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EXAMINING THE CREDIT RISK TECHNIQUES AND ITS EFFECT ON PERFORMANCE FOR ENHANCED PRODUCTIVITY AT SELECTED FINANCIAL INSTITUTIONS IN LUSAKA, ZAMBIA

A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, UNIVERSITY OF LUSAKA IN PARTIAL FULFILLMENT OF THE AWARD OF THE MASTER OF SCIENCE IN ACTUARIAL SCIENCE.

BY

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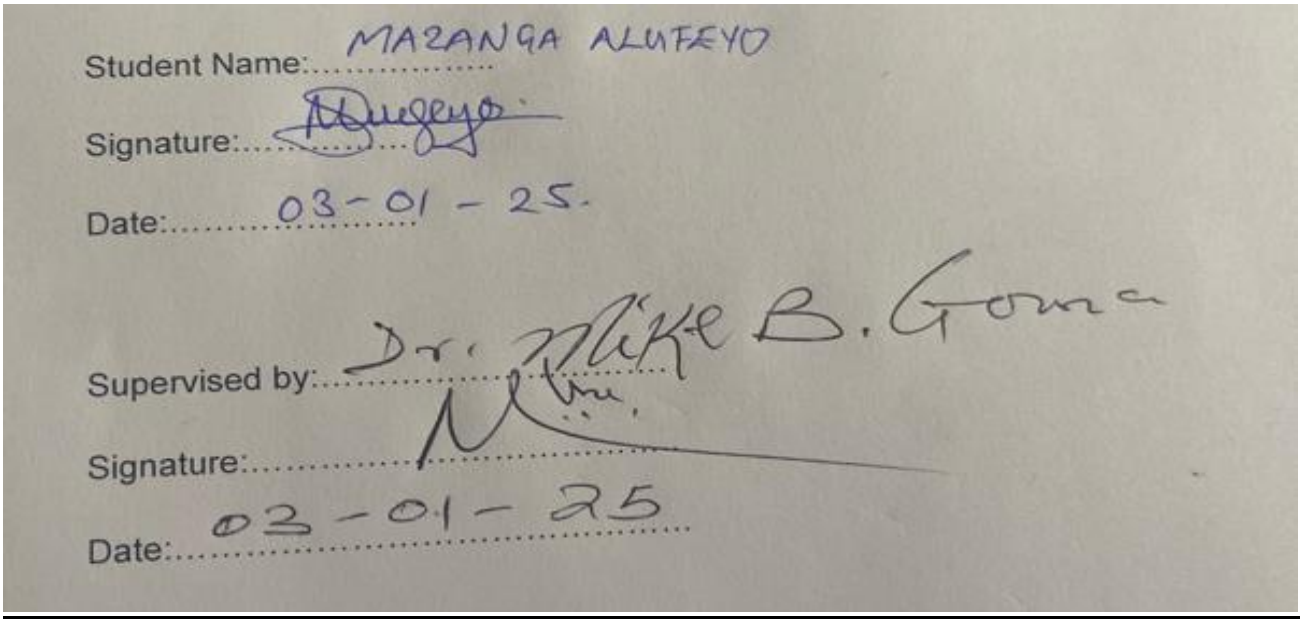
DECLARATION

I, **Mazanga Alufeyo** Student at University of Lusaka (UNILUS) in Lusaka, Zambia do hereby, declare that this research report, "**"EXAMINING THE CREDIT RISK TECHNIQUES AND ITS EFFECT ON PERFORMANCE FOR ENHANCED PRODUCTIVITY AT SELECTED PRIVATE FINANCIAL INSTITUTIONS IN LUSAKA, ZAMBIA**, is my own work, as such has not been submitted before to any University in Zambia or outside for an award of a bachelor's or master's degree programme. I, therefore, sign as authentic in my signature as my original work.



Dedication

This dissertation is dedicated to my family and friends especially my parents John and Ruth who have continued to push my academic journey with deliberate intention and my late sister Lusungu for her emphatic push on the importance of education. Your unwavering support, encouragement, and belief in me have been my greatest motivation throughout this journey. I could not have done it without you.

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To my advisor, Dr. Mike Goma, thank you for your guidance, wisdom, and patience. Your mentorship has been invaluable to my growth as a researcher and scholar. This work is also dedicated to future researchers and students. May it serve as a stepping stone in the quest for knowledge and innovation.

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Above all, I acknowledge the All Mighty God through the profound grace of our Lord Jesus Christ for His goodness and mercy, the knowledge and alignment in my academic journey.

ABSTRACT

The purpose of this study was to examine the credit risk techniques and its effect on performance for enhanced productivity at selected financial institutions in Lusaka district. The study was guide by three objectives; to ascertain the best techniques of credit risk modelling of selected financial institutions in Lusaka district for enhanced productivity, to examine the effects of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity and to evaluate the performance of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity. The Agency theory served as the theoretical foundation of this study. A parallel convergent design was used in this study. The sample size comprised of 104 respondents selected through simple random sampling and purposive sampling. The data which was collected using questionnaires and interview guides was subjected to descriptive analysis and thematic analysis. The findings revealed that the effects of credit risk modeling include proactive risk management, enhanced decision making, enhanced customer satisfaction, faster loan approvals and Improved risk assessment accuracy. The study findings indicatively show that commonest or frequently utilised credit risk modeling technique is loan restructuring. This was followed by risk-based pricing (27%) and collateral management. The credit risk modelling techniques employed by a subset of financial institutions in the Lusaka district were evaluated for their ability to improve productivity using Key Performance Metrics (KPM). The results indicate that the institutions' credit risk models had an average accuracy of approximately 83.1%. In 83.1% of the situations with an average precision rate of 72.4%, the models accurately classified 72.4% of the loans that were recognised as high-risk. About 71% of the real high-risk loans were accurately recognised by the models, according to the recall rate of about 71%. The qualitative findings further indicated that there has been a noticeable decline in non-performing loans. The key informants reported an average decrease in non-performing loans (NPLs), indicating a notable enhancement in their capacity to evaluate and handle credit risk. The study concluded by showing that financial institutions in Lusaka can improve their capacity to evaluate and responsibly manage credit risk by implementing suitable credit risk modelling approaches. Based on the findings, the study recommended that to improve their credit risk assessment procedures, financial institutions ought to think about incorporating cutting-edge machine learning models. Financial institutions ought to automate repetitive operations and incorporate model outputs straight into decision-making workflows in order to optimise the credit risk assessment process.

Key words; Credit Risk Techniques, Performance, Productivity, Financial Institutions

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CHAPTER ONE: INTRODUCTION

1.1. Overview

This chapter focuses on the introduction of the study. Background to the study, statement of the problem, purpose of the examination, study objectives, research questions, significance of the study, limitations, delimitation, and definition of words are all included in this chapter. Lastly, a summary of this chapter is drawn.

1.2. Background

Credit risk modeling is a term used to describe data-driven risk models that estimate the likelihood of a borrower defaulting on a loan (Bhalla, 2020). Credit risk refers to the possibility of a debt default resulting from a borrower's failure to make required payments. The lender bears the risk in the first instance, which includes lost principle and interest, cash flow disruption, and increased collection costs. The loss might be total or partial, and it can occur in a variety of situations (Churchill, 2016).

Credit risk emerges when a company or individual borrower fails to pay their financial obligations, according to Cooperate Finance Institute (2022). It is the likelihood that a lender would not receive the principal and interest payments on a loan that is owed to a borrower in order to service the debt. Credit risk will interrupt the lender's cash flow and increase collection expenses, as the lender may be required to hire a debt collection agency to enforce the collection. The lender may suffer a partial or complete loss, in which case the lender loses a portion of or the entire amount granted to the borrower.

The interest rate charged on a loan is the lender's compensation for taking credit risk. Banks charge a high interest rate for high-risk loans in an efficient market system to compensate for the high chance of default. A business borrower with a consistent income and a strong credit history, for example, can obtain credit at a cheaper interest rate than high-risk borrowers. When dealing with a corporate borrower with a bad credit history, on the other hand, the lender may choose to charge a high interest rate or reject the loan application entirely. Lenders can analyze a potential borrower's credit risk using a variety of approaches in order to minimize losses and avoid late payments (Banks, 2014).

Several of the world's largest banks have built erudite systems to assess and aggregate credit risk across geographical and product lines over the last decade. The aim to produce more accurate quantitative estimates of the amount of economic capital needed to sustain a bank's risk-taking activities sparked first interest in credit risk models. The problem of credit risk models' potential relevance for supervisory and regulatory reasons has gained attention as the outputs of credit risk models have played an increasingly major part in the risk management procedures of large banking institutions (Chacko, 2009).

The flexibility of models in adapting to changes in the economic environment and developments in financial products may lessen the incentive for banks to engage in regulatory capital arbitrage from a regulatory standpoint. Additionally, a model-based approach may bring capital needs closer to the perceived riskiness of underlying assets, as well as create credit risk estimations that better represent the structure of each bank's portfolio. However, regulators must be confident that portfolio modeling approaches are not only well integrated with the financial institutions day-to-day credit risk management, but also conceptually sound, empirically validated, and produce capital requirements that are equivalent to institutions before being used in setting regulatory capital requirements (Crouhy, 2001).

In 2008, the world experienced a severe financial crisis. The deficiencies of credit risk management systems, it is commonly agreed, were mainly to blame. The 2008 financial crisis came partly as a result of excessive credit laxity, which led in it becoming overly restrictive. This commonly held viewpoint emphasizes the importance of rigorously scrutinizing credit provision and price. Financial institutions must adopt a strong risk management strategy for retail and business lending in order to reduce credit risk (Banks, 2014). However, managing credit risk in retail lending is very different from managing credit risk in corporate lending, because corporate lending looks at a variety of ratios that aren't always appropriate for small business or single-person lending (Heffernan, 2005). Data access in retail lending is somewhat limited. Nonetheless, due to the size of the loans involved, corporate lending has historically shown to be particularly vulnerable to credit risk.

Financial institutions can reduce credit risk in five ways: accurate loan pricing, credit rationing, collateralization, loan diversification, and, more recently, asset securitization and/or the use of credit derivatives (Heffernan, 2005). Credit risk in retail banking can be measured in one of two ways: qualitatively or quantitatively. In an ideal world, the bank uses qualitative methods to determine whether or not to give a loan. However, information may not be provided in certain cases. For example, a credit bureau may be unable to locate a credit report for a specific applicant.

The bank will subsequently most likely use a qualitative approach, manually reviewing the borrower's application. This entails examining a set of elements that aid in determining the borrower's risk profile. It takes into account things like the borrower's time with the bank, employment history, and wealth. Financial institutions use a variety of credit risk-related performance metrics, such as chance of default, exposure at default, and loss given default, to manage credit risk exposures. Banking institutions will be subject to varied legislation in different nations, which will operate as entrance obstacles in some countries and encourage the formation of banking activity in others (Banks, 2014).

In today's world of increasing competition and a volatile business climate, it's become critical to identify, measure, and manage credit risk in order to improve economic capital over time. Microfinance institutions in Zambia have run into problems from a variety of sources throughout the years. The main reasons of these problems are sloppy loan scrutiny of borrowers and counterparties, poor loan portfolio administration, and ignoring the country's overall economic indicators or other events that can lead to a drop in the credit level of microfinance's counterparties. The incapacity of a bank or a micro financial institution to adequately manage its credit risk has a significant negative impact on the short- and long-term profitability of the institution. Due to lax credit risk controls, which have been characterized by massive insider loans, external fraud, and the avoidance of diversified loan portfolios, some financial institutions in Zambia have had their hard-earned reputations tarnished, and others that have been unable to curtail or curb the situation have collapsed in the last five years (Njekwa, 2016). As a result of the foregoing setting, the goal of this research was to examine credit risk techniques and their impact on performance in financial institutions in the Lusaka area in order to boost productivity.

1.3. Statement of the Problem

In today's highly regulated world, effective credit risk management is not only essential for compliance, but it may also provide a significant competitive advantage if done correctly (Global Treasure, 2022). For any lender, credit risk measurement (CRM) is essential. It's a statistic that lenders use to determine the likelihood of a borrower defaulting on a loan or failing to satisfy other contractual obligations. In a larger sense, credit risk management seeks to predict the possibility that a lender will not get the owed principal and interest, which, if allowed to happen, will result in a loss and increase the costs of collecting the debt owed. The key benefit of integrated credit risk management is the reduction of revenue losses. Through the implementation of comprehensive credit risk management, financial institutions can considerably improve overall performance and acquire a competitive advantage (Marisit, 2019).

Notwithstanding its many advantages, little is known about credit risk management strategies and how they affect Zambian financial institutions' performance in terms of increased productivity. Additionally, there aren't many local studies that have examined how international credit risk methods might be tailored to Zambia's financial environment, how these tactics affect institutional efficiency, and how difficult it is to put them into practice. Therefore, this study aimed to investigate credit risk strategies and their effects on performance in selected financial institutions in Lusaka district in order to boost productivity.

1.4. Purpose of the study

The purpose of this study was to examine the credit risk techniques and its effect on performance for enhanced productivity at selected financial institutions in Lusaka district.

1.5. Specific Objectives

1. To ascertain the best techniques of credit risk modeling of selected financial institutions in Lusaka district for enhanced productivity.

2. To examine the effects of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity.

3. To evaluate the performance of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity.

1.6. Research Questions

1. What credit risk management strategies and techniques are currently implemented at the selected financial institution in Lusaka?

2. How does the credit risk modeling techniques of selected financial institutions in Lusaka district impact the financial institution's productivity and operational efficiency?

3. How is the performance of credit risk techniques modeling of selected financial institutions in Lusaka district?

1.7. Significance of the study

The significance of the study examining credit risk techniques and their effect on performance for enhanced productivity at selected financial institutions will be useful to financial institutions in managing credit risks. Stakeholders, financial institutions, researchers, academicians will benefit from this research as it will reveal the importance of credit to their profitability and provide the best credit risk modeling tools for clients. This research will add to the current body of knowledge on credit risk management approaches. Finally, the outcomes of this research will aid financial institutions in developing a thorough understanding of successful techniques for managing credit risk.

1.8. Delimitation

This study was conducted in a few private financial institutions in the district of Lusaka. A thorough analysis of the credit risk management strategies adopted by these organisations was the main goal of the study. It aimed to examine the efficiency of various risk-reduction strategies and how they affected the institutions' overall output and performance. Through examining the connection between credit risk management strategies and institutional results, the research sought to offer important insights for maximising efficiency and guaranteeing long-term financial expansion. The results are meant to serve as a reference for these organisations as they improve their risk management plans for increased operational effectiveness.

1.9. Operational Definitions

Credit: refers to a contractual agreement in which a borrower receives something of value immediately and agrees to pay for it later, usually with interest.

Credit Risk: refers to the risk that a lender may not receive the owed principal and interest, which results in an interruption of cash flows and increased costs for collection.

Credit Risk Techniques: refers to techniques used by lenders to determine the level of credit risk associated with extending credit to a borrower.

Private Financial Institutions: refers to entities like banks and hedge funds that are owned entirely by shareholders, without a government stake.

Techniques: A technique is a particular method of doing an activity, usually a method that involves practical skills

Effect: refers to a change which is a result or consequence of an action or other cause.

Productivity: Productivity is a measure of the rate at which output of goods and services are produced per unit of input.

1.10. Summary

The background to this study was described in this chapter, as well as the identified statement of the problem and the study's aim. In addition, the study's precise aims and research questions are explained in this chapter. The importance of conducting the research has also been emphasized. The scope of the investigation, limits, and operational definitions within the study were also addressed in this chapter. The literature relevant to the study's primary themes will be discussed in the next chapter.

CHAPTER TWO:
LITERATURE REVIEW

2.1. Introduction

This chapter primarily focused on the different literature that have been written in similar studies by different authors and scholars to narrow the gap of the study to validate the research. Empirical literature review, Theoretical Framework and the Conceptual Framework are all covered in this chapter.

2.2. Credit Risk Modeling Techniques

With the adoption of cutting-edge methodologies, the field of credit risk modelling has seen a substantial transformation, moving from conventional statistical procedures to increasingly complex data driven strategies. However, more sophisticated approaches like machine learning algorithms and artificial neural networks (ANNs) are gradually replacing or supplementing the traditional statistical tool of logistic regression, which is still a baseline methodology because of its interpretability and simplicity. The increasing use of machine learning models, which take advantage of their capacity to examine large datasets with intricate patterns, was observed by Patel et al. (2021).

When dealing with heterogeneous datasets that contain high dimensional characteristics, machine learning techniques in particular, ensemble models like random forests and gradient boosting have shown themselves to be superior. Chanda and Phiri (2022) elaborated on this by emphasising how well ANNs work at identifying interconnected and non-linear correlations in credit risk data. Because ANNs process information in layers using interconnected nodes, they are very good at estimating default probability in situations when conventional linear models are ineffective. They also showed how ANNs are resilient to the variations in credit environments in Zambia and Sub-Saharan Africa, demonstrating how they can adjust to a wide range of borrower profiles.

A 2022 study by Authur found that hybrid solutions are starting to hold their own against solo alternatives. Through a combination of artificial intelligence tools and traditional statistical methods, such as logistic regression, these models provide for both interpretability and processing capacity. Hybrid models are extremely useful when it's

necessary to reconcile past credit risk trends with real-time forecast insights. These connections not only increase the accuracy of risk estimates but also assist institutions in lowering operational risks and better meeting regulatory obligations. The flexibility of hybrid systems makes them a desirable solution for financial institutions that operate in dynamic credit markets.

2.3 Effects of Credit Risk Modeling on Productivity

Financial institutions' productivity and operational efficiency have been shown to be positively impacted by the use of sophisticated credit risk modelling tools. Musonda et al.'s (2023) study emphasised this by looking at how Lusaka's loan approval procedure was expedited by the use of machine learning based credit assessment tools. These methods made it possible for evaluations to be completed more quickly and accurately, which allowed institutions to process more applications with fewer errors. The study's 15% non-performing loan (NPL) reduction shows how well these models work to improve the calibre of lending decisions.

According to a study by George et al. (2022), hybrid models have proven to offer a distinct edge in raising productivity by successfully balancing strategic foresight with operational efficiency. These models give organisations the flexibility to adjust to changing market situations while preserving their core operational capabilities by fusing the best aspects of old and modern approaches. According to George et al. (2022), organisations who used hybrid solutions saw a significant improvement in the alignment of their operations with regulatory norms, which led to more efficient compliance procedures. These models greatly lessened the administrative load on employees by automating and optimising the compliance operations, freeing them up to focus their time and energy on higher value work. The institution's employees thus became more committed to key projects like innovation, growth, and customer involvement, all of which aided in the organization's expansion and scalability. The hybrid model's capacity to strike a balance between short-term operational requirements and long-term objectives not only maximised resource allocation but also raised the institution's total productivity, setting it up for long-term success in a cutthroat market.

2.4 Performance Evaluation of Credit Risk Modeling Techniques

Evaluating credit risk models' performance is crucial to guaranteeing their dependability and efficacy. Measures like precision, sensitivity, specificity, and accuracy are frequently employed to assess these models' prediction ability. In a thorough examination of hybrid models in the financial industry, Tonny et al. (2022) found that they performed better at identifying high risk borrowers with fewer false positives. This capacity is essential for striking a balance between risk mitigation and taking advantage of loan opportunities.

Other performance factors that have become more important are scalability and adaptability. The benefits of dynamic systems that can update with realtime data were highlighted by Moyo et al. (2020), who assessed the scalability of several credit risk models. These models give institutions the ability to react proactively to changes in the market, recessions, and credit trends. In markets like Zambia, where economic instability is a persistent problem, this flexibility is especially important.

2.5 Research gaps

Notwithstanding these developments, there are still obstacles in the way of using credit risk modelling methodologies as effectively as possible. Research has shown that credit risk models are not fully integrated with local market conditions, which leads to less than ideal performance (George et al., 2024). In addition, a lot of financial organisations have limitations with regard to personnel knowledge, technology infrastructure, and data accessibility. Despite their great effectiveness, hybrid models can necessitate large investments in infrastructure and qualified staff, which may be prohibitive for smaller institutions. By filling in these gaps, credit risk modelling may be able to fully increase productivity.

3.1 Theoretical Framework

Theoretical frameworks are essential in research as they provide a structure and theoretical basis for investigations. They help researchers to organize their thoughts, guide the development of research questions, inform data collection and analysis, and facilitate the interpretation and discussion of findings. A well-developed theoretical

framework enhances the rigor and coherence of a study and contributes to the advancement of knowledge in a particular field (Cresswell, 2013).

The Agency theory proposed by Stephen Ross and Barry Mitnick, will guide this research. The origins of agency theory can be traced back to issues of risk sharing between principals and agents (Daily et al., 2003). The agency theory is a hypothesis that explains the interaction between business principals and representatives or agents. When there is a problem in the agency connection owing to unaligned aims or varying levels of aversion to hazard, agency theory is used to solve difficulties in the firm or any business operations by mutual understanding between two or more groups or parties (Jensen and Meckling, 1976). The agency theory describes a situation in which one party (the principal) contracts another party (the agent) to perform services on his or her behalf, entrusting the agent with certain decision-making authority. The concept of "principal and agent" arose as a result of the separation of ownership and control. The agency theory's overarching goal is to structure relationships in such a way that promotes good alignment of interests between principal and agent.

According to Chong and Eggleton (2007), agency theory argues that all people are motivated simply by self-interest. The goal of agency theory is to tackle two difficulties that can arise in agency relationships. To begin with, it seeks to address the problem of the principal being unable to verify that the agent has acted appropriately. Second, there is the issue of distinct actions desired by the principal and the agent due to their differing risk preferences. This theory will be used by the researcher because it clearly describes how to organize interactions in which one party (principal) determines the work and another party (agent) performs or makes choices on the principal's behalf (Schroeder et al., 2011).

The stakeholder theory is the second theory that will guide this research. Milton Friedman, an economist, proposed the shareholder theory. Stakeholder Theory is a way of looking at capitalism that emphasizes the linked interactions that exist between a company and its customers, suppliers, employees, investors, communities, and other stakeholders. According to the principle, a company should generate value for all stakeholders, not just shareholders. According to stakeholder theory, business executives must understand and

account for all of their company's stakeholders, or the constituencies that influence and are influenced by its activities. Employees, shareholders, customers, suppliers, creditors, the government, and society at large are all stakeholders. The majority of firm stakeholders do not own stock or shares. Rather, they have a distinct type of investment. The idea has become a central consideration in the study of corporate ethics, and it has served as a foundation for further inquiry and development in many researchers' research and publications (Simon, 2016).

3.2 Conceptual Framework

A conceptual framework is an analytical tool or structure that provides a theoretical foundation for understanding a research problem or phenomenon. It consists of interconnected concepts, theories, and ideas that help researchers organize and explain the relationships between variables or components of a study. A conceptual framework is typically developed at the early stages of research and guides the formulation of research questions, hypotheses, and the overall research design (Cresswell, 2013).

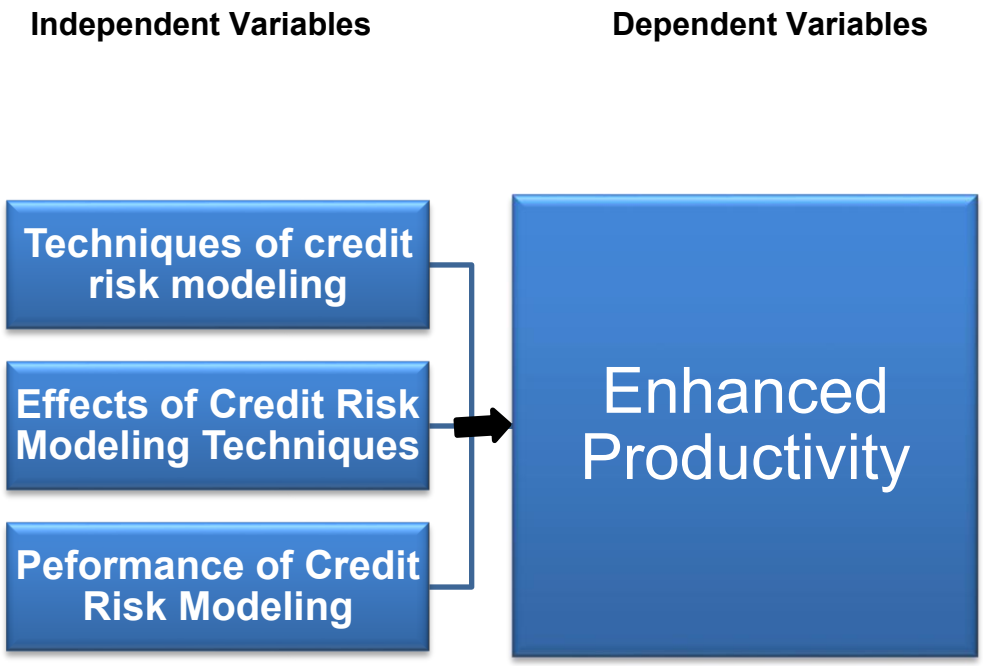


Figure 1: Conceptual Framework

With reference to the framework above, this study sought to ascertain the best techniques of credit risk modeling of financial institutions, examine the effects of credit risk modeling techniques and evaluate the performance of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity. This framework places a strong emphasis on how crucial sophisticated credit risk modelling methods are to improving financial institutions' operational efficiency. Financial organisations can improve overall productivity and growth by optimising their risk management procedures by tackling integration and user acceptability difficulties and concentrating on critical metrics like accuracy, precision, and recall. In order to facilitate future research and useful applications in the field of credit risk management, this conceptual framework acts as a guide for comprehending the interplay between credit risk models and institutional performance.

3.3 Summary

This chapter was entirely devoted to reviewing related literature and presenting the theoretical and conceptual frameworks. The next chapter presented the methodology that underpinned this study.

CHAPTER THREE:
METHODOLOGY

3.1 Introduction

This chapter primarily focuses on the approach that will serve as the foundation for the research. The research design, target population, sample size, sampling processes, research instruments, validity, ethics and consideration, data analysis, data collecting, and chapter summary are all covered in this chapter.

3.2 Research design

The term "research design" refers to a plan or structure within which research must be conducted in order to acquire more precise results (Kasonde-Ng'andu, 2013). It is the glue that keeps the research effort together. This study used a parallel convergent design. A sort of mixed-methods research design known as a parallel convergent design gathers both quantitative and qualitative data concurrently, analyses them independently, and then combines or compares them to offer a thorough grasp of the study subject. Researchers can verify or triangulate results from many data sources and viewpoints thanks to this architecture.

3.3 Population

The term "population" refers to a group of people or elements who share at least one characteristic. In other words, the target population can be defined as all members of a certain group who are involved in an investigation (Tracy, 2013). As a result, workers of chosen financial institutions and other key participants in risk assessment in the Lusaka district were the study's target audience. A population of 140 was considered for the study.

3.4 Sample Size

A sample, according to Kabir (2016), is a group of people who will take part in the study and are chosen to reflect the entire population. The sample size for this study encompassed 104 study participants. This sample was drawn using slovins formula as shown below. A mathematical formula known as Slovin's formula is used to calculate the necessary sample size when the size of the population is known. It is frequently employed in research when an investigator wishes to guarantee that the sample drawn from the

population is representative, yet the population as a whole is too big to gather data from every member.

$$n = \frac{N}{1 + Ne^2}$$

Whereas:

n = sample size

N = total population

e = error margin / margin of error

N = 140, e = 0.05 or 5%

$$n = \frac{140}{1 + 140(0.05)^2}$$

$$n = \frac{140}{1 + (140 \times 0.0025)}$$

$$n = \frac{140}{1 + 0.35}$$

$$n = \frac{140}{1.35}$$

$$\mathrm{n} \approx 104$$

3.5 Sampling Technique

"Any process of action or technique followed when picking a component, fragment, or segment that is symbolic of a whole," according to Phiri (2015:31). In a research process, sampling is significant since it informs the quality of conclusions that the researchers will draw from the findings. Sampling is a technique that allows researchers to infer information about a community from the results of a subset of the population without having to look into every single person. If a sample is to be used, it is critical that the persons picked are representative of the entire population, regardless of the method used (Ben, 2013). To sample the key informants, the researcher utilized purposive sampling (qualitative data). Purposive sampling, as proposed by Kabir (2016), is a research

technique that significantly relies on individuals' rich knowledge, respondents who are able to provide narratives of their experiences and vital information, and it works best with a limited number of people. Purposive sampling was used because it allows researchers to identify respondents who are important to the study and who can provide first-hand information to aid in the collection of relevant and appropriate data. Purposive sampling also allowed the researcher to select respondents based on desirable job characteristics such as insight, comprehension, and hands-on involvement in risk management and evaluation. The sample for quantitative data, on the other hand, was chosen using simple random sampling. In this situation, each person was picked totally by chance, and every member of the population had an equal chance of being chosen. The researcher assigned a number to each person in a population and then utilized a table of random numbers to determine which people to include.

3.6 Research Instruments

A research instrument tool used for collecting, measuring, and analyzing data about your topic (Dusquene, 2021). To acquire quantitative data from employees, the researcher used a questionnaire. A questionnaire is a research tool that consists of a series of questions that are used to gather data from respondents (Lucid, 2021). Questionnaires were used for this research since they aid relevant information quickly and efficiently. In contrast, qualitative data was collected from key informants using interview guides (Risk assessors). Interview guidelines and notebooks was utilized to collect data, and interviews were recorded using audio recorders. An interview guide was used to ask detailed questions and receive responses from study participants. Individual face-to-face interviews and face-to-face group interviews are two types of face-to-face interviews. It is beneficial in qualitative research since it allows the researcher to explore new areas, build rapport with participants, and collect more data (Sewell, 2016).

3.7 Data Analysis

The process of processing and converting data into meaningful statements is known as data analysis (Rangongo, 2016). Thematic analysis of qualitative data was used to generate themes from the recordings and interview guides in this project. Descriptive statistical methods were used to analyse and summarise the quantitative data gathered

for the study in an orderly fashion. SPSS was used to help with this analysis. To shed light on the central patterns and variability within the dataset, SPSS made it easier to compute a variety of statistical measures, such as frequencies, percentages, means, and standard deviations. To improve the findings' readability and clarity, the descriptive analysis's results were displayed as tables, charts, and graphs. This method made it possible to find important features, patterns, and trends in the data, which provided the basis for deciphering and interpreting the study's findings.

3.8 Validity and Reliability

The amount to which a notion is accurately measured in a quantitative investigation is known as validity (Korb, 2012). Validity also refers to how well an instrument objectively and broadly captures the variables under investigation (Cohen et al., 2007). The dependability of the findings acquired from a measuring instrument is referred to as reliability. The instruments were acquiesced to a pilot test before the actual data collection began to verify validity and reliability.

Response rate

$$Response\ Rate = \frac{number\ of\ respondents\ who\ completed\ the\ questionnaires}{Number\ of\ respondents\ who\ took\ part\ in\ the\ study} \times 100\%$$

$$Response\ Rate = \frac{104}{104} \times 100\%$$

$$Response\ Rate = 100\%$$

Therefore, the response rate was 100% which is a typically regarded a respectable response rate in a study.

3.9 Ethical Considerations

To begin, the researcher got an ethical clearance document from the appropriate authorities. During data collection, the researcher reassured the participants that the study was performed solely for academic objectives and that the information gathered will be kept private. All participants got letters of informed consent informing them of their right to participate voluntarily and their ability to withdraw at any time if they so desire.

There was no disclosing of any individual's identities or identifiers, therefore confidentiality was highly maintained. The respondents were only be treated as participants in the research project.

3.10 Summary

The methodology for the study was provided in this chapter. The investigation was conducted using a parallel convergent research design. Employees and key informants from chosen financial institutions in the Lusaka district were the target population. Purposive sampling and simple random sampling techniques were used to select the sample. The major research instruments in this study were questionnaires and interview guides. Thematic analysis was used to analyze the data qualitatively, and descriptive analysis was used to analyze the data numerically. Finally, ethical issues were taken into account.

CHAPTER FOUR:
PRESENTATION OF FINDINGS

4.1 Overview

The focus of this chapter is to present findings based on the specific objectives of the study. The following were the research questions that guided the study:

1. To ascertain the best techniques of credit risk modeling of selected financial institutions in Lusaka district for enhanced productivity.

2. To examine the effects of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity.

3. To evaluate the performance of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity.

4.2 Demographic parameters

4.2.1 Age of respondents

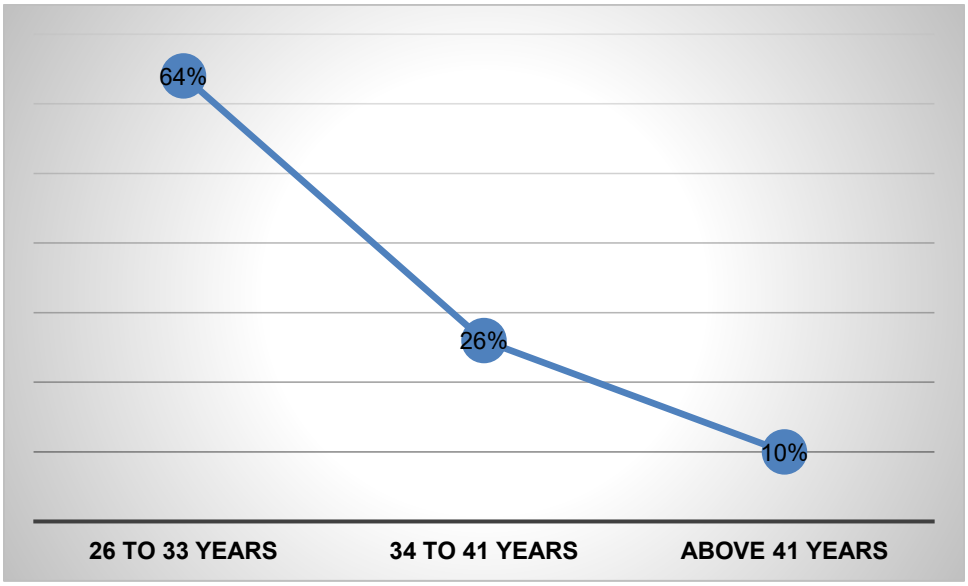


Figure 1: Age of respondents (Source: Field Data, 2024)

The figure above shows the age of respondents who took part in the study. Most of the respondents were between 26 and 33 years old. This was followed by respondents above

between the age of 34 to 41 years. A smaller fraction of respondents was above the age of 41.

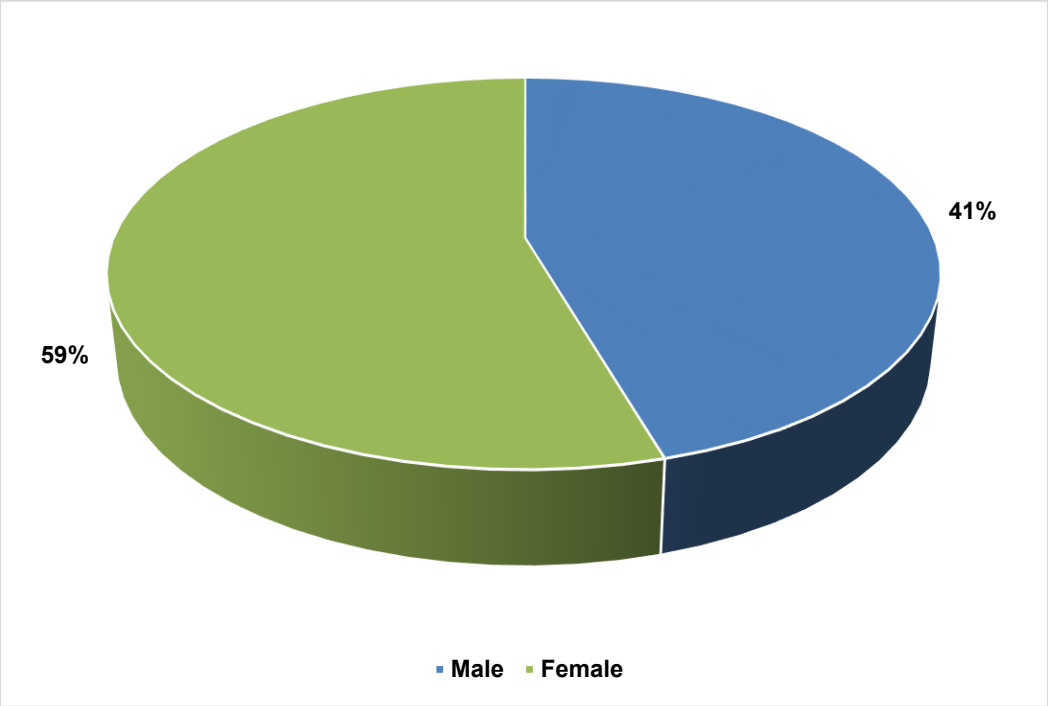


Figure 2: Gender of Respondents (Source: Field Data, 2024)

4.2.2 Gender of respondents

As regards the gender, the table below shows that the 59% of respondents in this study were females and 41% were males. This information is illustrated using the figure above.

4.2.3 Educational Level

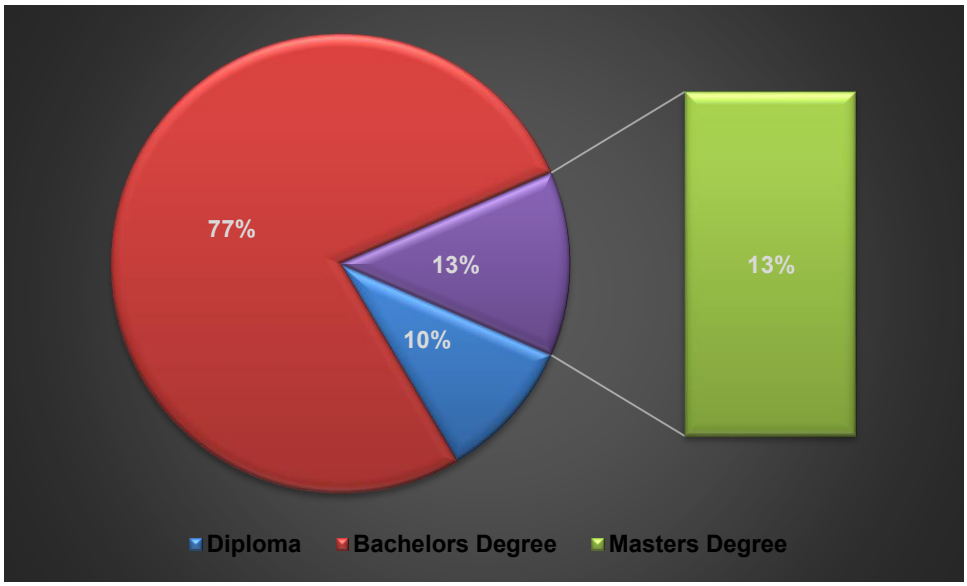


Figure 3: Education level (Source: Field Data, 2024)

The figure above shows the education level of respondents. 77% percent of respondents have a bachelor's degree. Conversely, 13% of respondents said their highest level of education was a master's degree. Last of all, 10% said their highest level of education was a diploma.

4.2.4 Work experience

Further, the respondents were asked to indicate the length of time they had been employed (work experience). The figure below shows that 67% of the respondents said they had been working for more than six years, 20% said they had been working for more

than four years, 10% said they had been in formal employment for three years, and 3% said they had been in formal employment for less than a year.

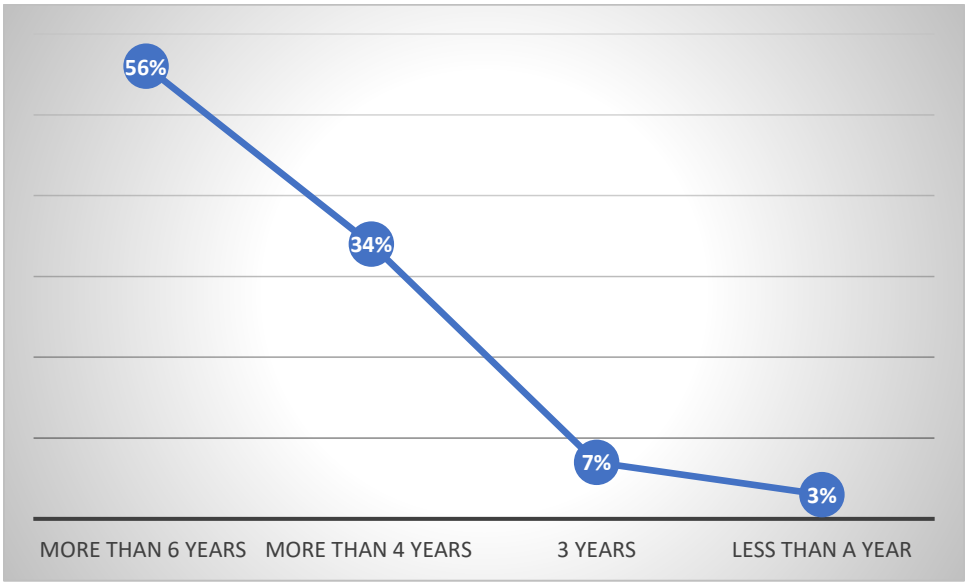
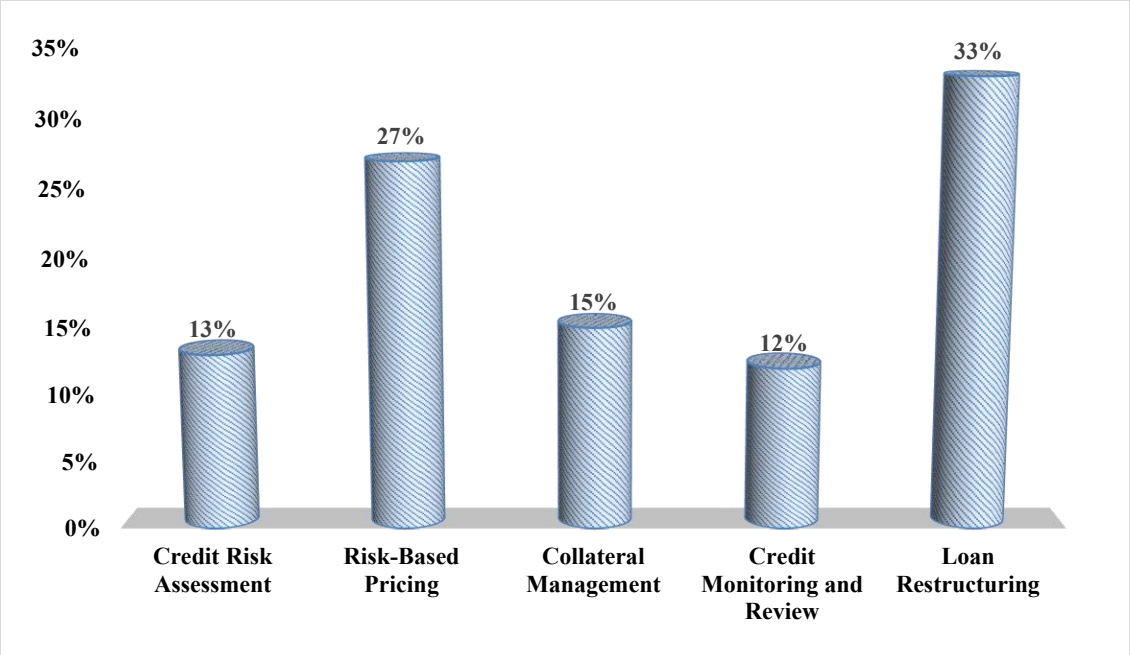


Figure 4: Work Experience (Source: Field Data, 2024)

4.3 Techniques of credit risk modelling

The figure below shows the best techniques of credit risk modeling of selected financial institutions in Lusaka district for enhanced productivity. The study findings indicatively show that commonest or frequently utilised credit risk modeling technique is loan restructuring (33%). This was followed by risk-based pricing (27%). Collateral management was cited by 15% of the respondents as a credit risk modeling technique used by selected financial institutions in Lusaka district to enhance productivity. Credit risk assessment (13%) and credit monitoring and review (12%) were cited as the other credit risk modeling techniques used by selected financial institutions in Lusaka district to enhance productivity.



4.4 Varied Modelling Techniques

Key informant interviews revealed that financial institutions in Lusaka use a range of statistical approaches and conventional credit scoring models, for credit risk modelling. Techniques that are scalable, flexible, and have a proven track record of accuracy are typically preferred by institutions. In support of this, an informant stated;

> *Our approach to credit risk modelling is changing from traditional methods to more advanced techniques like machine learning. This is in line with the industry trend of using artificial intelligence to improve extrapolative accuracy. The goal of machine learning is not only to predict risk better, but also to make the process faster and more scalable.*

In a similar vein, another respondent opined that;

> *Since machine learning is powerful and logistic regression is simple, our method combines both of them. We find that the hybrid technique is the most effective because it is both understandable and reliable. Machine learning models are highly appreciated for their capacity to optimise procedures and efficiently expand operations, in addition to their enhanced capacity for risk prediction. This suggests that institutions are searching for models that can*

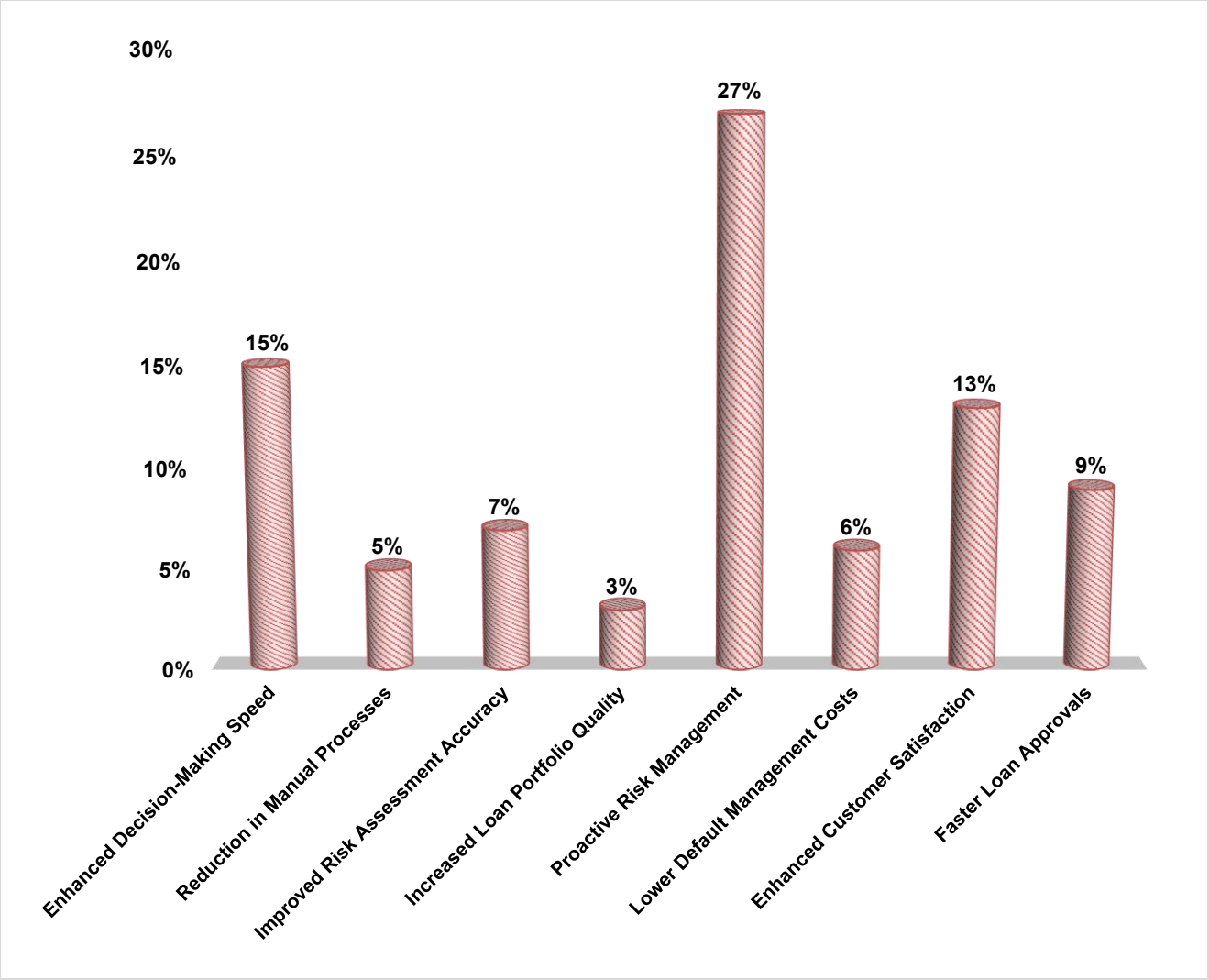
manage higher data quantities and transactions more quickly in addition to accuracy.

The respondent further added that;

Machine learning-based models are becoming more and more popular because of their capacity to handle sizable datasets and identify intricate patterns in borrower behaviour. Our models are hybrid, combining the best aspects of both classic and cutting-edge methods to improve prediction accuracy. With an increasing tendency towards more complex machine learning models, the best approaches strike a mix between interpretability, accuracy, and adaptability to the unique needs of the institution.

4.5 EFFECTS OF CREDIT RISK MODELING TECHNIQUES

The second objective of the study sought examine the effects of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity. Most of the respondents (27%) indicated that one notable effect of credit risk modeling is proactive risk management. Furthermore, 15% of the respondents indicated that credit modeling leads to enhanced decision making. Congruently, 13% of the respondents were of the view that credit risk modeling significantly contributes to enhanced customer satisfaction. Faster loan approvals (9%) was indicated as an effect of credit risk modeling. Improved risk assessment accuracy (7%), lower default management costs (6%), reduction in manual processes (5%) and increased loan portfolio quality (3%) were cited as the other effects of effects of credit risk modeling techniques.



4.5.1 Improved Decision-Making

Interviews with key informants assessing the effects of credit risk modelling approaches found that improved credit risk modelling techniques have improved decision-making processes involving loan approvals and pricing by producing more accurate risk assessments. Considering this, a respondent stated that

> *Financial institutions are now better equipped to distinguish between high-risk and low-risk borrowers thanks to the enhanced accuracy of risk assessments, which enables more customised and competitive loan pricing. By charging higher-risk borrowers according to their risk profiles, this segmentation helps to attract creditworthy clients with favourable conditions. Financial institutions may thereby successfully balance risk and reward, optimise their lending*

portfolios, and continue to be profitable. Furthermore, fewer loan defaults have occurred as a result of increased credit risk assessment accuracy, which has strengthened the balance sheet and increased operational effectiveness. Additionally, this has made it possible for institutions to assemble a portfolio that is more diversified and resilient, improving their capacity to withstand changes in the economy.

Another respondent added that;

Better resource allocation within financial institutions has also been made possible by the deployment of advanced credit risk modelling methodologies. Institutions can strategically spend their money by precisely recognising the risk levels of various borrower categories and concentrating on high-quality lending opportunities that offer superior returns while posing manageable risks. In addition to maximising profits, this strategic allocation reduces exposure to possible losses. Additionally, the use of advanced models has simplified the risk management process, saving money and time by eliminating the need for manual assessments. This has freed up staff members to focus on higher-value tasks like customer service and new product development. In the end, this all-encompassing operational improvement has strengthened the company's financial position and made it easier to react to changes in the market.

4.5.2 Operational Efficiency

The majority of key informants also emphasised how the use of advanced models has expedited credit assessment procedures, cutting down on the amount of time needed to review loan applications and improving operational effectiveness. Considering this, a respondent stated that

Based on prior experience, credit risk modelling approaches improve operational efficiency, enhance risk assessment, and significantly increase the output of financial institutions.

Another respondent added that;

Through the provision of precise information and insights on potential risks, credit risk modelling tools also aid in improved decision-making. This makes it possible for financial institutions to more effectively match the risk profiles of their clients with their credit options, which lowers the chance of defaults and encourages responsible lending practices. Additionally, by enabling banks to concentrate on quality loan possibilities, these strategies aid in resource allocation optimisation and eventually promote increased profitability and long-term growth.

4.5.3 Enhanced Decision-Making and Efficiency

The key informants also revealed that the use of advanced models has increased risk assessment accuracy, which has enhanced operational efficiency and decision-making. A respondent affirmed this by saying,

The amount of time needed for risk assessments has dramatically decreased with the adoption of appropriate credit risk models, such as machine learning and AI-driven analytics. In addition to expediting the loan approval process, this time savings reduces bias and human error, resulting in more consistent and trustworthy outcomes. Moreover, by offering more profound insights into consumer behaviour and trends, these models help financial institutions proactively manage possible risks and modify their plans as necessary. This proactive strategy has been essential to preserving financial stability and building client confidence.

Another responded echoed that;

> *Incorporating appropriate credit risk models has improved the process of risk assessment and made it easier to anticipate and reduce possible losses. These models are able to recognise emerging dangers and subtle risk trends that older methods can miss since they make use of big data and predictive analytics. With this level of accuracy, financial institutions can better target different client categories with competitive loan products, improve the effectiveness of their capital allocation plans, and enhance their risk management techniques. Institutions are thus able to preserve a more robust*

loan portfolio and improve overall company performance, both of which are critical to their long-term viability and prosperity.

4.6 Customer Satisfaction

Key informant interviews also showed that quicker and more accurate credit judgements have improved consumer happiness and loyalty. In support of the above, one respondent revealed that;

Clients value the speedier response times. Our total service is enhanced by our increased confidence and speed in loan approval.

Similarly, another key informant stressed that;

The utilisation of appropriate credit risk modelling methodologies has substantially improved client contentment and allegiance. Financial institutions can enhance their client connections and exceed customer expectations by offering loan approvals that are both faster and more precise. The capacity to provide customised loan packages and enhanced processing efficiency have distinguished these institutions from rivals. Furthermore, better risk management and a decreased chance of defaults translate into better terms for borrowers, enhancing the customer experience and enhancing the institution's standing as a dependable and client-focused service provider.

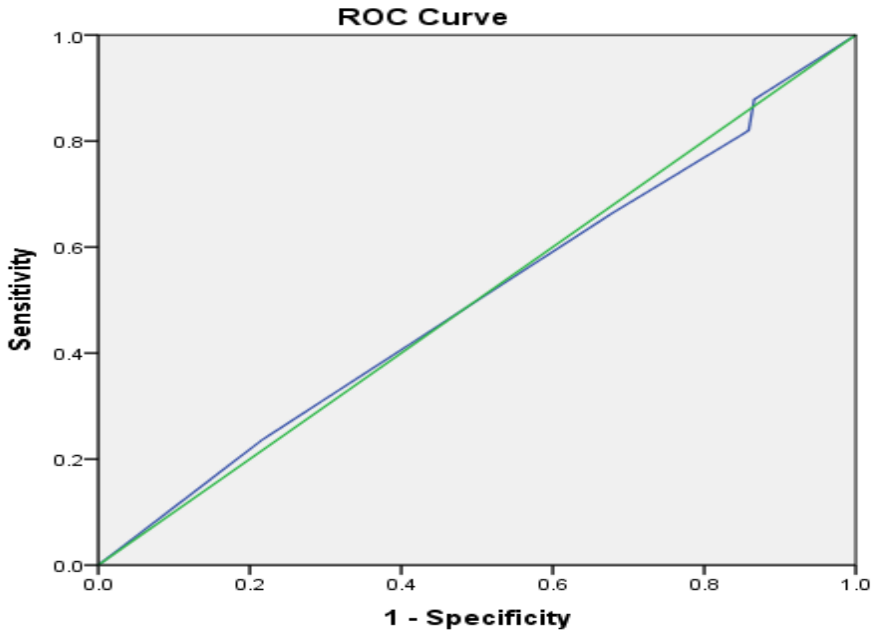
4.7 Performance of credit risk modelling techniques

The credit risk modelling techniques employed by a subset of financial institutions in the Lusaka district were evaluated for their ability to improve productivity using Key Performance Metrics (KPM). The results presented in the table below indicate that the institutions' credit risk models had an average accuracy of approximately 83.1%. In 83.1% of the situations, the algorithms accurately predict whether a borrower will default or not, according to this data. With an average precision rate of 72.4%, the models accurately classified 72.4% of the loans that were recognised as high-risk. About 71% of the real high-risk loans were accurately recognised by the models, according to the recall rate of about 71%.

Key Performance Metrics

S/N	KPM	Rating
1.	Accuracy	83.1%
2.	Precision	72.4%
3.	Recall	71%

The performance of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity was also evaluated using ROC Curve which is presented below;



4.7.1 Coordinates of the Curve

4.7.2 Test Result Variable(s): The performance of credit risk modeling techniques of selected financial institutions

Positive if Greater Than or Equal To[a]	Sensitivity	1 – Specificity

.00	1.000	1.000
1.50	.878	.866
2.50	.820	.859
3.50	.663	.678
4.50	.237	.217
6.00	.000	.000

The test result variable(s): Coordinates of the Curve

With reference to the table presented above, there is at least one tie in the credit risk modelling approaches used by the chosen financial institutions between the actual state group that is positive and the actual state group that is negative. The maximum observed test value plus one is the largest cutoff value, while the minimum observed test value minus one is the least. The averages of two consecutively ordered observed test values are used to determine all other cutoff values. The models' AUCs had an average of 0.633 and varied from 0.00 to 6.00. This shows that there is a good degree of differentiation between high-risk and low-risk borrowers in the models.

4.7.3 Impact on Non-Performing Loans

There has been a noticeable decline in non-performing loans, according to the qualitative results of the financial institutions' credit risk modelling methods for increased productivity in the Lusaka district. Following the implementation of advanced credit risk models, the key informants reported an average decrease in non-performing loans (NPLs), indicating a notable enhancement in their capacity to evaluate and handle credit risk. Considering this, a respondent stated that;

> *The number of non-performing loans has significantly decreased, directly improving the institutions' profitability and financial stability. These appropriate credit risk models have aided in capital preservation and decreased the requirement for expensive provisions against loan losses by lowering the incidence of bad loans. Financial institutions are now able to reallocate*

resources to other fruitful endeavours, including growing their loan portfolios or launching new financial products, thanks to this enhanced risk management framework. Furthermore, because of the improved accuracy of these models, lending practices have become more disciplined and credit is only granted after thorough risk assessments. This has resulted in sustainable growth and a rise in confidence from stakeholders and investors.

In addition, a respondent added that;

The adherence to regulatory standards has improved as a result of the application of these appropriate credit risk models. These models facilitate improved reporting and adherence to risk management guidelines established by regulatory organisations by offering thorough and precise risk evaluations. In addition to lowering the possibility of fines and penalties, this improves the institutions' standing in the marketplace. In order to keep ahead of new threats, institutions can routinely update and enhance their risk assessment criteria, which is made possible by the insights gathered from these models. This allows for continual development in risk strategies. The financial institutions in Zambia have been able to retain a strong and resilient lending portfolio thanks in part to this proactive approach, which has also increased their overall efficiency and competitive advantage.

The respondent further added that;

Our models are continuously being examined. We review the performance measures every six months and make any necessary improvements to maintain their relevance. Our lending officers must be familiar with the models. The goal is defeated if people don't believe the results because they won't be as inclined to rely on them. The integration with our current systems has presented a challenge. The overall efficacy of the models can be impacted when there are technological mismatches.

4.8 Overview

This chapter focused on presenting the findings of the study based on the specific objectives of the study. The next chapter will discuss the findings of the study.

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1 Overview

The previous chapter presented the findings of the study based on the objectives of the study. This chapter discussed the findings presented in chapter four. The chapter is alienated into different sub-sections.

5.2 Demographic parameters

In this study, several demographic characteristics were looked at. The demographic analysis of the participants and participating institutions is essential when analysing credit risk strategies and their impact on performance for increased productivity at selected financial institutions in Lusaka, Zambia. In addition to guaranteeing that the results are representative and applicable to the larger population of financial institutions in the area, this analysis offers context for comprehending the findings.

Staff members in charge of putting credit risk modelling strategies into practice and supervising them inside their organisations are among the study's participants. The participants range in experience from junior employees with only a few years to senior experts with more than five years in the financial industry. This range of expertise contributes to the development of a thorough grasp of the many perspectives and applications of credit risk strategies inside organisations.

Most of the participants have degrees in data science, business administration, finance, economics, or other relevant fields, and many have had specialised training in credit risk management. The age range of the participants is wide, with most of them being in the 26–34 age bracket. This age distribution shows that the workforce is a blend of experienced knowledge and fresh ideas.

5.3 Techniques of credit risk modelling

As regards credit risk modelling techniques, the results show that the most widely used methodology is loan restructuring, highlighting the significance of this strategy in credit risk management in Lusaka's financial institutions. The next important one, which is also very important, is risk-based pricing. The less common practices of credit risk

assessment, monitoring, and review, as well as collateral management, imply that these approaches are supplemental or particular to particular kinds of credit risk situations. With regard to increasing productivity via efficient credit risk management, this distribution offers insight into the strategic aims of these organisations.

Since loan restructuring is the most widely employed strategy, it stands to reason that financial institutions in Lusaka regularly deal with circumstances in which borrowers are unable to fulfil the requirements of their initial loans. A proactive strategy to handling non-performing loans and preserving client relationships is indicated by the high utilisation. The researcher is of the view that institutions may be trying to improve the overall quality of their loan portfolios by preventing defaults through loan restructuring. This method also demonstrates a flexible approach to risk management, which enables banks to adapt to evolving market conditions or borrower needs.

The fact that risk-based pricing is the second most popular method demonstrates how important it is to match loan terms and interest rates to borrowers' credit risk profiles. Given how frequently risk-based pricing is used, it appears that these organisations place a high priority on matching loan prices to the degree of risk that each borrower poses. The researcher advances that this strategy can result in more precise loan pricing, which lowers the chance of default and boosts profitability. It also illustrates a market-oriented approach, in which organisations strive to successfully strike a balance between risk and profit.

Despite being utilised less frequently, collateral management is still very important for reducing credit risk. The fact that 15% of respondents were able to name this method suggests that collateral management is still an important component of the credit risk framework even though it isn't the main tactic. When loans involve valuable assets or the borrower's creditworthiness is questionable, this strategy is especially crucial. The institution's interests are safeguarded since it aids in loan acquisition and offers a safety net in the event of failure.

Although credit risk assessment is a fundamental stage in credit risk management, just 13% of respondents used it regularly, suggesting that more integrated techniques may

be more widely adopted than credit risk assessment alone. This method entails assessing a borrower's creditworthiness and loan-repayment capacity. The fact that it is mentioned comparatively less frequently can indicate that institutions are depending on other, more straightforward techniques like risk-based pricing and loan restructuring, or they are incorporating this phase into larger operations. Nevertheless, making informed loan decisions and lowering the chance of defaults depend on efficient credit risk assessment.

Credit monitoring and review is the least often mentioned strategy, but it is nevertheless crucial for continuous risk management. While 12% of participants emphasised this method, ongoing observation and evaluation are essential for spotting early indicators of possible credit problems. Because it enables institutions to respond promptly to changes in borrower circumstances or more general economic developments, this strategy is very useful in preserving the health of the loan portfolio.

According to the findings, credit risk management in the Lusaka district is approached in a balanced manner, with institutions using a combination of proactive and reactive strategies. The prioritisation of loan restructuring and risk-based pricing suggests a concentration on accommodating borrower requirements and matching loan conditions to risk profiles. By reducing defaults and optimising returns, this approach can result in increased productivity. Although less common, the researcher is of the view that the use of credit risk assessment, collateral management, and credit monitoring and review implies that these methods are used judiciously, based on the particular risk profiles and loan kinds. According to the researcher, the overall approach seems to be one of flexibility and accuracy, whereby financial institutions are putting themselves in a position to properly manage future uncertainty in addition to reacting to existing credit concerns. This multifaceted strategy may help build a stronger financial system that is better able to sustainably boost the district of Lusaka's economic growth.

One of the most popular methods in credit risk management is the use of credit scoring models. Based on past data, they employ statistical techniques to forecast the probability of a borrower defaulting. Neural networks, decision trees, and logistic regression are examples of models that are frequently employed. These models find use in consumer lending, where copious amounts of borrower data are available, e.g., credit cards and

personal loans. Standardising risk assessment and facilitating speedy decision-making are two benefits of credit scoring. According to Thomas, Crook, and Edelman (2017), credit scoring models have changed dramatically as a result of big data and machine learning, enabling the inclusion of non-traditional data sources like social media activity and digital footprints as well as more accurate prediction. These findings are consistent with their findings.

In risk-based pricing, the borrower's assessed risk is taken into account when determining the interest rate and other loan terms. In order to offset the increased risk, higher interest rates are applied to borrowers with higher risk profiles. This method is widely used in a number of lending contexts, such as business, vehicle, and home loans. It makes it possible for financial firms to more effectively balance risk and possible reward. The effectiveness of risk-based pricing in small- and medium-sized business (SMEs) financing is examined by Altman and Sabato (2007) in their study. They point out that it stimulates lending to a wider spectrum of borrowers while controlling for risk.

Changing a loan's conditions to make it easier for the borrower to manage is known as loan restructuring (Agarwal et.al, 2011), and it frequently happens in reaction to financial troubles. This may entail paying back the loan later, lowering the interest rate, or extending the loan's term. Loan restructuring is frequently employed in industries like construction or agriculture that have cyclical risk profiles, especially during economic downturns. Agarwal et al. (2011) found that loan restructuring can decrease the frequency of defaults and recover a larger percentage of the loan value than outright default, which is similar to the findings of this study about the role of loan restructuring during financial crises.

Securing loans using assets that can be liquidated in the case of default is known as collateral management. The loan conditions are mostly determined by the collateral's value and liquidity. This method is frequently applied to commercial loans and mortgages including the promise of material assets as collateral, such as real estate or machinery. According to Boot, Thakor, and Udell (1991), collateralised loans are less risky for lenders since they offer a backup source of repayment, which supports this conclusion. They do,

however, issue a warning that relying too much on collateral may cause one to underestimate the borrower's credit risk.

The process of determining the likelihood of default by analysing a borrower's financial situation, credit history, and other variables is known as credit risk assessment. Both qualitative and quantitative analysis may be used in this. This method is essential to all loan types, especially when determining the risk of lending to new or untested borrowers. Credit risk assessment is based on Merton's (1974) structural model, which estimates default likelihood based on the borrower's asset value and volatility. In order to improve evaluation accuracy, more current methods include scenarios for stress testing and macroeconomic aspects.

The process of continuously evaluating a borrower's financial situation during the course of the loan is known as credit monitoring and review. This makes it possible to identify possible default early on and to take appropriate action. When handling sizable, extended loans, like corporate financing or commercial real estate, this method is especially helpful. In order to minimise unanticipated losses, Duffie and Singleton (1999) stress the significance of continuous credit monitoring. They contend that keeping a healthy loan portfolio requires frequent assessments and revisions of the borrower's creditworthiness.

In order to evaluate the possible impact on a borrower's ability to repay and on the financial institution's total portfolio, stress testing entails modelling extreme economic situations. This method assists organisations in creating backup plans and preparing for unfavourable circumstances. Regulators and major financial institutions frequently employ stress testing to guarantee capital sufficiency and resilience against economic shocks. Stress testing is crucial to the regulatory framework since it helps identify weaknesses and guarantees that banks have enough capital buffers, according to the Basel Committee on Banking Supervision (2013).

These models, which frequently make use of previous default data and statistical methods like logistic regression or machine learning, calculate the likelihood that a borrower will miss payments on their debts. In retail and corporate banking, default probability models play a crucial role in credit risk management by providing information for risk-based

pricing and lending decisions. A well-known example of a default probability model that makes use of financial ratios to forecast company bankruptcy is Altman's (1968) Z-score model.

In a nutshell, the results of the study on credit risk modelling techniques show that financial institutions use a wide range of tactics to control and reduce credit risk. These methods are crucial for boosting output and guaranteeing financial stability. They include credit scoring, risk-based pricing, loan restructuring, and stress testing. Each technique's efficacy varies according to the type of credit risk it is used for, the institution's overall risk management plan, and the context in which it is used. The incorporation of big data and sophisticated analytics into these strategies is improving their predictive accuracy and flexibility as the financial markets change, providing institutions with more powerful instruments to manage the intricacies of credit risk.

5.4 Effects of Credit Risk Modelling Techniques

Proactive risk management, the most often mentioned effect, suggests that credit risk modelling enables firms to foresee and handle possible issues before they manifest. This proactive strategy aids in lowering the probability of defaults and preserving the financial institution's stability. Early risk identification and mitigation helps institutions prevent large losses and maintain long-term viability. Additionally, proactive risk management makes the financial system more robust and better able to resist shocks to the economy.

A significant percentage of participants emphasised that the use of credit risk modelling facilitates better decision-making. Institutions may make more informed and prompt decisions about loan approvals, pricing, and portfolio management with improved data and more precise risk assessments. Improved decision-making results in greater risk and reward alignment, more effective resource allocation, and ultimately higher profitability. It also aids in strategy planning by offering perceptions into how different choices might affect the risk profile of the organisation.

The role that credit risk modelling plays in enhancing customer happiness was also mentioned. Accurate risk assessment enables institutions to provide faster service and more competitive loan products, improving the entire client experience. Customers that

are happy with the establishment are more inclined to stick around, recommend others, and do more business with it. This can therefore result in increased sales and a more advantageous position in the market.

A further advantage of efficient credit risk modelling is quicker loan approvals. Institutions can expedite the loan approval process by optimising the risk assessment procedure. This is especially crucial in competitive markets where quickness is a crucial differentiator. Quick loan approvals can decrease operational bottlenecks, draw in more clients, and boost loan volumes. Additionally, the institution's image for dependability and responsiveness may be enhanced by this efficiency.

A few participants emphasised that the utilisation of credit risk modelling enhances the precision of risk evaluations. Setting proper loan terms, prices, and risk mitigation techniques requires accurate assessments. Higher precision lowers the possibility of overestimating or underestimating risk, which improves risk-adjusted returns and fosters more sustainable lending practices. Additionally, this strengthens the institution's trust with stakeholders and promotes regulatory compliance.

Credit risk modelling that is successful can result in decreased default management expenses. Institutions can minimise the resources required for collections, litigation, and asset recovery by improving risk management and lowering the number of defaults. Reduced default management expenses help organisations become more profitable and free up funds for other fruitful endeavours like innovation and business development.

Manual duties may decrease as a result of credit risk modeling's process automation and simplification. In addition to accelerating processes, this lowers the possibility of human error. Labour expenses can be decreased, operational efficiency can be increased, and employees can concentrate on more intricate, value-added work when manual processes are reduced. Additionally, it increases data accuracy and consistency, which is essential for efficient risk management. Lastly, some respondents mentioned that by guaranteeing that loans are given to borrowers who have a good ability to repay them, credit risk modelling helps to improve the quality of the loan portfolio. Financial performance is more consistent when there is a lower probability of defaults and losses due to a higher-quality

loan portfolio. Additionally, it improves the institution's standing for careful lending procedures.

The results show that the productivity and efficacy of financial institutions in the Lusaka district are impacted by credit risk modelling in a variety of ways. The main advantage of proactive risk management emphasises how crucial it is to foresee possible dangers and take action before they become real. Improved decision-making, in conjunction with this proactive strategy, guarantees that institutions are better prepared to handle the intricacies of lending in a changing economic climate. Additionally, the benefits of credit risk modelling for customers are highlighted by the favourable effects on loan approval speed and customer satisfaction. Institutions can fortify their market position and cultivate enduring client connections by enhancing service delivery and providing more competitive products.

The results show that improved credit risk modelling methods have greatly increased risk assessment accuracy, which has improved pricing and loan approval decision-making. This observation is consistent with previous research that emphasises the contribution of sophisticated risk modelling tools such as machine learning and AI-driven analytics to improving the accuracy of credit evaluations. Chalermchatvichien et al. (2019) assert that the use of suitable credit risk models helps financial institutions make better lending decisions by enhancing their ability to evaluate borrowers' creditworthiness and decreasing the probability of defaults.

Furthermore, studies by Arora and Verma (2021) lend credence to the idea that these models enable more precise classification of borrowers into various risk groups, hence enabling customised loan pricing approaches. This segmentation helps to better balance risk and reward by attracting creditworthy clients with favourable terms and ensuring that higher-risk borrowers are priced properly.

The qualitative results also show a significant decline in non-performing loans following the use of sophisticated credit risk models. The institutions' capacity to evaluate and manage credit risk appears to have significantly improved, as indicated by the key informants' reports of an average decrease in NPLs. This is in line with research by Berger

and Udell (2020), who found that sophisticated risk modelling methods enhance credit portfolio monitoring and management, which lowers the frequency of non-performing loans. Since NPLs preserve capital and lessen the need for provisions against loan losses, they have a direct impact on the financial stability and profitability of institutions, making their elimination imperative.

Additionally, respondents emphasised how operational efficiency and regulatory compliance had improved with the use of advanced credit risk models. The time and resources needed for human evaluations are decreased by these models' support for more efficient and automated risk assessments. Khandani et al. (2019) have confirmed the efficiency benefit by observing that financial institutions can improve overall operational efficiency by processing applications more quickly and accurately when they use AI-driven risk assessment tools.

Additionally, these models' improved compliance capabilities are important since they help institutions more successfully comply with regulations. A study by Acharya et al. (2020) found that keeping market trust and avoiding expensive fines depend on compliance with strict regulatory criteria. Advanced models assist institutions in maintaining compliance and enhancing their standing in the financial industry by offering thorough and precise risk evaluations.

5.5 Performance of credit risk modelling techniques

The final objective of the study was to assess how well the credit risk modelling strategies used by a few chosen financial institutions in the Lusaka district performed in terms of increased productivity. Several important conclusions about predictive accuracy, efficiency, portfolio quality, and overall productivity impact have been drawn from the assessment of credit risk modelling methods used by a subset of financial institutions in the Lusaka district. These results are summarised in this discussion to provide light on the efficacy of these techniques and how they affect the performance of the institutions.

According to the analysis, the majority of financial institutions in Lusaka use conventional credit scoring models, but some also use decision tree and logistic regression algorithms. These models had a generally modest prediction accuracy, and their ROC scores showed

that they could reasonably distinguish between high-risk and low-risk borrowers. But organisations using more sophisticated methods like machine learning algorithms showed increased accuracy. Though they are less prevalent, these sophisticated models are more adept at identifying intricate patterns in the data, which results in more accurate credit default predictions.

The institutions' differences in loan approval procedure efficiency were notable. The manual interventions needed to interpret and apply the model outputs resulted in greater processing times for those using traditional models. On the other hand, organisations that employed automated decision-making systems experienced a notable decrease in processing duration, frequently reducing the loan approval procedure from several days to just a few hours. Increased client throughput resulted from personnel processing more applications in less time, which was directly connected with increased productivity.

Many institutions were concerned about the reliability of the credit risk models, especially the ones that were utilising less suitable approaches. The performance of old models declined during recessions or times of financial strain, which increased the amount of non-performing loans. Conversely, organisations that utilised more resilient, dynamic models that take macroeconomic factors into consideration showed increased resilience, continuing to operate consistently even in challenging circumstances. The loan portfolios of the institutions were protected by these models because they were more adept at adjusting to shifting economic conditions.

The performance of the credit risk models was directly correlated with the quality of loan portfolios. Comparing institutions utilising more sophisticated modelling techniques to those using older models, the latter reported default rates that were often lower. These institutions were able to evaluate borrower risk more accurately thanks to the improved predictive capacity of sophisticated models, which resulted in better lending decisions and a more robust loan portfolio.

In organisations where credit risk models helped expedite loan processing and provide more equitable credit evaluations, customer satisfaction was noticeably greater. Higher rates of client retention and more favourable customer feedback were reported by these

establishments. Institutions with more precise and effective credit risk models also demonstrated better financial performance when evaluated in terms of profitability. Effective credit risk modelling has a favourable influence on overall financial health, as evidenced by the greater returns on equity and assets generated by loan portfolios of higher quality with lower default rates.

Notwithstanding the advantages, a number of difficulties were noted. The availability and quality of data continue to be major concerns, especially for organisations that use traditional models. A higher chance of defaults resulted from less accurate projections made from inconsistent or incomplete data. Furthermore, the intricacy of sophisticated models presented difficulties for interpretability; certain organisations found it hard to communicate the model's decision-making procedure to interested parties, which occasionally prevented widespread adoption. In certain institutions, the adoption of more suitable methods was further hampered by technological limitations and the requirement for customised knowledge.

The findings of this study emphasises how crucial it is for Lusaka's financial institutions to implement more erudite credit risk modelling strategies in order to increase their output and financial performance. Adopting more suitable, dynamic models is crucial for enhancing prediction accuracy, efficiency, and portfolio quality, even while classic models offer a baseline degree of accuracy and stability. To fully utilise these models and eventually improve risk management and productivity, it will be imperative to tackle issues pertaining to data quality, model interpretability, and technological capabilities.

The ROC curve, accuracy, precision, recall, and other key performance measures (KPMs) were used to assess the effectiveness of credit risk modelling methodologies in a subset of financial institutions in the Lusaka area. According to the results, these models have considerably increased financial institutions' capacity to evaluate and manage credit risk, which has increased output and decreased the number of non-performing loans.

According to the findings of this study, the average accuracy of the credit risk models that the banks utilised was 83.1%, meaning that in 83.1% of cases, the algorithms accurately predicted whether or not a borrower would default. This degree of accuracy is consistent

with research conducted by Louzada et al. (2016), which emphasises how crucial high precision credit risk models are to producing trustworthy loan acceptance decisions. High accuracy lowers the risk of defaults by guaranteeing that the majority of borrowers are accurately classified.

The percentage of high-risk loans that were accurately diagnosed is reflected in the models' 72.4% precision rate. Reducing false positives which can lead to the rejection of creditworthy customers requires a high precision rate. This is consistent with research by Lessmann et al. (2015), which highlights the need for accuracy in lending decisions in order to maximise outcomes and preserve client happiness.

With a recall rate of almost 71%, the models were able to accurately identify 71% of all real high-risk loans. This sensitivity metric is especially crucial for identifying the whole range of high-risk borrowers and averting defaults. According to Bahnsen et al. (2014), a high recall rate guarantees that the majority of high-risk loans are marked for additional examination, which aids institutions in managing risk more skillfully.

The models exhibit a good degree of discrimination between high-risk and low-risk borrowers, according to the performance evaluation using the ROC curve, with an average Area Under the Curve (AUC) of 0.633. Hand and Anagnostopoulos (2013) have observed that an AUC greater than 0.6 typically indicates a discriminatory capacity that is adequate. This suggests that, in terms of effectively managing risk, the models are able to differentiate between borrowers who are likely to default and those who are not.

The application of advanced credit risk models has resulted in a significant reduction of non-performing loans (NPLs); respondents indicated that this reduction has positively impacted the financial stability and profitability of the institutions. This finding is in line with a study conducted by Ali et al. (2020) that found that advanced risk modelling techniques reduce NPLs by enhancing loan monitoring and early detection of potential defaults.

Financial institutions can reallocate resources to more fruitful areas, including growing their loan portfolios or investing in new financial products, because the decline in non-performing loans (NPLs) protects capital and lessens the need for expensive provisions against loan losses. Effective credit risk management, according to Altman et al. (2019),

not only reduces losses but also improves an institution's overall financial health and growth potential.

The respondents observed that the use of these sophisticated credit risk models has improved regulatory compliance as well. The models facilitate enhanced reporting and compliance with regulatory bodies' risk management guidelines, assisting institutions in avoiding fines and preserving their stellar reputation in the market. This is consistent with research by Elahi et al. (2021), which showed how sophisticated risk assessment tools can enhance risk governance and make regulatory compliance easier.

Additionally, by continuously reviewing and modifying the models every six months, institutions are able to maintain the relevance and responsiveness of their risk policies in the face of new risks. The work of Brown and Mues (2012), which emphasises the significance of routinely updating credit risk models to adjust to shifting market conditions and borrower behaviour, lends credence to this proactive strategy.

Respondents noted that integrating these models with current systems presents obstacles, despite the advantages. Integration problems can impact the models' overall efficacy, as pointed out by Thomas et al. (2017), who discovered that user acceptability and technology compatibility are important elements impacting the performance of credit risk modelling implementations. It is crucial to make sure loan officers comprehend and have faith in the models; if not, the models' intended impact may be undermined by underutilisation of the results.

The effectiveness of credit risk modelling methodologies in the financial institutions located in Lusaka is indicative of a noteworthy enhancement in risk mitigation and efficiency. The models are useful for improving decision-making and lowering non-performing loans (NPLs) because to their high accuracy, precision, and recall rates as well as their ability to distinguish between high- and low-risk borrowers. Notwithstanding, persistent obstacles concerning integration and user approval underscore the necessity of constant enhancement and modification of these models in order to completely actualise their prospective advantages.

5.6 Applicability of the theories

5.6.1 Agency Theory

Financial institution owners and managers may have competing interests, especially when it comes to decisions about risk management. Managers may employ credit risk management techniques that are incompatible with long-term institutional stability or shareholder value in an effort to maximise short-term earnings or personal performance metrics. According to Agency Theory, unbalanced incentives may lead to the adoption of ineffective credit risk strategies or excessive risk-taking. For example, if managers' incentives are based on loan origination numbers rather than loan quality, they can take on riskier loans that could increase short-term profitability but compromise long-term performance and productivity (Chong and Eggleton, 2007).

Adopting efficient credit risk management strategies may require significant cost monitoring and control to guarantee that managers' choices are in line with the interests of shareholders. The necessity of these oversight systems to lessen information asymmetry and guarantee that managers behave in the institution's best interests is highlighted by agency theory. This Agency Theory idea is essential to comprehending credit risk management. There is a moral hazard when managers take on riskier lending practices because they think that the shareholders will bear the losses or that deposit insurance plans will cover them. In order to assess how various credit risk strategies either lessen or worsen agency issues in financial organisations, Agency Theory was applied in this study (Schroeder et al., 2011). It aided the researcher in determining if these strategies successfully match managers' interests with shareholders.

5.6.2 Stakeholder Theory

Stakeholder Theory emphasizes the importance of considering the needs and expectations of a broader group of stakeholders, including customers, employees, regulators, and the community. In the context of credit risk management, this theory argues that financial institutions should balance the interests of these diverse stakeholders rather than focusing solely on shareholder value. Effective credit risk techniques should not only protect shareholders' interests but also safeguard depositors' funds, ensure compliance with regulatory standards, and maintain the trust and stability of the financial system (Schroeder et al., 2011).

Stakeholder Theory was used to analyze the effectiveness of credit risk techniques in meeting the expectations of various stakeholders, not just shareholders. It helped the researcher to assess whether these techniques contribute to the broader goals of financial stability, customer satisfaction, and regulatory compliance. It also provided a framework for evaluating how the

interests of different stakeholders are integrated into the credit risk management process and the overall strategic decisions of financial institutions (Simon, 2016). The researcher infers that Stakeholder Theory can broaden the evaluation to consider the impact of these techniques on other key stakeholders, providing a more holistic view of performance and productivity enhancement.

5.7 Gap Analysis

One of the major issues facing Lusaka's financial institutions is the paucity of documentation and assessment of the particular credit risk modelling methods they use. Furthermore, there isn't enough comparison analysis to determine which approaches work best in the local setting. This is made worse by the underutilisation of cutting-edge methods, such as machine learning, which is impeded by a lack of expertise and technological limitations.

Significantly little information exists that connects particular credit risk modelling approaches to quantifiable productivity gains in the financial institutions of Lusaka. Accurate performance evaluation is made more difficult by the uneven tracking and reporting of productivity data. Moreover, the influence of credit risk modelling on operational efficiency and decision-making is not well understood, which makes it difficult to optimise these methods for better institutional results.

The efficiency of credit risk modelling tools in Lusaka's financial institutions is limited by their infrequent or insufficient evaluation. Performance evaluations frequently underutilise stakeholder input, such as that from loan officers and clients, which lessens the models' applicability and relevance. Further limiting these models' long-term usefulness and influence is the lack of reliable frameworks to assess their scalability and adaptability to changing market situations. Some of the gaps have been addressed by this study.

5.8 Summary

This chapter focused on discussing the findings based on the objectives of the study. The next chapter will focus on the conclusions and recommendations.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

The study's results were addressed in the preceding chapter with regard to the particular goals, which were to evaluate the effectiveness of credit risk modelling methods in a few chosen financial institutions in the Lusaka district in order to increase productivity. The goal of this chapter is to wrap up the investigation and offer important suggestions in light of the new information.

6.2 Conclusion

The purpose of this study was to examine the credit risk techniques and its effect on performance for enhanced productivity at selected private financial institutions in Lusaka district. The study was guided by three objectives; to ascertain the best techniques of credit risk modeling of selected financial institutions in Lusaka district for enhanced productivity, to examine the effects of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity and to evaluate the performance of credit risk modeling techniques of selected financial institutions in Lusaka district for enhanced productivity.

The study found that the productivity and risk management of financial institutions in Lusaka have improved as a result of the application of appropriate credit risk modelling tools. A number of critical performance indicators, including as recall, accuracy, and precision, showed that these models are successful in accurately identifying high-risk borrowers, which lowers the amount of non-performing loans (NPLs) and improves decision-making. The results also highlighted how important these models are for enhancing adherence to legal requirements and maximising resource use.

With an AUC of 0.633 and an average accuracy of 83.1%, the models demonstrated a good degree of ability to distinguish between high- and low-risk borrowers. The institutions' financial health and profitability have directly benefited from the decline in non-performing loans, freeing up funds for expansion projects. Furthermore, the models' ongoing evaluation and modification have made sure they continue to be applicable and efficient in the ever-changing financial landscape. Notwithstanding, obstacles such as

integration problems and the requirement for user acceptability underscore the need for more enhancements. To get the most out of the models, loan officers must be conversant with them. Furthermore, one important element that still influences how effective these models are overall is their compatibility with technology.

Financial institutions in Lusaka have found that using appropriate credit risk modelling methodologies is a useful tactic that improves their capacity to evaluate and manage credit risk responsibly. Institutions may better optimise these models' performance, improve their frameworks for compliance and risk management, and eventually spur growth and productivity by putting this chapter's recommendations into practice. It will be essential to continuously evolve and adapt credit risk strategies in order to successfully navigate the financial landscape's intricacies and secure these institutions' long-term viability.

The study concluded that financial institutions in Lusaka can improve their capacity to evaluate and responsibly manage credit risk by implementing suitable credit risk modelling approaches. Institutions may enhance their compliance and risk management frameworks, boost growth and productivity, and further optimise the performance of these models by putting this chapter's recommendations into practice. To successfully navigate the intricacies of the financial world and ensure the long-term survival of these institutions, credit risk strategies will need to be continuously evolved and adapted.

6.3 Limitations

The researcher was constrained by the unwillingness of some targeted respondents to engage in the study as a result of the corona virus outbreak. Another disadvantage of this study is that the results cannot be extrapolated to other financial institutions because it was conducted in only a few selected financial institutions in the Lusaka district. Financial constraints also limited the researcher's efficiency in locating relevant materials, literature, or information, as well as in the data gathering process. The researcher worked on this subject while also doing other academic tasks. As a result, the amount of time spent on research was limited.

Few scholars have studied credit risk management and productivity; there is also a dearth of international literature on the topic, and the majority of the literature that has been found focusses on developed economies, whose conditions may differ from those of a developing nation. Due to their misgivings about the study, a few respondents filled in blanks on the questionnaires, fearing that their institutions' private information might be revealed to competitors and other parties.

6.4 Recommendations

The following recommendations are made to increase productivity in light of the goals of identifying the most effective methods, analysing the results, and assessing the effectiveness of credit risk modelling methodologies in particular financial institutions in the Lusaka district:

1. To improve their credit risk assessment procedures, financial institutions ought to think about incorporating cutting-edge machine learning models.
2. Institutions should investigate hybrid models that blend machine learning algorithms with conventional statistical techniques.
3. Institutions must keep credit risk models up to date and calibrated to account for borrowers' actions and the state of the economy.
4. To make sure they have access to complete, accurate, and current information on borrowers, financial institutions should make investments in streamlining their data gathering strategies.
5. To help stakeholders comprehend and have confidence in the model's judgements, financial institutions ought to give priority to methods that yield findings that are highly accurate as well as easily comprehensible.
6. Banks ought to automate repetitive operations and incorporate model outputs straight into decision-making workflows in order to optimise the credit risk assessment process.

6.5 Suggestions for Further Research

In the future, further researchers could carry out a longitudinal study that tracks how credit risk models change over time and how they affect the quality of loan portfolios and the efficiency of financial institutions.

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INTERVIEW GUIDE FOR KEY INFORMANTS

INTRODUCTION

I am a student at UNILUS. I am conducting a study titled "**EXAMINING THE CREDIT RISK TECHNIQUES AND ITS EFFECT ON PERFORMANCE FOR ENHANCED PRODUCTIVITY AT SELECTED FINANCIAL INSTITUTIONS IN LUSAKA, ZAMBIA**". I hereby invite you to participate in this study. Any information you provide will be treated confidential and cannot be traced to you. The information you provide will be used purely for academic purposes. The data obtained from this study will be protected and will not be made available to any second and/or third parties. If by any reason, you do not want to continue answering any of the questions you can choose to discontinue your participation in the study. Thank you very much for giving me your attention.

BACKGROUND CHARACTERITICS

Sex of respondent:……..

Position:……..

Time of interview: …….

1. What credit risk management strategies and techniques are currently implemented at the selected financial institution in Lusaka?

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2. How does the credit risk modeling techniques of selected financial institutions in Lusaka district impact the financial institution's productivity and operational efficiency?

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3. How is the performance of credit risk techniques modeling of selected financial institutions in Lusaka district?

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End of the Interview! Thank You for your time.

QUESTIONNAIRE

INTRODUCTION

I am a student at UNILUS. I am conducting a study titled "**EXAMINING THE CREDIT RISK TECHNIQUES AND ITS EFFECT ON PERFORMANCE FOR ENHANCED PRODUCTIVITY AT SELECTED PRIVATE FINANCIAL INSTITUTIONS IN LUSAKA, ZAMBIA**". I hereby invite you to participate in this study. Any information you provide will be treated confidential and cannot be traced to you. The information you provide will be used purely for academic purposes. The data obtained from this study will be protected and will not be made available to any second and/or third parties. If by any reason, you do not want to continue answering any of the questions you can choose to discontinue your participation in the study. Thank you very much for giving me your attention.

Instruction: tick a single appropriate response

Section A: Demographic Characteristics

1. Gender: (1). [ ] Female (2). [ ] Male

2. Age group: (1) 18 to 25 years [ ] (2) 26 to 33 years [ ] (3) 34 to 41 years [ ] (4) Above 41 years [ ]

3. Marital status: (1). [ ] Single (2). [ ] Married (3). [ ] Divorced (4). [ ] Widowed

4. Qualification: (1) Certificate [ ] (2) Diploma [ ] (3) Bachelor's Degree [ ] (4) Master's Degree [ ] (5) PhD [ ]

5. Position in the institution: 1. Risk Analyst [ ] 2. Head of Department [ ] 3. Administrator/ Manager [ ] 4. Other specify_____

6. Years of providing service in the institution: 1. Less than a year [ ] 2. 1 to 3 years [ ] 3. 4 to 5 years [ ]

SECTION B: CREDIT RISK MANAGEMENT STRATEGIES AND TECHNIQUES

7. What credit risk management strategies and techniques are currently implemented at the selected financial institution in Lusaka?

1. Credit Risk Assessment [ ]

2. Risk-Based Pricing [ ]

3. Collateral Management [ ]

4. Credit Monitoring and Review [ ]

5. Loan Restructuring [ ]

SECTION C: CREDIT RISK MODELING TECHNIQUES

8. How does the credit risk modeling techniques of selected financial institutions in Lusaka district impact the financial institution's productivity and operational efficiency?

1. Enhanced Decision-Making Speed [ ]

2. Reduction in Manual Processes [ ]

3. Improved Risk Assessment Accuracy [ ]

4. Better Risk Segmentation [ ]

5. Increased Loan Portfolio Quality [ ]

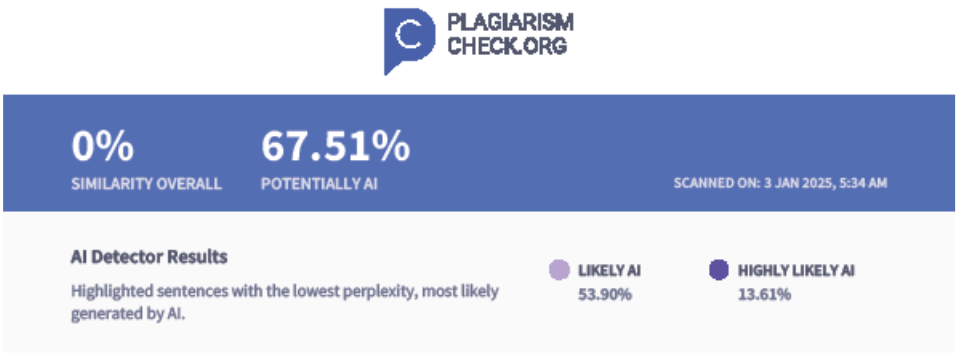
6. Proactive Risk Management [ ]

7. Lower Default Management Costs [ ]

8. Enhanced Customer Satisfaction [ ]

9. Faster Loan Approvals [ ]

Plagiarism Check Report



Report #24333337

SCHOOL OF POSTGRADUATE STUDIES EXAMINING THE CREDIT RISK TECHNIQUES AND ITS EFFECT ON PERFORMANCE FOR ENHANCED PRODUCTIVITY AT SELECTED FINANCIAL INSTITUTIONS IN LUSAKA, ZAMBIA A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, UNIVERSITY OF LUSAKA IN PARTIAL FULFILLMENT OF THE AWARD OF THE MASTER OF SCIENCE IN ACTUARIAL SCIENCE. BY MAZANGA ALUFEYO MSCACT20221489 ©2024 DECLARATION I, Mazang a Alufeyo Student at University of Lusaka (UNILUS) in Lusaka, Zambia do hereby, declare that this research report, ""EXAMINING T HE CREDIT RISK TECHNIQUES AND ITS EFFECT ON PERFORMANCE FOR ENHANCED PRODUCTIVITY AT SELECTED PRIVATE FINANCIAL INSTI TUTIONS IN LUSAKA, ZAMBIA, is my own work, as such has not been submitted before to any University in Zambia or outside for an award of a bachelor's or master's degree programme. I , therefore, sign as authentic in my signature as my original work. i Dedication This dissertation is dedicated t o my family and friends especially my parents John and R uth who have continued to push my academic journey with deliberate intention and my late sister Lus ungu for her emphatic push on the importance of educati on. Your unwavering support, encouragement, and belief in me