1]Moses Chipili Musuku, [2]Marvin Kabubi

About Article

Article History

Submission: February 05, 2025
Acceptance : March 10, 2025
Publication : April 09, 2025

Keywords

Banking Industry, Business Management, Data Analytic

About Author

[1] Department of Business, Information and Communication University, Lusaka, Zambia

[2] Department of Humanities and Social Sciences, Information and Communication University, Lusaka, Zambia

Contact @ Moses Chipili Musuku
momusuku@gmail.com

ABSTRACT

Data has emerged as the new currency, and businesses across industries are increasingly turning to data analytics to gain insights, make informed decisions, and gain a competitive edge. The banking industry, as a data-rich sector, stands to benefit significantly from leveraging data analytics tools and techniques. It is for this reason that this study looked at Analysing the Effectiveness and Usage data analytics in business management within commercial banks operating in Lusaka Zambia. A mixed-methods approach was used to gather comprehensive insights and a total of 100 employees from 10 different commercial banks in Lusaka made up the sample size. Regression analysis as well as descriptive statistics was used to establish relationships and give context to the observed data. The study observed that data analytics greatly improves banks' capacity to efficiently segment their clientele, enabling more specialised services and higher levels of customer satisfaction. The study also found that data analytics is essential for developing and visualising a number of indicators for the inefficiency of numerous internal and external processes and observed that data-driven insights should be increased as they enhance decision-making processes pertaining to risk assessment and mitigation techniques, which is crucial for preserving financial stability and compliance among institutions. It was observed that a well-educated workforce is essential to effectively leverage data analytics thus to optimise the use of data analytics banks should greatly improve their ability to make strategic decisions by emphasising ongoing professional development and incorporating analytical techniques into every aspect of company management.

Citation Style:

Musuku, M. C., & Kabubi, M. (2025). Analysing the Effectiveness and Usage Data Analytics in Business Management: A Study of the Banking Industry in Lusaka. *Journal of Economics, Business, and Commerce, 2*(1), 59-69. https://doi.org/10.69739/jebc.v2i1.358

Copyright: © 2025 by the authors. Licensed Stecab Publishing, Bangladesh. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

1. INTRODUCTION

1.1. Background

Technology breakthroughs and a growing focus on data-driven decision-making have caused a fast transition in the banking sector in recent years. Banks are using data analytics to obtain a competitive edge, improve operational efficiency, and customise client experiences as competition heats up and consumer expectations change. However, even with the increasing use of data analytics, its effectiveness and use in actual business contexts still need to assessment.

In recent years, data analytics has become a fascinating area of productivity and opportunity that is posing a growing challenge to businesses. According to Barton and Court (2012) and Davenport and Harris (2009), data analytics capabilities are likely to revolutionise how businesses conduct their operations. Technology breakthroughs and shifting consumer habits are causing major changes in the banking sector in Lusaka, as well as in many other countries. In this regard, data analytics may present banks with opportunities to improve client experiences, boost operational effectiveness, and successfully manage risks. Additionally, it seems that many businesses are still learning the necessary technologies and skills, how to produce value from data analytics, and how to perform business management using data analytics efficiently, Barton and Court, (2012).

This will provide executives and managers with empirical insights on the effectiveness and usage of data analytics and help them assess whether the investment in data analytics is worthwhile.

1.2. Statement of the problem

The Analysing the effectiveness and usage of data analytics in the banking industry in Lusaka has not been thoroughly examined. While there is a growing recognition of the importance of data analytics, there is limited empirical evidence on its actual impact on business management practices within this context (Ekinci, 2015). Designing research questionnaires for business and management students. Sage.

1.3. Objectives

General Objective

To analyse the effectiveness and usage data analytics in business management of the banking industry in Lusaka.

Specific Objectives

i. Assess the effectiveness of data analytics in customer segmentation.

ii. Analyse the effectiveness of data analytics in facilitating business intelligence.

iii. Ascertain the effectiveness of data analysis in risk management in the Banking sector.

iv. Effectiveness of data analytics in Business forecasting and identifying economic trends.

1.4. Conceptual framework

Figure 1 shows the conceptual framework that the study employed as the study was conducted to understand the effectiveness of data analytics in customer segmentation, business intelligence, risk management as well as business forecasting and economic trends.

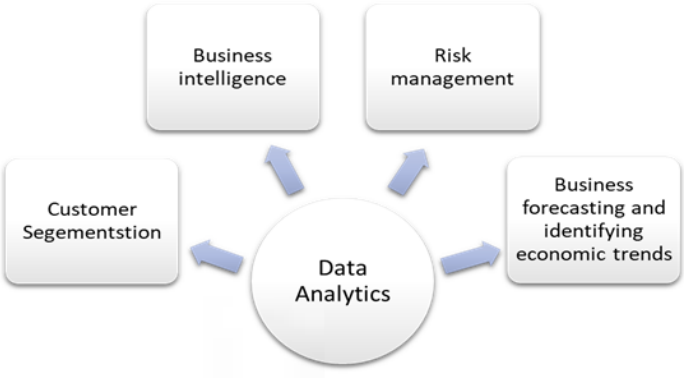

Figure 1. Authors' concept (2024), conceptual framework

2. LITERATURE REVIEW

The effectiveness of data analytics in customer Segmentation

The research by Wedel and Kamakura (2012) explored the Effective segmentation that allows banks to tailor their products and services to meet the specific needs of different customer groups (Wedel & Kamakura, 2012). A mixed method research was used. Further research shows that data analytics enhances segmentation by enabling more precise and actionable insights, leading to improved customer satisfaction and retention (Chen *et al.*, 2012).

Effective customer segmentation using data analytics helps banks personalize marketing strategies, improve customer retention, and increase profitability (Johnson *et al.*, 2018). According to Bankseta (2017) "Using big data and machine learning can help banks to perform deeper and broader segmentation of its client base". Therefore, this segmentation can help the banks to design and tailor targeted marketing programs, create loyalty programs based on card usage habits, optimize pricing strategy; and Build relationships with valuable customers.

According to research studies by yellowfin (2011), banks may improve customer satisfaction by using business intelligence (BI) to assess consumer transaction histories and habits and customise services. A study carried out in the United States, for example, showed that tailored marketing strategies based on customer data greatly increased retention rates. The study used a sample of 300 banks and structured questionnaires to gather responses from bank executives regarding their BI practices (Fintrak, 2023; Yellowfin, 2011).

2.1. The effectiveness of data analysis in risk management in the Banking sector

Risk management in banking involves identifying, assessing, and mitigating financial risks. Data analytics can enhance risk management by providing predictive insights and early warnings of potential risks (Crouhy *et al.*, 2006). risks early, assessing creditworthiness, and improving fraud detection mechanisms (Brown & White, 2021).

In a groundbreaking 2019 study, KPMG examined how data analytics affected risk assessment in 150 European banks. Using a mixed-methods approach, the study combined qualitative

interviews with quantitative surveys. The results showed that banks might reduce default rates by 15% by using advanced analytics to better correctly detect credit concerns. The sample size relied on questionnaires to assess the efficacy of analytics tools across different banks and included replies from executives and risk managers from a variety of institutions, offering a thorough picture of current practices (KPMG, 2019).

2.2. Effectiveness of data analytics in Business forecasting and identifying economic trends

This research discovered that a study by McKinsey, which used structured questionnaires focussing on the utilisation of predictive analytics tools and their impact on forecasting accuracy, found that organisations using AI-driven predictive models may minimise forecasting errors by up to 50%, resulting in a decrease of sixty-five percent in lost sales and inventory shortages (McKinsey & Company, 2018). Predictive analytics has become a powerful tool for forecasting future trends.

Business forecasting involves predicting future trends based on historical data and statistical models. Data analytics improves forecasting accuracy by utilizing advanced algorithms and machine learning techniques to analyse large datasets (Makridakis *et al.*, 2018).

3. METHODOLOGY

This study employed a mixed-method approach, combining quantitative analysis of economic data with qualitative insights from interviews and surveys. The quantitative analysis involved examining data trends in the banking industry using statistical tools such as regression analysis and time series modelling.

The respondents composed of Finance officers, Operations officers, Marketing officers, IT officers, Data clerks' officers, Economists and Bankers, including employees who are familiar with the company's business management practices.

The research site involved 10 commercial banks in Lusaka, Zambia. Participants were randomly selected from these commercial banks to participate in this research study. The study sample included general managers, IT specialists, analyst, executives, risk managers, risk analyst, business intelligence (BI) analysts and data engineers among others.

In this research, both qualitative and quantitative data will be collected as the researcher has adopted a mixed quantitative and qualitative research. Primary and secondary data may complement each other in order to have a complete or clear understanding of a local situation.

Some scholars have criticised the use of mixed method approach. For example, Creswell (2013), described the use of mixed method approach as it is time consuming. While Sarantakos (2013) observed that mixed method is difficult to replicate, and therefore advised that it is not more valuable than single method procedure, which can be more suitable, useful and meaningful to answer certain questions such as the focus of business management and the Analysing the data usage banking in Lusaka.

4. RESULTS AND DISCUSSION

4.1. Presentation of research findings

This graph below shows participation of workers from different

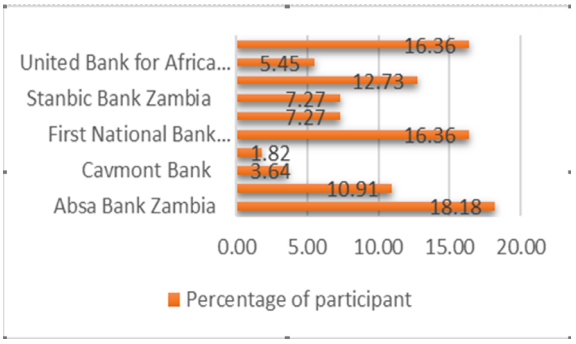

Figure 1. Participants

banks in the study carried out in Lusaka, as summarized;

The results presented in the figure reveal that the majority of respondents in this sample are males making 60% while 40% are females of the total respondents.

4.1.1. Assessment of Data Analytics in Customer Segmentation (Objective 1)

Table 1. Assessment of Data analysis on customer activity

Assess customer activity	Percentage
Most effective	61.82%,
Moderate effective	25.45%
Effective	12.73%

The Table above shows that the majority, 61.82%, assessed customer activity most effective, while 25.45% most effective and effective at 12.73% of banks use data analytics tools. According to this distribution, these banks most frequently analyse client insights through monitoring.

4.2. Metrics being used for segmentation

The graph in Fig 2 shows the survey's findings of how banks categorise their clientele using a range of indicators;

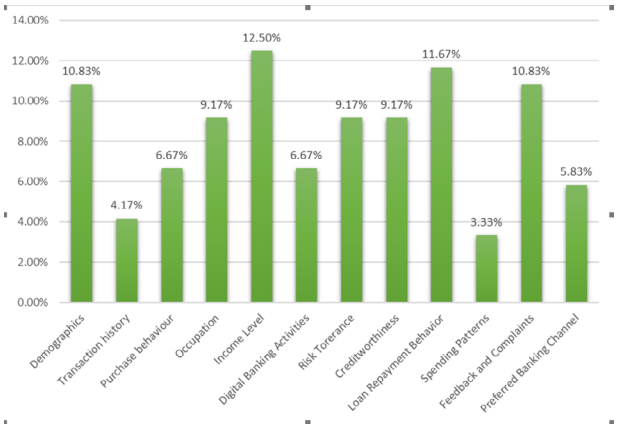

Figure 2. Metrics being used for segmentation

4.2.2. Effectiveness of data analytics in customer segmentation

According to the study's findings, commercial banks have a very favourable opinion of how well data analytics work for client segmentation.

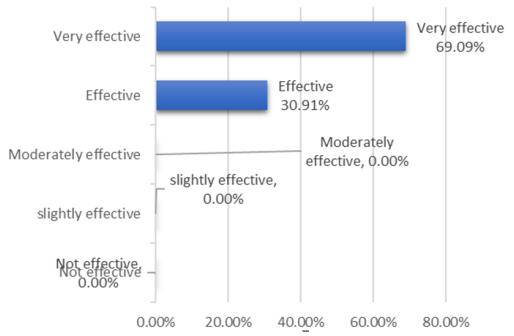

Figure 3. Effectiveness of data analytics in customer segmentation

The fact that none of the participants gave data analytics the ratings of "Not effective," "Slightly effective," or "Moderately effective" indicates that everyone agrees that it is important for consumer segmentation procedures. Rather, 69.09% of participants ranked data analytics as Very effective, while 30.91% of respondents assessed it as Effective. The majority of banks believe data analytics to be very useful for precisely identifying and classifying client groups, which results in more specialised and effective marketing, product development, and service strategies. This distribution demonstrates the significant influence that data analytics has on customer segmentation.

4.3.2. Effectiveness of using data analytics for Customer Segmentation

The survey's findings point to effectiveness of commercial banks' use of data analytics for client segmentation. 23.64% of respondents acknowledged the importance of informed decision making in assisting banks in making data-driven decisions that are suited to the demands of their clients, making it the most notable benefit. At 14.55%, improved customer experience came next, highlighting how data analytics can be used to tailor interactions and raise satisfaction as discovered.

4.3.3. Customer Value Indicators in customer segmentation

The study's findings, which are displayed in figure below,

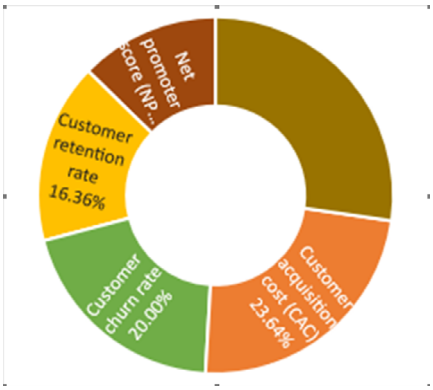

Figure 4. Customer value indicator

At 27.27%, customer satisfaction (CSAT) was the most emphasised measure, suggesting that banks place a high priority on gauging customer satisfaction with their offerings, since this has a direct impact on long-term engagement and loyalty. The significance of comprehending the cost-effectiveness of acquiring new customers in proportion to their potential worth is demonstrated by the fact that 23.64% of participants deemed Customer Acquisition Cost (CAC) to be relevant.

With a customer churn rate of 20.00%, banks can determine how many customers are departing and where their customer retention tactics need to be improved. Since it shows the bank's capacity to keep up ties with current clients, which is frequently more economical than finding new ones, the customer retention rate (16.36%) is also regularly tracked. Finally, the Net Promoter Score (NPS), which stands at 12.73%, is a metric used to gauge client loyalty and the chance that they will refer the bank's services to others. Taken together, these measures give banks a comprehensive picture of client value, directing focused initiatives to raise customer happiness, lower attrition, and maximise efforts to attract and retain customers.

4.4. Extent of data analytics to influence bank's customer segmentation strategies

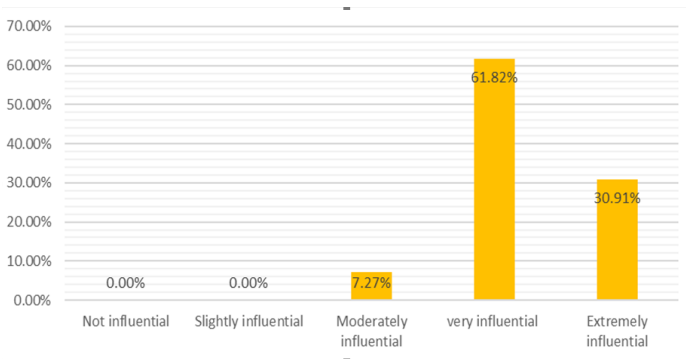

Figure 5. Influence of data analytics on customer segmentation

The results of the study show that banks' customer segmentation tactics are significantly impacted by data analytics. In forming these strategies, the vast majority of respondents (92.73%) believe that data analytics is either very influential (61.82%) or highly influential (30.91%). This suggests that banks use data analytics extensively to improve their comprehension of the requirements and habits of their customers, which makes segmentation more successful. Just 7.27% of respondents say it has a considerable amount of influence, while none say it has little to no influence. These findings highlight how crucial data analytics is to improving client segmentation, which in turn supports focused marketing campaigns and personalised financial services.

4.4.1. Effectiveness of data analytics in improving customer segmentation

The figure below shows the results of the effectiveness of data analysis in improving customer segmentation.

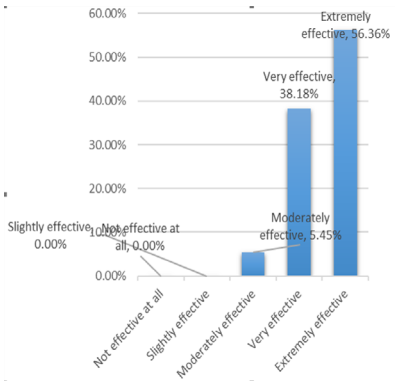

Figure 6. Effectiveness of data analytics in improving customer segmentation

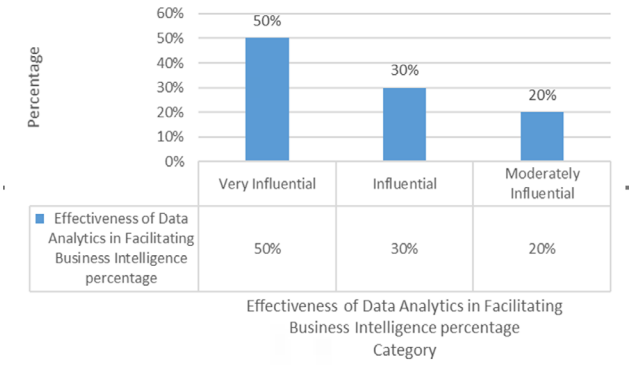

Figure 8. Effectiveness of Data Analytics in Facilitating Business Intelligence percentage

According to the survey findings displayed in the figure 4.10. In this sense, a sizable majority of respondents (94.54%) believe that data analytics are either very effective (38.18%) or highly effective (56.36%). This demonstrates a strong understanding of the benefits that data analytics offers to the process of locating and classifying clients according to their demographics, interests, and behaviours. The results highlight how important data analytics is in helping businesses customise their marketing strategies and enhance customer engagement through accurate segmentation, as only 5.45% of respondents thought it was moderately effective and none thought it was slightly or not effective at all.

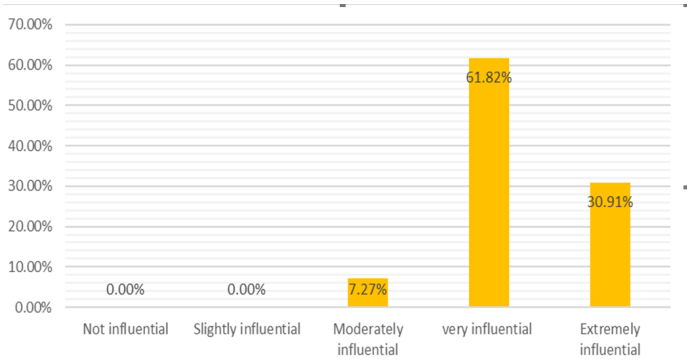

Figure 7. Effectiveness of data analytics in improving customer segmentation

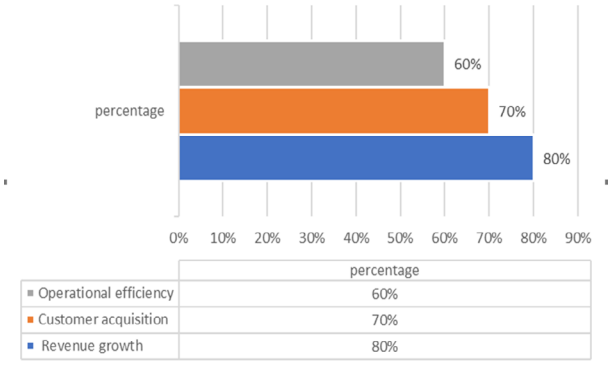

Figure 9. Business intelligence KPIs

4.5. Effectiveness of data analytics in facilitating Business Intelligence (Objective 2)

4.5.1. How data analytics inform business decisions

The second objective of this study was to analyse the effectiveness of data analytics in facilitating business intelligence.

In this study it was clear that the majority decision obtained was, Very Influential (50%) and Moderately Influential (20%) as shown below (Figure 9).

It was found that the responses on the business Intelligence KPIs were obtained as; KPIs tracked: Revenue growth (80%), Customer acquisition (70%), Operational efficiency (60%) as shown in the bar chart below.

The use of analytics tools helps banks to model and forecast risk scenarios, leading to more informed and proactive risk management strategies (Gordy & Heitfield, 2006). Data analytics enhances risk management in banking by identifying potential

4.5.2. Effectiveness of data analysis in Risk Management (Objective 3)

Risk monitoring: The types of risks that Lusaka's commercial banks keep a careful eye on are shown in Figure below;

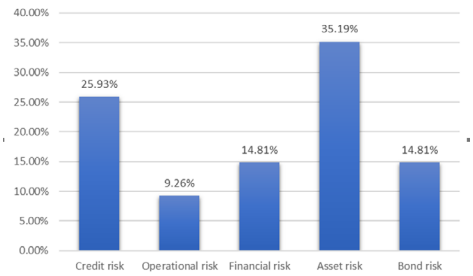

Figure 10. Risks being monitored

along with the percentages that correspond to each. According to the study, asset risk is the most important factor, accounting for 35.19%. This suggests that banks are most worried about the potential for assets to fluctuate or lose value, which might have an effect on financial stability. At 25.93%, credit risk comes next, highlighting how crucial it is to keep an eye out for borrower defaults and make sure that loans are repaid in order to preserve profitability. At 14.81%, financial risk and bond risk receive similar attention, indicating that banks are wary of risks associated with the market and bonds, such as shifts in interest rates or credit downgrades. The last risk type with the least focus, operational risk, is 9.26%. This means that although operational problems and internal failures are tracked, they are not as important as other risk categories. All things considered, banks give priority to credit and asset risks, although financial, bond, and operational risks all play significant roles in their risk management strategies.

4.5.3. Where banks apply Credit Risk Indicators

Commercial banks utilise a variety of credit risk indicators as shown in Figure 4.5.2, to evaluate and control their exposure to credit risk.

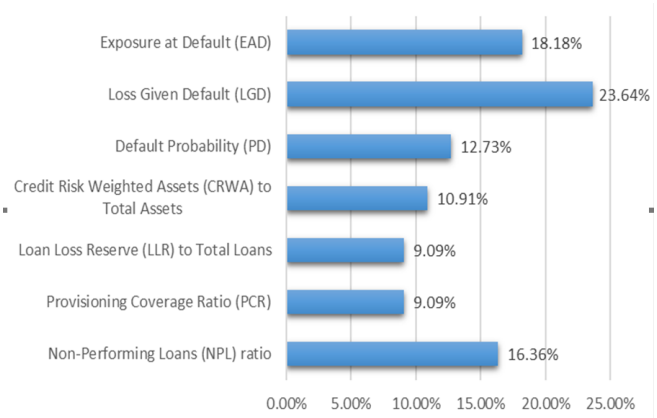

Figure 11. Credit risk indicator

According to the study, the bank's loan portfolio quality is reflected in the Non-Performing Loans (NPL) ratio, which stands at 16.36% and represents the percentage of loans that are in default or nearly so. The Provisioning Coverage Ratio (PCR) and Loan Loss Reserve (LLR) to Total Loans, both of which was selected by 9.09% of the respondents, represent the money set aside to cover any loan losses, which helps to protect the bank from defaults. The Credit Risk Weighted Assets (CRWA) to Total Assets ratio of 10.91% shows the degree of risk associated with the bank's asset holdings, adjusted for credit risk. The bank's risk assessment procedures are informed by the Default Probability (PD), which calculates the probability of borrower default at 12.73%. With a rate of 23.64%, Loss Given Default (LGD) calculates the possible loss in the event of a default following recovery and offers information about the anticipated financial effect. Finally, the total amount the bank might lose in the event of a borrower failure is shown by Exposure at failure (EAD), which is 18.18%. When taken as a whole, these indicators assist Lusaka banks in tracking, reducing, and being ready for any credit risks.

4.5.4. Where Operational Risk Indicators can be effectively monitored

The results in figure 12 highlight respondents' views on where operational risk indicators can be effectively monitored within a banking environment.

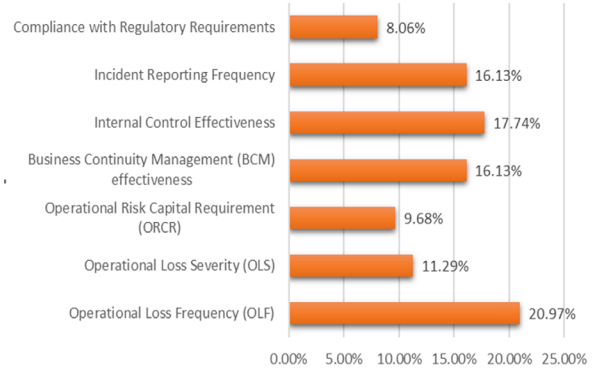

Figure 12. Operational risk indicators

Operational Loss Frequency (OLF) is considered the most critical, with 20.97%, indicating a strong focus on tracking the frequency of operational losses to identify patterns and improve risk management. Internal Control Effectiveness follows at 17.74%, emphasizing the importance of robust internal controls in mitigating operational risk. Both Business Continuity Management (BCM) effectiveness and Incident Reporting Frequency are rated at 16.13%, reflecting the need for effective continuity plans and comprehensive incident tracking to manage operational disruptions. Operational Risk Capital Requirement (ORCR) at 9.68% indicates that capital allocations should be monitored to cover prospective losses, while Operational Loss Severity (OLS) at 11.29% indicates that attention should be paid to the financial effect of losses. Lastly, the lowest rating of 8.06% goes to Compliance with Regulatory Requirements, suggesting that although regulatory compliance is crucial, respondents could consider other indicators to be more accurate gauges of operational risk in their organisations. According to the replies, banks should give internal controls, loss frequency, and continuity planning top priority in order to efficiently monitor and reduce operational risks.

4.6. Risk Management Tools used

The findings, which are displayed in figure 4.4.11 below, shed light on the risk management tools that Lusaka's commercial banks employ. According to the research, 25.45% of respondents said they depend on Risk Management Information Systems (RMIS) to centralise and simplify risk data, making them the most extensively utilised. At 23.64%, Risk Analytics Software comes in second, underscoring the banks' emphasis on applying analytics to comprehend and reduce risks. With 20% of respondents using Governance, Risk, and Compliance (GRC) platforms, these platforms are also widely utilised and demonstrate a focus on integrated governance and compliance frameworks. 16.36% of respondents said they utilise scenario planning tools, which help banks anticipate and get ready for certain risk situations. Finally, 14.55% use stress testing tools, suggesting some attention to assessing resilience under

challenging circumstances.

4.6.2. Risk Management Techniques utilized

The risk management strategies employed by Lusaka's commercial banks are depicted in Figure 12. According to the report, the most often used strategies for actively managing and continually monitoring risks inside banks are risk mitigation and control and risk monitoring and review, with 20.37% of respondents utilizing each. 16.67% of respondents use risk diversification, demonstrating a desire to distribute risks among several assets or industries. While 12.96% reported using Risk Transfer and Hedging, which reflects attempts to control risk exposure through mechanisms like insurance and financial hedging, 14.81% reported using Risk-Based Audit and Compliance, emphasizing the significance of audits matched with identified risk factors. 11.11% of banks use risk assessment and prioritization, suggesting that certain banks place a high priority on identifying and classifying risks according to their possible impact. Finally, just 3.70% of respondents reported using stress testing and scenario planning, indicating that this method is not widely utilised to evaluate resilience in fictitious unfavourable circumstances. These answers show that in order to properly manage risk, Lusaka's commercial banks place a high priority on active monitoring and varied approaches.

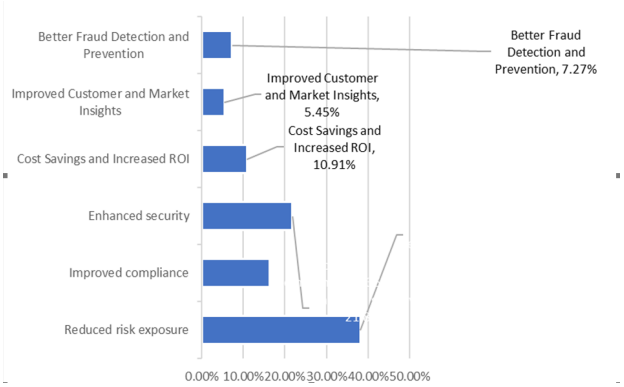

Figure 13. Effectiveness of using data analytics for risk management

Figure above illustrates the perceived benefits of employing data analytics for risk management based on survey responses from respondents working at Lusaka's commercial banks. Reduced Risk Exposure was the advantage that respondents scored the highest, with 38.18% acknowledging the importance of data analytics in detecting and reducing possible hazards, therefore shielding the company from a range of exposures. 21.82% of respondents mentioned enhanced security, emphasizing data analytics' capacity to identify and lessen security risks and guarantee the protection of private data and vital systems. With 16.36% of the respondents recognising that data analytics facilitates adherence to regulatory standards by enabling real-time monitoring and discovery of compliance concerns, improved compliance came next.

10.91% of participants saw the value of Cost Savings and Increased ROI, viewing data analytics as a tool that improves resource allocation, lowers operational inefficiencies, and eventually leads to financial gain. 7.27% of respondents mentioned improved fraud detection and prevention, highlighting the importance of analytics in spotting questionable trends and stopping fraudulent activity. Last but not least, Improved Customer and Market Insights scored 5.45%, indicating its importance in comprehending consumer behavior and market trends, which aids in reputation risk management and improves strategic planning.

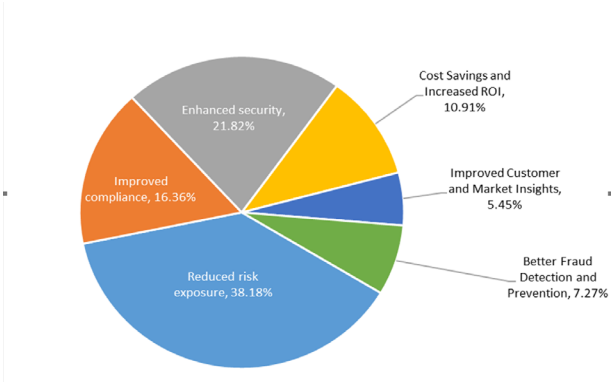

Figure 14. Effectiveness of using data analytics for risk management

4.7. Effectiveness of data analytics in Business forecasting and identification of economic trends (Objective 4)

4.7.1. Forecasting methods used by Lusaka commercial banks

As seen in Figure 4.5.1, the responses from respondents from Lusaka's commercial banks on the forecasting techniques they use reflect a variety of approaches to data analysis and forecasting. According to 30.91% of respondents, time series analysis is the most often employed technique. This implies that a sizable percentage of banks base their predictions of future trends on patterns seen in previous data. At 25.45%, regression analysis comes in second, underscoring its significance in forecasting correlations between variables like consumer behaviour or market dynamics.

Fewer banks utilise more sophisticated methods like machine learning (7.27%) and cluster analysis (5.45%), which are probably used for more intricate or forecasting tasks like client segmentation or forecasting changes in the market. Some banks are using social media or consumer sentiment data into their forecasting models, according to sentiment analysis, which is likewise at 5.45%. 10.91% of respondents use Bayesian inference, indicating a preference for probabilistic models that enable estimates to be updated in response to new evidence. Lastly, the 14.55% ANOVA (Analysis of Variance) indicates that certain banks are concentrating on comprehending the variations in different aspects that might affect their forecasting models. These findings demonstrate the banks' diverse forecasting strategies, which, depending on the complexity of their forecasting requirements, use both more contemporary and conventional statistical methodologies.

4.7.2. Accuracy of forecasts when data analytics is used

Respondents from Lusaka's commercial banks evaluated their forecasting models favourably overall depending on how accurate their data analytics estimates were. The fact that 59.26% of respondents stated that their forecasts are mostly

accurate shows that they are confident in the precision of their forecasting methods. Additionally, 14.81% of respondents rated their estimations as Very Accurate, indicating that a smaller but still significant portion of banks think their projections are fairly accurate. Nonetheless, 25.93% of respondents rated their forecasts as Moderately Accurate, suggesting room for improvement in the forecasting process or some degree of uncertainty. Banks generally believe their data-driven estimates, and few have any doubts about their correctness, as seen by the surprising fact that none of the respondents thought their forecasts were Not Accurate or Somewhat Accurate.

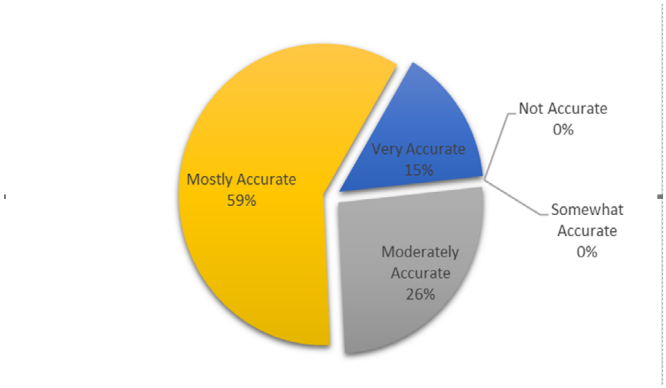

Figure 16. Commercial Banks frequency for reviewing and updating forecasting models

According to the findings from Lusaka's commercial banks on how frequently they examine and update their forecasting models, as seen in Figure 4.6.4, monthly updates are the most popular, with 47.27% of respondents choosing this schedule. This implies that many banks choose a modest update frequency, which probably strikes a balance between the resources needed for model improvements and the requirement for new data.
Figure 14 also shows a significant proportion of respondents (30.91%) stated that they reviewed and updated their models once a week, demonstrating a dedication to making more regular revisions to maintain the highest level of accuracy in their projections. Just 16.36% of respondents update their models every three months, compared to 5.45% who change them every day. Even if they are less frequent, the daily updates raise the possibility that some institutions are depending on extremely dynamic forecasting models that need to be adjusted often. Overall, the data shows a tendency towards monthly updates, while there may be some variance depending on each bank's unique forecasting requirements and available resources.

4.7.3. The extent to which data analytics inform commercial banks business decisions

The findings from Lusaka's commercial banks, displayed in Figure 15, demonstrate how important data analytics are in guiding business decisions. The vast majority of respondents (69.09%) said that data analytics have significant effects on their business choices, indicating that their strategic processes heavily rely on data-driven insights. The importance of data analytics in the sector is demonstrated by the additional 29.09% of respondents who stated that it significantly influences their decision-making. Notably, none of the respondents chose Not at All or Slightly, and just 1.82% of respondents ranked the impact as Moderate. With the great majority of commercial banks in Lusaka perceiving a high degree of impact, this distribution shows a broad consensus that data analytics are crucial for directing business choices.

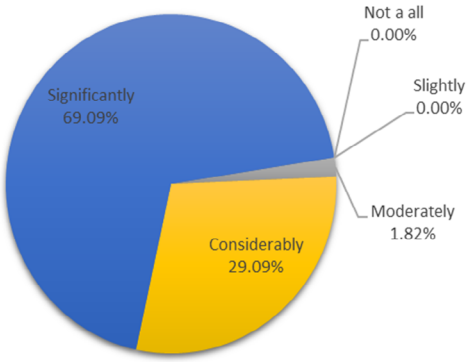

Figure 15. Extent of data analytics in informing commercial banks business decisions

4.8.1. Commercial banks satisfaction with current forecasting methods

According to the data presented respondents who worked for Lusaka's commercial banks expressed a generally good opinion of the forecasting techniques currently in use. 58.18% of respondents said they were Very Satisfied with their predicting techniques, compared to 32.73% who said they were Satisfied. Merely 9.09% of participants had a neutral sentiment, meaning they were neither satisfied nor dissatisfied. It is interesting to note that because the Very Dissatisfied and Dissatisfied categories reported 0.00%, none of the respondents expressed discontent Bany Mohammad *et al.*, (2022). Business intelligence. This indicates that most respondents had a positive opinion of the banks' forecasting techniques, indicating that they are generally well-regarded.

4.8.2. Economic Trend Identification

Effectiveness of data analytics in identifying economic trends
The fourth and final objective for this study was to assess the effectiveness of data analytics in Business forecasting and identifying economic trends and the results presented as follows.
Effectiveness of Data Analytics in Business Forecasting and Identification of Economic Trends results obtained showed that in Forecasting methods, Time series analysis had 60%, Regression analysis had 50% and Machine learning was 40% as represented below;
While results obtained in Forecast accuracy showed that Very Accurate rated at 40%, while Accurate rated at 30% and Moderately Accurate at 30% as showed below;
Results obtained under Economic indicators tracked showed that GDP was at 80% while Inflation ranked 70% and Interest rate at 60% tracked as tabulated.

4.9. Discussion of research findings

Data analytics is widely used in the banking industry, with 80% of respondents using Excel and 40% using Python.

Data analytics is effective in customer segmentation, with 70% of respondents finding it Very Effective or Effective. This implies that data analytics greatly improves banks' capacity to efficiently segment their clientele, enabling more specialised services and higher levels of customer satisfaction.

This conclusion is consistent with research by Davenport (2009) that discovered that two of the most effective methods for enhancing organisational decision-making are data analytics and decision automation. Additionally, the findings support a study by Hung *et al.* (2020) that revealed data analytics is utilised to optimise internal operations and enhance existing goods or services. should be used cautiously, nevertheless, since Gupta and George (2016) found that a corporation does not necessarily realise benefit from the use of data analytics if it only adopts information technology (IT) and accumulates data.

Data analytics informs business decisions, with 50% of respondents finding it Very Influential. A well-educated workforce is essential for effectively leveraging data analytics tools, as evidenced by the findings of this study, which aimed to analyse the Analysing the data analytics in business management within the banking sector in Lusaka.

Risk management is a key application of data analytics, with 80% of respondents monitoring credit risk. Although just 5.6% of respondents had a risk management function, the results also indicate that there is room to improve the application of data analytics in this crucial field. Increasing the emphasis on data-driven insights might enhance decision-making processes pertaining to risk assessment and mitigation techniques, as risk management is crucial for preserving financial stability and compliance inside institutions. This supports the results of Lee (2017), who found that the use and utility of data analytics have shown to be crucial, particularly with regard to fraud detection, risk management performance, and marketing enhancement in commercial banks

The under-representation of risk management specialists, however, suggests a possible knowledge vacuum that may be filled by focused training and development initiatives meant to incorporate data analytics into risk management procedures.

Business forecasting and economic trend identification are critical applications of data analytics, with 60% of respondents using time series analysis.

According to the survey, data analytics is essential for business forecasting and spotting economic trends in the banking industry. The mix of highly qualified personnel with extensive educational backgrounds supports the efficient use of analytical techniques for forecasting market changes and consumer behaviour patterns.

This feature enables banks to proactively modify their plans in response to expected shifts in the economy. This result is in line with the findings of, who found that data analytics is essential for developing and visualising a number of indicators of the inefficiency of numerous internal and external processes, as well as the study conducted by Al-Dmour *et al.* (2023), which found that the use of data analytics improves bank performance. The outcomes also supported the conclusions of Johnson *et al.* (2018), who found that banks may use data analytics to enhance client retention, boost profitability, and personalise marketing campaigns.

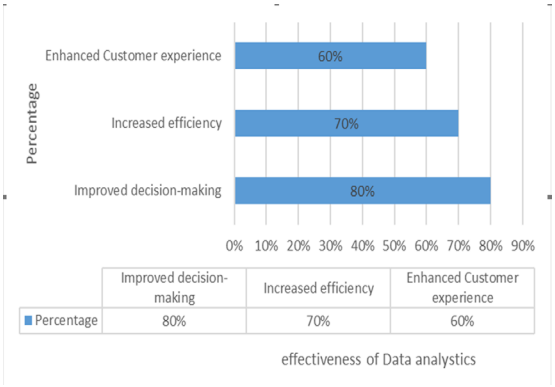

Figure 40.27. Effectiveness of Data analytics

5. CONCLUSION

Notably, data analytics will help banks better effectiveness to segment their clientele and provide specialised services that increase client retention and satisfaction. It is also significant of the use of data analytics in promoting individualised banking experiences is demonstrated by the substantial connections found between its use and effective segmentation.

Workers with higher educational backgrounds demonstrate a better comprehension of business intelligence and the strategic advantages of data analytics. Further underscoring the need to develop a workforce in the banking industry that is both educated and analytically strong. Long-term corporate success is facilitated by their ability to use data-driven insights to make better decisions.

The study also highlights how important data analytics are for predicting and tracking economic trends, which helps banks foresee shifts in the market and modify their plans appropriately towards better performance of the banks. In addition to giving the bank a competitive edge, this forecasting skill increases the bank's resilience in a financial climate that is changing quickly. Overall, professional experience and educational background have a significant impact on how effectively data analytics work in banking management. This suggests that harnessing the promise of data-driven insights requires ongoing investment in staff members' data-driven insights. The potential for enhanced strategic planning and operational efficiency increases as banks continue to incorporate analytics more thoroughly into their operations.

REFERENCES

Barton, & Court. (2012). Approaches to analysis of qualitative research data: a reflection on the manual and technological approaches.

Bankseta. (2017). Annual report, enabling skills development in the banking and alternative banking sector, investors in people, republic of south africa.

Bahl, J., Nkosi, T., & Roberts, P. (2020). Evaluating the impact

of data analytics on operational risk management: a study of the south african banking sector. *Journal of banking and financial analytics, 12*(3), 45-67.

Bany Mohammad, A., Al-Okaily, M., Al-Majali, M., & Masa'deh, R. E., (2022). Business intelligence and analytics (bia) usage in the banking industry sector: an application of the toe framework. *Journal of open innovation: technology, market, and complexity, 8*(4), 189.

Beattie, A. (2022). *Business forecasting: understanding the basics.* Investopedia. available at: https://www.investopedia.com/articles/financial-theory/11/basics-business-forcasting.asp.

Berumen, A. (2021). *Effective use of data analytics and its impact on business performance within small-to-medium-sized businesses.* Pepperdine University.

Brown, L., & Johnson, P. (2020). Challenges of over-segmentation in consumer targeting: a data-driven approach. *International journal of marketing research, 15*(2), 89-103.

Buchak, G., Matvos, G., Piskorski, T., & Seru, A., (2024). Beyond the balance sheet model of banking: implications for bank regulation and monetary policy. *Journal of political economy, 132*(2), 616-693.

Chen, C., & Storey. (2012). *Strategic fit and design in business ecosystems.* IGI global USA.

Chen, J., Siddik, A. B., Zheng, G. W., Masukujjaman, M., & Bekhzod, S. (2022). The effect of green banking practices on banks' environmental performance and green financing: An empirical study. *Energies, 15*(4), 1292. https://doi.org/10.3390/en15041292

Chen, X., Tan, Y., & Lim, J. (2022). The effectiveness of data analytics tools in smaller banks in southeast asia. *Journal of banking and finance, 134*, 106-120. https://doi.org/10.1016/j.jbankfin.2022.106120.

Coggin, H. (2024). *Business intelligence and its applications in banking industry.* Kani. Available at: https://kanipayments.com/blog/application-of-business-intelligence-in-banking-industry

Cote, C. (2021). *What is predictive analytics? 5 examples | hbs online.* Business insights. Available at: https://online.hbs.edu/blog/post/predictive-analytics.

Creswell, J. W. (2013). *Qualitative inquiry & research design: choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage.

Crouhy, G., & Mark. (2006). *The essential of risk management, mcgraw hill professional.*

Davenport, T. H., & Harris, J. G. (2009). *Competing on analytics: the new science of winning.* Harvard business review press.

Ekinci, Y. (2015). *Designing research questionnaires for business and management students.* Sage.

Fintrak. (2023). *The power of business intelligence in the banking sector.* Fintrak software. available at: https://www.fintraksoftware.com/business-intelligence-in-banking-sector

Gordy, & Heitfield. (2006). *A risk-factor model foundation for ratings-based bank capita rules.* Academic press, USA.

Grover, V., Chiang, R. H., Liang, T. P., & Zhang, D. (2018). Creating strategic business value from big data analytics: a research framework. *Journal of management information systems, 35*(2), 388-423.

Gupta, M., & George, J. (2016). Toward the development of a big data analytics capability. *Information manager (the), 53*, 1049-1064. https://www.semanticscholar.org/paper/c7f686b1047d6519ea1f90c8e3bfd6e7e2d7aadf

Gupta, M., & George, J. F., (2016). Toward the development of a big data analytics capability. *Information & management, 53*(8), 1049-1064.

Gupta, S., & Mehta, S. K. (2024). Data mining-based financial statement fraud detection: Systematic literature review and meta-analysis to estimate data sample mapping of fraudulent companies against non-fraudulent companies. *Global Business Review, 25*(5), 1290-1313.

Hung, J. L., He, W., & Shen, J. (2020). big data analytics for supply chain relationship in banking. *Industrial marketing management, 86*, 144-153.

Hung, T., Wang, C. J., & Brook, R. H. (2020). Response to covid-19 in taiwan: big data analytics, new technology, and proactive testing. *Journal of the american medical association (JAMA), 127*(3), 15-19.

Intelligence, B., Bhuvana, J., Balamurugan, M., Aadil, M., & Hemachandran, K. (2023). *18 al and real-time.* Artificial intelligence and knowledge processing: improved decision-making and prediction, 208.

Jones, M., Lee, D., & Carter, S. (2017). Adapting to change: the risks of relying on historical data for market segmentation. *Journal of business analytics, 9*(4), 121-134.

Keller, K. D. (2016). About marketing process model and relationship marketing. Model-based governance for smart organizational future, (february) (pp. 51–54). https://www.researchgate.net/publication/313561456.

Kotler, P., & Keller, K. L. (2012). *Marketing management* (14th ed.). Boston. prentice hall, pearson.

KPMG. (2019). D*ata analytics and risk assessment: how data analytics is transforming risk assessment" (report).* KPMG international.

Leeal-Dmour, H., Saad, N., Basheer Amin, E., Al-Dmour, R., & Al-Dmour, A. (2023). the influence of the practices of big data analytics applications on bank performance: filed study. *Vine journal of information and knowledge management*

systems, 53(1), 119-141.

Mckinsey, & Company. (2018). *The state of ai in business: how ai is transforming industries.* Retrieved from https://www.mckinsey.com

Osei, F., Ampomah, G., Kankam-Kwarteng, C., Bediako, D. O., & Mensah, R. (2021). Customer satisfaction analysis of banks: the role of market segmentation. *Science Journal of Business and Management, 9*(2), 126. https://doi.org/10.11648/j.sjbm.20210902.19.

Rahman, M. M. (2023). The effect of business intelligence on bank operational efficiency and perceptions of profitability. *FinTech, 2*(1), 99-119.

Rishabh Software. (2019). *BI in Banking Sector, Business Intelligence in Financial Industry.* Available at: https://www.rishabhsoft.com/blog/business-intelligence-in-banking-and-finance.

Sarantakos, S. (2013). *Social Research* (4th ed.). Hampshire: Palgrave Macmillan.

Schabenberger, O., & Gotway, C. A. (2017). *Statistical methods for spatial data analysis.* Chapman and Hall/CRC.

Smith, A. (2018). The impact of data-driven segmentation on marketing strategies. *Journal of Marketing Insights, 12*(3), 45-60.

Smith, J. (2019). The Impact of Fuel Price Volatility on Business Operations: A Review of Literature. *Journal of Business Economics, 15*(2), 87-102.

Vivek, J. (2021). *How Is Data Analytics Used In Finance And Banking Sector?* Zuci Systems. Available at: https://www.zucisystems.com/blog/how-is-data-analytics-used-in-finance-and-banking-sector/.

Wamba, S. F., Akter, S., Edwards, A., Chopin, G., & Gnanzou, D. (2017). How 'big data' can make big impact: Findings from a systematic review and a longitudinal case study. *International Journal of Production Economics, 183*, 416-428.

Wedel & Kamakura. (2012). *Market segmentation concept and Methodological Foundations.* Springer US.

Yellowfin, B. I. (2011). *Business Intelligence for the finance and banking sector.* Available at: https://www.yellowfinbi.com/blog/business-intelligence-for-the-finance-and-banking-sector