DETERMINANTS OF ADOPTION OF GREEN FINANCING BY COMMERCIAL BANKS IN KENYA

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DECLARATION

I hereby certify that this work has not previously been submitted to and approved for degree award by this or any other university. To the best of my knowledge and belief, the Dissertation includes no content previously published or authored by another person, save when appropriate reference is provided in the Dissertation itself.

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ABSTRACT

Climate change presents an unparalleled test to the management of global socioeconomic and financial structures. Our current models of production and consumption lead to unsustainable greenhouse gas emissions, primarily carbon dioxide (CO2), with their levels in the atmosphere surpassing critical limits that our ecosystem can absorb and recycle. Banks committed to sustainability must place greater emphasis on integrating long-term strategies into their business choices. However, the banking sector's response to the emerging challenges of sustainability has been notably sluggish compared to other industries. Bankers often perceive themselves as part of an environmentally considerate sector in terms of emissions and pollution. Despite this perception, they have been relatively tardy in assessing the environmental impact of their clients, despite the potential risks involved. The study aimed to examine the determinants of adoption of green financing by commercial banks in Kenya. The study employed a post - positivist approach. The research adopted a descriptive research design. The study targeted senior officers in the thirty-nine commercial banks in Kenya. From the findings of the study, it was concluded that the adoption of green financing by commercial banks in Kenya is driven by Bank-level characteristics, board composition, banking sector regulations and risk management. The study also found that the four independent variables, were statistically significant in adoption of green financing by commercial banks in Kenya. The study recommends that regulatory bodies in Kenya develop and implement comprehensive, uniform guidelines for green financing. Future research should conduct longitudinal studies to evaluate the long-term impact of green financing on the financial performance and sustainability practices of commercial banks in Kenya.

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ABBREVIATIONS AND ACRONYMS

AFAC	African Financial Alliance on Climate Change
BIS	Bank of International Settlements
CBK	Central Bank of Kenya
CEA	Credit Exposure Analysis
EU	European Union
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
NACOSTI	National Commission for Science, Technology, and Innovation
NGFS	Network For Greening Financial Services
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
OECD	The Organization for Economic Cooperation and Development
SDG	Sustainable Development Goals

DEFINITION OF TERMS

Climate Change: Changes in temperature, precipitation, wind patterns, and other elements of the Earth's climate system over an extended period of time are frequently linked to human activities like the combustion of fossil fuels, deforestation, and industrial processes (Ahenkan, 2020).

Green Financing Practices: Green financing practices refer to the set of financial strategies, policies, and mechanisms employed by financial institutions to endorse and bolster projects that are both environmentally sustainable and socially responsible. These practices aim to allocate capital and resources toward efforts that contribute to ecological preservation, climate change mitigation, and overall sustainable development (Mirovic, et al., 2023).

Green financing: Financial products and services tailored to promote environmentally sustainable projects and initiatives, with a focus on mitigating climate change and promoting ecological responsibility (Mirovic, et al., 2023).

Renewable Energy: Energy from renewable natural resources, like sunshine, wind, rain, tides, waves, and geothermal heat, that has less of an adverse effect on the environment than conventional fossil fuels (Harjanne & Korhonen, 2019).

Sustainable banking: It involves a commitment to responsible and ethical banking practices that promote long-term economic development while minimizing negative impacts on the environment and society. Sustainable banking institutions aim to balance financial profitability with social and environmental responsibility by incorporating sustainability criteria into lending, investment, risk management, and other financial activities (Inacio & Delai, 2021).

Sustainable Development: Sustainable development encompasses economic, social, and environmental aspects, ensuring that current needs are met without jeopardizing the capacity of future generations to fulfill their own. (Brundtland Commission, 1987)

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Climate change presents an unparalleled test to the management of global socioeconomic and financial structures (Ranger et al., 2021). The current models of production and consumption lead to unsustainable greenhouse gas emissions, primarily carbon dioxide (CO2), with their levels in the atmosphere surpassing critical limits that our ecosystem can absorb and recycle. The ongoing rise in temperatures is already manifesting in the impact on both ecosystems and socioeconomic systems on a global scale (IPCC, 2022). Compared to the pre-industrial era, the worldwide climate has undergone transformations, and there exist numerous pieces of evidence indicating that these shifts have led to consequences for organisms, ecosystems, as well as human systems and overall well-being. The undeniable existence of climate change is evident through increasingly intense tropical storms and prolonged droughts, which result in infrastructure damage, livelihood disruptions, and fuel the phenomenon of mass migration (OECD, 2017)

It is critical to protect the environment and take aggressive steps to combat climate change if the global achievement of the SDGs set forth by the UN is to be achieved by 2030 (Rahman et al., 2022). A number of Sustainable Development Goals (SDGs) may be advanced with the help of green financing. To achieve sustainable development, it is essential to implement the concept of "greening finance," which means that financial institutions' decision-making processes should take social and environmental considerations into account (Potts et al. 2016a). To advance environmentally conscious and socially beneficial financial practices, it is essential to adopt a fresh viewpoint. Sustainable development is heavily dependent on the participation of financial institutions, particularly commercial banks, in the field of green financing. The distribution and use of resources are greatly affected by their decisions. The provision of financial services like insurance, as well as the allocation of credit and investment options, fall under this category.

It was claimed by Gor and Tekin (2023) that the global market for green financing increased from $143 billion in 2015 to $224 billion in 2021, demonstrating a considerable rise in spite of the difficulties brought about by the pandemic. Within the realm of green finance distribution in 2021, Western Europe emerged as the most prominent area, accounting for 77% of the total with a total of $63.1 billion. Following that was South Asia, which brought in a total of $5.5 billion.

Developing green finance product labeling and determining whether items are qualified for green financing were the primary focuses of an inquiry that was initiated by the European Union in March of 2018.

According to Lindenberg (2014), there is still a lack of a commonly recognized and correct definition of green finance, which may be linked to two main factors. First, many publications lack a full explanation, and second, the suggested definitions vary greatly. Hohne et al. (2012) defines green finance as an extensive category of financial investments that foster sustainable development and long-term expansion, in addition to environmental products and regulations that promote the growth of an economy more attuned to environmental concerns. Green finance comprises climate finance as well as various other issues. It also includes a larger variety of environmental aims, such as monitoring industrial emissions, preserving water quality, and safeguarding biodiversity.

Commercial banks have increasingly adopted a comprehensive approach, including environmental and social considerations in their evaluation of the feasibility and consequences of financial choices (Liu et al., 2022). Financial institutions may significantly contribute to the promotion of environmental conservation and social fairness by performing a comprehensive review of credit allocation and investment strategies. The shift in perspective demonstrates a dedication to integrating financial operations with the concepts of sustainability, thereby promoting a harmonious synergy between economic progress, environmental conservation, and social accountability (Liu et al., 2022).

Various financial instruments fall under the category of green financial products, including green loans, green deposits, green bonds, green funds, green insurance products, green securities, and green infrastructure investments (Soundarrajan & Vivek, 2016). Green loans are specifically intended to finance projects that tackle environmental issues (Güler & Tufan, 2015). In addition, financial support for initiatives centered around environmental conservation is provided through various instruments such as green sukuk, green bonds, and similar financial tools like green funds (Kahraman, 2022).

Green loans are recognized by global financial institutions, such as the World Bank (Volz et al., 2015), as a means to tackle environmental concerns. They require an evaluation of the environmental impact of various investments. As per the research conducted by Gündoğan & Bitlis (2018), it is stated that individuals who opt for green loans are required to allocate the funds

towards projects that prioritize environmental issues. Experts advocate for the implementation of green finance practices by financial institutions, highlighting the significance of green loans as a vital financial tool for promoting sustainable economies (Xu & Li, 2020; Yan et al., 2016). Green bonds are essential for financing projects that have a positive impact on the environment. The bonds were initially issued by the World Bank in 2007 and subsequently in Turkey in 2016. These projects should be utilized for environmentally friendly purposes and are closely monitored through evaluations conducted by rating and audit companies (Jun et al., 2016).

The financial industry plays a vital role in tackling climate change by actively striving to decrease climate risk and alleviate the consequences of unfavorable weather occurrences (OECD, 2017). The IPCC (2022) study states that an annual expenditure of USD 2.4 trillion in renewable energy would be required until 2035. The budgeted funds for energy-related investments range from USD 51.2 trillion to USD 122 trillion, representing a substantial sum. It is expected that the financial sector would play a crucial role in providing the necessary economic resources, considering the large financial needs. This could be because of its fundamental role in supporting the physical economy (Park & Kim, 2020).

While numerous banks have taken the lead in financing green or climate initiatives, the majority have a limited green portfolio. In 2016, developing country banks provided a significant amount of green loans and credits to the private sector, totalling USD 1.5 trillion. This accounted for approximately 7% of emerging market private sector claims, according to the International Finance Corporation (IFC). This can be attributed to the absence of a comprehensive legal and regulatory framework, as well as the failure to integrate environmental and climate change risks into banks' strategic planning and risk management systems. Meeting investment requirements within the current financial framework is challenging due to various sectoral and institutional obstacles (Mazzucato and Semieniuk 2018). With the absence of a proper regulatory framework, an increasing number of central banks and regulators are recognizing their responsibility and potential to tackle climate change and environmental risks in the banking and financial sector. They are now taking proactive measures to address these issues (Volz 2017). In 2017, central banks and supervisors established the Networking for Greening the Financial System (NGFS) with the aim of analyzing and addressing climate and environment-related risks in the financial sector. The

NGFS also seeks to encourage mainstream finance to contribute to the transition towards a sustainable economy (NGFS 2018).

For over a century, the worldwide financial system has played a pivotal role in expediting economic progress, profoundly reshaping the trajectory of global economic and societal advancement during the industrial era (Lo, 2021). It stands as the central pillar of contemporary economies. Nevertheless, it is encountering challenges in aligning itself with the imperative to swiftly transition towards a more environmentally sustainable and resource-efficient model of growth. To illustrate, while clean energy funding reached approximately USD 250 billion in 2012, this amount barely constituted one-third of the USD 674 billion directed towards the extraction of fossil fuels within the same period (Potts et al., 2016a).

According to Reghezza et al., (2022), risk executives within the banking sector are resolute in their acknowledgment that climate change constitutes the foremost nascent risk, a sentiment shared by their respective boards. With increasingly frequent instances of extreme weather spanning the globe and a global shift toward a more environmentally sustainable economy, the banking industry is engaged in a dual-pronged endeavor. Simultaneously, banks are evaluating the consequences of climate change on their internal strategies and operations. Additionally, they are making efforts to support customers and communities in navigating the complex and swiftly changing dynamics of this market.

1.1.1 Green financing in the Kenyan banking sector

In 2015, the Kenya Bankers Association (KBA) launched the Sustainability Finance Initiative (SFI). The SFI prioritized raising awareness of environmental, social, and governance risks and financing in the banking sector with an academic approach. KBA has created a comprehensive online training program with the goal of assisting banks in creating long-lasting value for the economy, society, and the environment. Currently, all 39 banks are actively participating and over 30,000 bankers have already registered.

In January 2020, the Acorn Group issued a corporate green bond valued at Ksh.4.3 billion, which was listed at the Nairobi Securities Exchange (NSE). The bond was also included in the International Securities Market (ISM) segment at the London Stock Exchange (LSE). The funds were used to build environmentally friendly housing for university students. In November 2020,

KCB Bank was accredited by the United Nations Green Climate Fund (GCF) as the first financial intermediary for green financing in East Africa. The GCF is a well-known climate fund that prioritizes supporting developing nations in their efforts to achieve low-emissions and climate resilience.

The Central Bank of Kenya (CBK) partnered with the European Investment Bank to help banks finance green projects and handle climate risks (Mangwa & Jagongo, 2022). The two-year technical assistance initiative would help CBK integrate climate risk into the regulatory framework and remove impediments to commercial banks financing green projects. The regulator noted that the greening of financial systems project will assist Kenyan banks implement climate finance best practices across all their operations to better analyse, manage, and report climate-related risks.

Most of the existing research concurs that green financing is closely associated with sustainable green development initiatives, which yield improvements for both the environment and society. This encompasses a comprehensive concept encompassing all financial investments directed towards promoting environmental sustainability. It also encompasses borrowing activities aimed at fostering green projects. Such financial endeavors can pertain to a wide array of areas, including industrial pollution control, reduction of greenhouse gas emissions, and protection of biodiversity(Afridi et al., 2021). In a broader context, green financing is a comprehensive term that is commonly characterized in the existing literature as the provision of funds for sustainable and environmentally friendly projects. Nevertheless, the practical task lies in establishing clear parameters for what constitutes green financing and investments. Green loans emerge as a pivotal link that bridges the gap between financial institutions and industries dedicated to promoting environmental well-being (Böhnke , et al., 2015).

Banks committed to sustainability must place greater emphasis on integrating long-term strategies into their business choices (Yip & Bocken, 2018). However, the banking sector's response to the emerging challenges of sustainability has been notably sluggish compared to other industries. Bankers often perceive themselves as part of an environmentally considerate sector in terms of emissions and pollution. Despite this perception, they have been relatively tardy in assessing the environmental impact of their clients, despite the potential risks involved. This hesitancy is attributed to concerns that such scrutiny could be construed as interference with client operations. Empirical studies conducted in 1990 revealed that European banks displayed limited interest in

addressing their own environmental standing or that of their clients (Jeucken & Bouma, 2001). Additionally, it encompasses a wider spectrum of environmental objectives, such as the oversight of industrial contamination, the preservation of water cleanliness, and the safeguarding of biodiversity. This would involve developing a deeper understanding of sustainable finance principles and practices, as well as building the necessary skills and resources to effectively assess and manage sustainability risks in their operations (Wang & Zhi, 2016).

Dikau et al. (2020) posit that in the banking sector, there is a growing emphasis on green finance as a proactive approach to protect banks and society from unexpected economic challenges caused by global financial events, the climate crisis, social unrest, and corporate wrongdoing. This shift reflects a larger change in the traditional banking model towards offering environmentally sustainable products and services. The urgency to adopt green finance practices arises from the recognition that traditional approaches to banking and finance may not be equipped to adequately address the complex and interconnected risks posed by a changing global landscape according to (Jeucken & Bouma, 2001). Factors such as volatile financial markets, the escalating impacts of climate change, social tensions, and high-profile corporate controversies have underscored the need for a more resilient and responsible banking sector.

1.2 Statement of the Problem

It is widely recognized in academic circles that the ongoing emission of greenhouse gases will lead to a more pronounced global warming (Stojanovic & Ilic, 2018). This type of warming, surpassing 2 degrees Celsius (2°C) compared to the pre-industrial era, has the potential to cause notable economic and social impacts (Stojanovic & Ilic, 2018). In December 2015, approximately 200 nations convened to enhance the global endeavor to tackle the pressing issue of climate change. This collaborative response demonstrates an increasing recognition of the potential risks involved, as highlighted by the Central Bank of Kenya in 2021. This was achieved through the "Paris Agreement," which has the goal of restricting the rise in global average temperature to under 2°C compared to pre-industrial levels. In addition, efforts are being made to limit the rise in temperature to no more than 1.5°C above pre-industrial levels. The Paris Agreement aims to enhance governments' capacity to tackle the impacts of climate change and align financial resources with a strategy that promotes reduced greenhouse gas emissions and improved climate resilience (UNFCCC, 2015).

Kenya has been significantly vulnerable to severe climatic occurrences, leading to its classification as one of the most disaster-prone nations globally (Kariuki, 2020). Notably, the country faces considerable risks from extreme events such as floods and droughts. Major drought episodes emerge approximately every decade, while moderate droughts or floods transpire every three to four years (Parry et al., 2012). According to the UNFCCC (2015) report, implementation of the Paris Agreement could potentially trigger a transformative shift in economic activities and resource allocation. As a result, this could carry profound implications for economies and financial markets worldwide. The agreement not only underscores the critical need for addressing climate change but also highlights the imperative of aligning financial systems with sustainable and environmentally conscious principles.

Mahmud et al. (2017) argue that incorporating sustainability practices into commercial banks, along with implementing legislation that fosters environmental consciousness, could potentially facilitate the growth of green finance. David and Shameem (2017) conducted a study to assess the impact of management commitment and support on the successful implementation of environmentally friendly practices in a bank. The findings indicate a noteworthy correlation between management support, dedication, and the adoption of ecologically conscious banking practices. The findings show that greater product development and regulatory support might help to encourage the adoption of environmentally friendly banking practices. This study was conducted in Sri Lanka presenting a contextual gap. There have been no previous investigations conducted in this specific location, resulting in a paucity of empirical study. This research aims to fill the gap.

At the municipal level, the development of green finance is now in its nascent phase. Batsukh et al. (2019) conducted research that focused on the subject of green funding in developing nations, with a special emphasis on Kenya and Nigeria. The researchers underscored the need of fostering the growth of green finance in order to attain the Sustainable Development Goals (SDGs) in poor nations. However, the nations have failed to achieve the goals due to inadequate collaboration between public and commercial entities. Regrettably, the research did not investigate the participation of commercial banks in the advancement of green financing projects creating a conceptual gap to be filled by this study. Ochieng (2019) did research to investigate the impact of implementing environmentally friendly business practices on the performance of Safaricom

Kenya. Adopting eco-friendly strategies, including green supply chains, green products, green bonds, green offices, and sustainability policies, has significantly improved the organization's overall performance, according to the study. The study presented a conceptual and contextual gap by focusing on Safaricom and the impact of implementing environmentally friendly business practices. This study will fill both gaps by focusing on commercial banks and the determinants of adoption of green financing. Prior research has mostly concentrated on communications companies, neglecting the exploration of banks' initiatives in establishing green finance schemes.

It is imperative for financial institutions to align themselves with the trajectory towards low-carbon economies, as staying outside this transition path is not a viable option. Moreover, financial entities must gain a comprehensive understanding of the climate-related risks linked to their non-green assets and take proactive steps to develop strategies that mitigate these risks(Nawaz et al., 2021). Presently, the overwhelming share of funding for climate change adaptation initiatives originates from the public sector. Out of the entire climate financing summing up to $361 billion in 2014, a mere $25 billion was directed towards climate change adaptation. Remarkably, a minuscule portion of this, approximately $141 million, equivalent to less than 0.6 percent, originated from the private sector. This stark disparity between private and public financing underscores a substantial potential for financial institutions, to play a more impactful role in climate change adaptation efforts (Li et al., 2016).

The volume of scholarly articles dedicated to green finance remains notably low and more so in Africa (Ozili, 2022). Zadek and Flynn (2013) demonstrate the increasing trend of south-originating green finance (SGF) flows majorly in South Africa. This growth is attributed to the presence of advanced financial markets within South Africa, which provides a conducive environment for financial institutions to engage in longer-term investments focused on sustainability.

Incorporating green finance principles into core banking policies and procedures continues to be a challenging task across the banking sector. This is due to the persistence of barriers and limitations that need to be addressed to realize the intended outcomes and effects. Within this context, Kenya grapples with challenges in obtaining financing from domestic banks. The banks display risk aversion and a restricted grasp of low-carbon prospects, leading to elevated interest rates and substantial collateral demands. As a result, the seamless integration of green finance into mainstream banking practices is hindered (Mangwa, 2023). This gap in research and

implementation calls for a comprehensive investigation into the determinants of green financing adoption by commercial banks in Kenya, aiming to identify barriers and opportunities for promoting sustainable financial practices in the region.

1.3 Research Objectives

1.3.1 General Objective

The general objective was to investigate the determinants of adoption of green financing by commercial banks in Kenya.

1.3.2 Specific Objectives

i. To examine the impact of bank level characteristics on adoption of green financing by commercial banks in Kenya.
ii. To determine the effect of board characteristics on the adoption of green financing by commercial banks in Kenya.
iii. To assess the effect of banking sector regulations on the adoption of green financing by commercial banks in Kenya.
iv. To examine the effect of risk management on the adoption of green financing by commercial banks in Kenya

1.4 Research Questions

i. What is the impact of bank level characteristics on the adoption of green financing by commercial banks in Kenya?
ii. What is the effect of the board characteristics on the adoption of green financing by commercial banks in Kenya?
iii. What is the effect of banking sector regulations on the adoption of green financing by commercial banks in Kenya?
iv. What is the effect of risk management on the adoption of green financing by commercial banks in Kenya?

1.5 Scope of the Study

The study was centered on an analysis of the commercial banking institutions located in Nairobi City County, Kenya. The objective of this study was to evaluate the implementation of environmentally sustainable financial practices and identify the factors that influence commercial

banks in Kenya's adoption of such initiatives. A meticulous selection process was employed to analyze the operational protocols of 41 commercial banks situated in Kenya. The study employed a systematic and scholarly approach, analyzing cross-sectional data. The study took place between January and April 2024.

1.6 Significance of the Study

1.6.1 Investors

The study's results would be beneficial for both collective and individual investors seeking to participate in financial institutions that have implemented green financing. These insights would enable people to make well-informed investing choices that align with their beliefs. Moreover, the study's conclusions would have significant value for investors who are evaluating the extent of adoption of sustainable financial practices within the banking sector.

1.6.2 Policy makers

The findings can inform policymakers and regulatory authorities about the need to create a supportive environment for green financing, including the development of incentives, regulations, and guidelines to encourage banks to adopt sustainable practices. Identifying the factors influencing green financing adoption can contribute to the development of strategies aimed at enhancing the role of banks in promoting environmentally sustainable investments. This can lead to the expansion of green financing initiatives, which in turn can stimulate economic growth while addressing environmental challenges.

1.6.3 Commercial banks

By promoting the adoption of green financing practices, the study can contribute to mitigating climate change and environmental degradation. Banks that integrate sustainability into their operations can allocate more resources to environmentally friendly projects, leading to a reduction in carbon emissions and other harmful environmental impacts.

1.6.4 Scholars and academicians

The study's results will significantly augment the current understanding and awareness of the degree to which commercial banks in Kenya are embracing green financing. This material is of great use to scholars seeking a comprehensive grasp of the present state of sustainable banking practices and has the potential to serve as a basis for future scholarly inquiries.

1.8 Chapter summary

The chapter starts with an introduction, providing background information on the study. It then identifies the problem statement and states the purpose of the study, along with the research questions that will be addressed. Additionally, it provides an explanation of the reasoning, extent, and importance of the research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides an in-depth evaluation of relevant academic publications on the study subjects. The chapter includes a theoretical review, an empirical evaluation of past works, and a list of research gaps that were discovered. Furthermore, an overview of the conceptual framework supports the inquiry.

2.2 Theoretical Review

This study is grounded on two theoretical frameworks, that is, Institutional Theory and the Resource Based View Theory. The theories are discussed hereafter and their relevance to the study indicated.

2.2.1 Institutional Theory

Institutional theory, as articulated by Scott (1987), delves into the intricate and adaptable nature of societal frameworks. It examines how these structures encompass elements such as rules, regulations, norms, and cultural understandings that dictate strategies for societal conduct. This theory has gained prominence due to its comprehensive and prevailing depiction of guidelines shaping the behaviors of both individuals and organizations.

Meyer and Rowan (1977) emphasized that within organizations, guidelines function as narratives embedded in institutions. These narratives serve to establish legitimacy, stability, and enhanced prospects for survival. This perspective implies that the rational ideologies held by corporations play a pivotal role in driving institutions to adapt their practices and processes, thereby enhancing their legitimacy and longevity.

Organizational isomorphism is a central concept within institutional theory, encompassing the idea that institutions tend to adopt similar processes and structures. This is achieved through various forms of isomorphism, including coercive, mimetic, and normative isomorphism, as previously outlined in earlier research. These isomorphic mechanisms contribute to the alignment of organizations with prevailing norms, regulations, and practices, thereby fostering consistency and legitimacy within the institutional environment (Karbhari et al. 2020). According to Chua and Rahman (2011), one of the key factors in increasing organizational acceptability is isomorphism, which is defined as adhering to anticipated norms.

Carruthers (2015) presents evidence that firms often emulate practices that have been established in other companies, and simultaneously, certain governments enforce compliance with internationally endorsed operational standards.

This theory holds particular significance in the current study. When it comes to commercial banks in Kenya, the regulatory frameworks established by financial authorities and environmental agencies serve as institutional pressures that impact their choices related to green financing. Strict environmental regulations, policies that offer incentives, and clear guidelines for incorporating sustainability into financial operations can serve as institutional factors that motivate commercial banks to embrace green financing practices. On the other hand, the absence of supportive regulations or ambiguous guidelines could impede the adoption process. Thus, Institutional Theory emphasizes the influence of institutional pressures, particularly banking sector regulations, on molding the path of green financing adoption in commercial banks through affecting their strategic reactions to environmental sustainability imperatives.

2.2.2 Resource Based View Theory

Penrose (1959) first introduced the Resource Based View theory, suggesting that organizations can gain a competitive advantage by managing their resources effectively. Based on Wernerfelt's (1984) study, a company's performance depends on how it handles and controls its essential resources. The Resource-Based View (RBV) focuses on the attributes of resources and capabilities and their source to explain a firm's differences, performance, and longevity, as proposed by Morheney and Pandian in 1992. According to Collini and Montgomery (1998), resources are essential for gaining a competitive edge in a fiercely competitive market. Identifying, developing, strategically positioning, and safeguarding unique resources is essential for a firm's success. According to Barney et al. (2001), every organization has a diverse range of tangible and intangible assets. The Resource-Based View (RBV) suggests that people are driven to maximize the use of organizational resources (Barney, 2007).

Barney and Hesterly (2010) highlighted the key elements of resources as resources, capabilities, and competences. Based on scholarly sources, resources are described as tangible or intangible assets that an organization can utilize. Several scholars like Defillippi (1990), Arend and Levesque (2010), and Anderson (2011) discuss competencies as the organizational strengths that help differentiate products or services by developing technological systems that meet beneficiary needs.

This, in turn, improves the organization's capacity to compete more effectively and attain greater success in comparison to its rivals. The Resource Based View theory has made a substantial impact on the field of strategic management by highlighting the importance of firm-specific resources as a legitimate source of competitive advantage and superior performance (Mckelvie & Davidsson, 2009). Capability can be described as a blend of skills, knowledge, abilities, and experience that empowers an organization to efficiently handle its operations and make the most of resources to attain peak performance. This definition is backed by several scholars, such as Amit and Shoemaker (1993), Barney (2007), and Mckelvie and Davidson (2009). Lockett, Thompsons, and Morgenstern (2009) state that within the field of strategic management, the Resource-Based View (RBV) framework is utilized to analyse the resources and capabilities that help a company attain better rates of return and improved performance results.

The Resource-Based View (RBV) theory is closely associated with the adoption of green financing in commercial banks by highlighting the significance of firm characteristics as crucial determinants. In this context, the distinct resources and capabilities of commercial banks play a crucial role in influencing their strategy towards green financing adoption. Company-specific traits like organizational culture, management skills, and financial innovation abilities play a crucial role in shaping the adoption process. Financial institutions that prioritize the environment in their corporate culture and are adept at creating and providing cutting-edge green financial products are more inclined to adopt sustainable finance practices. This perspective highlights the significance of identifying and utilizing internal firm characteristics as crucial factors in influencing the implementation of green financing strategies in the commercial banking sector in Kenya.

2.3 Empirical Review

2.3.1 Level of Adoption of Green Financing

An unequivocal and clearly defined definition of "green finance" holds immense importance for practical application of the concept. It is particularly essential to facilitate the precise development of policies, meticulous statistical monitoring, and evaluation of regulatory efficiency. Nevertheless, in real-world practice, a unanimous and singular definition of green finance remains absent(Potts et al., 2016b)

Green finance should not be perceived solely as a corporate social responsibility for financial institutions. Instead, it represents a novel policy-centered realm that drives the advancement of the

financial sector (Lamperti et al., 2021). What is required is an innovative financial framework that overtly highlights the advantages of preserving natural resources, such as lush landscapes and pristine water bodies, while also acknowledging the detriments of pollution through the implementation of policies and market indicators. This new paradigm must work towards increasing the tradability and liquidity of environmental assets, guaranteeing effective management of environmental risks, and enhancing standards of corporate governance. Ultimately, this transformative approach should influence the relative valuations of diverse assets and steer the conduct of investors and their intermediaries(Potts et al., 2016b). Commercial banks, operating as a service sector, hold a vital function in distributing financial assets to facilitate both current and future human and economic endeavors. Moreover, banks are responsible for supporting the establishment of a robust and enduring economy, ensuring its stability and sustainability(Yip & Bocken, 2018).

The Collevecchio Declaration was presented in 2003 by BankTrack, a worldwide alliance of non-governmental groups that specializes in examining the connection between commercial banks and sustainability. More than 200 civil society groups have voiced their support of this proclamation. The Declaration (2003) underscores the significance of financial institutions broadening their objectives beyond mere profit maximization and embracing a viewpoint centered on social and environmental sustainability. Embracing a commitment to sustainability entails integrating ecological boundaries, social equality, and economic impartiality into company strategies and fundamental business domains, such as credit, investment, underwriting, and consulting services. The purpose of this change is to give equal importance to sustainability goals in addition to the pursuit of shareholder profit and customer happiness. It actively strives to provide funding for deals that advance sustainability objectives.

Although each individual financial product may have a relatively small environmental footprint, the large quantities in which they are manufactured result in a huge overall effect. Within the banking sector, the use of paper is a significant environmental problem, mainly due to the vast amount of paper used in different documentation procedures, such as credit files and client information records (Yip & Bocken, 2018). In addition, the functioning of banks requires the use of office spaces, which leads to the use of resources such as water, electricity, and cooling agents for computer servers (Jeucken & Bouma, 2001). To achieve a reduction in landfill trash and carbon

dioxide emissions, it is necessary to minimize the exploitation of natural resources. An efficient approach involves digitizing and optimizing internal procedures, resulting in less office space needs. Consequently, this leads to a more sustainable and environmentally conscious attitude within the banking industry (Yip & Bocken, 2018). Therefore, it is essential to effectively address all of these limitations in order to successfully adopt green finance in any given nation.

A wide range of green financing solutions are being developed in the banking sector, each with unique branding and terms and conditions. To gain a competitive edge in the sector, banks may improve their strategic position by acknowledging and offering environmentally-conscious financial solutions that cater to their consumers' preferences (Raberto et al., 2019). These products are impacted by several elements within the banking industry, as outlined in an academic study published in 2015. Cullen (2018) performed a research that highlighted seven crucial green financing solutions offered by banks. Financial products in this field include green loans/bonds, green investments, climate financing, green infrastructure bonds, green insurance, green securities, and carbon finance.

A green loan, also known as green credit, is a specific kind of financial assistance provided by banks to a range of organizations, including startups, small firms, and multinational corporations. This initiative seeks to facilitate the investigation and progress of state-of-the-art goods (Islam et al. 2014). More precisely, it offers financial support for environmentally sustainable advancements, enabling them to acquire a superior position, especially among sophisticated technology firms (Chen et al., 2019). Furthermore, green loans provide support to small enterprises by enhancing their financial framework and safeguarding them from future economic adversities. These loans are provided at competitive rates of interest.

2.3.2 Firm Level Characteristics and Green Financing

One of the most important things that banks can do to help the environment is to make green banking a part of top-down management (Forcadell et al., 2019). In order to implement green banking practices, there must be a strong determination from upper management and staff to include eco-friendly operations into everyday tasks (Cui et al., 2018). In order to successfully create and integrate green initiatives into banking operations, the active engagement and commitment of top management are crucial.

The interaction between client needs and the quest of social legitimacy is a major driver for the progress of green banking (Mengze and Wei, 2015). The future of green banking is heavily influenced by how banks respond to client expectations and their efforts to build a trustworthy and socially responsible reputation.

Within the field of green finance, the size of the bank—usually measured by total assets—makes a big difference. In light of the possible long-term dangers, Dietrich and Wanzenried (2011) stressed that a bank's capacity to provide environmentally friendly loans to borrowers is affected by the amount of its assets. The capitalization of green finance efforts is directly affected by how a bank's risks are spread out over their whole portfolio, as pointed out by Hwang, Shan, and Supa'at (2017). Due to the perceived increased risk involved, banks need a substantial asset base to adequately manage any possible concerns that may emerge from providing green financing to borrowers (Babihuga and Spaltro 2014).

2.3.3 Board Characteristics and Green Financing

Efficient governance is essential for ensuring the smooth operation of both the banking sector and the broader economy. Within the economy, banks play a vital role by facilitating the movement of funds from savers and depositors towards activities that fuel business ventures and contribute to overall economic expansion. The stability and well-being of banks are pivotal for maintaining financial equilibrium, making their business practices a linchpin in sustaining economic vitality. Instances of governance shortcomings in banks holding significant positions within the financial system can lead to the propagation of issues throughout the banking sector and the economy in its entirety(Bank for International Settlements, 2015)

Sound corporate governance plays a crucial role in shaping and facilitating green financing practices within banking institutions (Li et al., 2020). Corporate governance encompasses the set of principles, policies, and practices that guide and regulate the decision-making processes and behavior of a company's leadership, including its board of directors, executives, and management. When effectively implemented, corporate governance can provide a conducive environment for the integration of green financing initiatives.

Top management has a crucial role in navigating both external and internal environments, including access to cash, customers, suppliers, and people. This relies on managerial competencies and networks (Bhatt & Bhattacharya, 2015). Thus, management shares its networks, expertise, and

assets with the public. It also encourages knowledge sharing and collaboration (Bryant & Davis, 2013). This idea highlights the importance of leadership in making decisions when it comes to green financing.

There has been a growing focus on the important relationship between corporate governance and green innovation. Many modern companies are increasingly dedicated to investing in green research and development (R&D) in order to spearhead eco-innovations. Embracing sustainability requires a fundamental change in the board of directors' mindset, leading to a shift in the company's research and development culture, implementation of innovative production methods, investment in environmentally friendly technologies, and encouragement of fresh ideas. As stated by Kock et al. (2018), successfully reducing and preventing waste emissions requires substantial managerial effort. This entails the complex task of redesigning internal processes and fostering green competencies within the board.

2.3.4 Banking Sector Regulations and Green Financing

The importance of the central bank in promoting green finance projects to other banks is substantial, as stated by Zhixia et al. (2018). It should be noted that many banks in Bangladesh are actively participating in green finance initiatives, following the rules set down by the Bangladesh Bank. To successfully execute green banking efforts, it is vital to do a comprehensive analysis of the social, economic, and environmental aspects of green financing. Zheng et al. (2021a) states that the aforementioned elements have a substantial influence on the green financing initiatives undertaken by financial institutions.

Achieving sustainable economic growth is significantly influenced by engaging in green finance activities, according to research (Zhang et al., 2022). Therefore, those involved in green finance need to carefully assess factors including the history of green financing, technical hurdles, investment costs, and the shortage of trained personnel. If we want green financing initiatives to lead to sustainable economic growth, we must take these factors into account.

Green finance policies need to be developed and implemented by national financial regulatory bodies and central banks of different nations (Durrani, Rosmin, & Volz, 2020). Banks are being hammered with more and more demands from central banks to conform. Green certifications, green credit ratings, social inclusion, support for environmental innovation, and maintenance of such ratings are some of the requirements (Chen et al., 2019; Julia & Kassim, 2019). Financial

institutions that fulfill the criteria for green finance are incentivized by central banks, who provide tax benefits and other advantageous terms.

Furthermore, the banking sector is experiencing heightened competitive dynamics, driving institutions to embrace intense mimetic pressures (Campiglio et al., 2018). This competitive climate is fostering an environment where banks are propelled to bolster their engagement with green finance initiatives, resulting in its expansion.

Barbu and Boitan (2019) highlight the presence of a significant disparity between a country's international stance on environmental protection agreements and its domestic regulations concerning green finance. This divergence necessitates attention and integration within the regulatory framework of banks. A notable example is observed in certain African and South American nations that have shown commitment by joining the Paris Climate Accord. However, these countries have not yet effectively embedded the pertinent principles within the core of their banking sectors.

Despite observable shifts away from financing coal and fossil fuels, it remains evident that a considerable number of banks in countries like the United States and Australia continue to support fossil fuel ventures according to Wu et al., (2021). The approach to green finance policies varies significantly due to the absence of standardized policies across global banking sectors. As a result, banks worldwide adopt diverse strategies to navigate the realm of green finance.

The study by Yu et al. (2021) aimed to explore how financing constraints impact the promotion of green innovations among Chinese listed firms from 2001 to 2017. We will explore how green finance policies tackle the financing obstacles that companies encounter when promoting green innovation. Financing constraints pose a challenge to green innovation, particularly for privately owned enterprises compared to state-owned ones. Although green finance policies can assist in addressing financing limitations for green innovation, privately owned enterprises may face challenges in obtaining green credits.

2.3.5 Risks and Green Financing

Zheng et al. (2021a) emphasized that banks should carefully assess the risks associated with green finance solutions integration before making any choices. Banks need to start talking about green financing and have plans in place to reduce risks if they want to handle these risks well. According

to Akomea-Frimpong et al. (2021), one approach would be for banks to implement internal credit risk rules that include risk-reducing procedures and strategies. This would also apply to the green financing industry. If banks take this tack, they may help provide a safe space for green financing initiatives while also promoting fruitful debate and development.

The risks linked to green financing have a substantial impact on banks' decision-making processes, prompting them to put control mechanisms in place. Credit managers must have a clear understanding of the risk level linked to green financing. Green credit risk models are also essential for making green financing available (Krosinsky and Purdom, 2016).

Credit Exposure Analysis (CEA) and other conventional financial risk models may be modified to evaluate green financing. One approach to this is to think about the standards that are used to determine economic capital. According to Green et al. (2016), the national regulatory standards provided by Basel II are of great value to both borrowers and banks.

Less stringent collateral requirements, based on criteria including loan size and length, are the norm for green loans (Huang et al. 2019).

In order to keep track of their environmentally friendly loan portfolios, banks are increasingly turning to credit derivatives and credit insurance. According to Elliott and Zhang (2019), they serve a dual purpose by contributing to risk diversification.

Numerous services, including Project Finance, Project Finance Advisory Services, Project-Related Corporate Loans, and Bridge Loans, may be structured according to the well-known Equator Principle. At now, the Equator Principle is being used by 80 financial institutions, which accounts for a substantial 70% of the foreign project finance debt in developing economies. Efficient risk management is built upon these foundations. Banks and other types of financial organizations are starting to use them. The primary objective of these models is to efficiently manage various social and environmental hazards associated with projects. Banks get the advantage of better risk management because of this. The banks' reputations are better protected thanks to their improved risk management capabilities, which also contribute to a favorable public opinion of the institutions.

Green financing isn't risk-free, as pointed out by Chen et al. (2019) and Barbu and Boitan (2019). The unknowns surrounding these possible losses might be hard to put a number on. There are

substantial short- and long-term risks connected with green financing products, which banks must take into account. Industry and internal bank credit risk policies related to green finance must include risk management techniques to effectively minimize these risks. According to Siri and Zhu (2019), this feature may make it easier for people to talk about and make progress in the area of green finance.

The area of green finance has unique challenges when it comes to risk management. The absence of defined frameworks and generally acknowledged risk management models for green finance risk identification and categorization is a major contributor to this (Falcone and Sica, 2019; Huang et al. 2019). To overcome these obstacles, we need more studies and banking sector regulations that put an emphasis on robust risk reduction models. This shift in thinking is consistent with a more conscientious attitude to money that considers social and environmental issues.

2.4 Summary of the Literature and Research Gap(s)

Table 2.1 Summary of Research Gaps

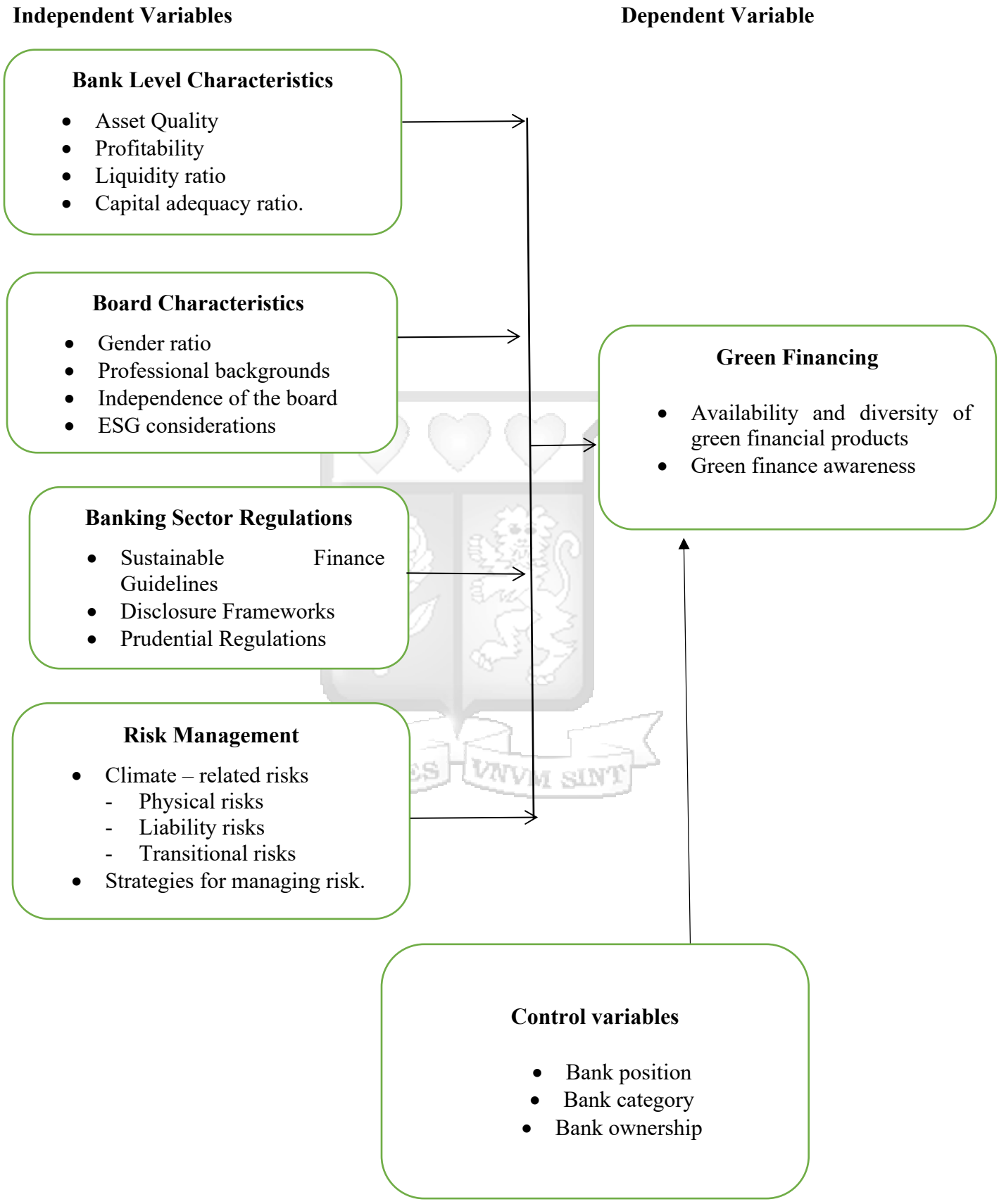
Author	Title	Findings	Research Gaps
Afridi et al., (2021)	An empirical study of the Pakistan banking system on incentives for green funding.	Increasing the proportion of green finance in a bank's loan portfolio may lower the bank's non-performing loan (NPL) percentage.	This research aims to determine the presence of a higher number of green loans and analyze the potential impact on default risk for the bank, particularly in relation to funding projects with high emissions and overcapacity.
Ahenkan (2020)	An evaluation of the potential investment possibilities in Ghana's private sector for financing efforts to mitigate climate change.	The research identified electricity, transport, agriculture, forestry and land use, garbage, and industry as the primary contributors to CO2 emissions in Ghana.	The research specifically examined the private sector's funding of Climate Change Mitigation in Ghana. It did not focus only on the banking industry.
Akomea-Frimpong et al., (2022)	An analysis of research conducted on the topic of banks' involvement in green financing, identifying areas where more investigation is needed and suggesting	The research provides evidence of a lack of clear and logical understanding of important topics related to banks' involvement in green financing.	There are few research on green financing, particularly for emerging nations. Studies should explain how green finance is conceptualized

	potential avenues for future study.		and theorized in global south banking.
Gilchrist et al., (2021)	A thorough analysis of the scope of green finance: A comprehensive review of current literature that specifically examines the implementation of green bonds and green loans.	The study highlights certain challenges in the analysis of green finance, including the varying methods used to measure corporate greenness, the ambiguous nature of the concept itself, and the limited availability of data.	The study exclusively examined green bonds and green loans.
Islam et al., (2014)	Examining the challenges and prospects of green finance in Bangladesh using a descriptive method.	The research highlighted the difficulties and potential advantages of implementing green banking practices in Bangladesh.	The researcher's primary objective is to analyze the present state of green finance and banking in Bangladesh, as well as the associated obstacles and prospects.
Li et al., (2016)	Maximizing banks' potential in climate and green investing	With the escalating impact of, and growing awareness about, climate change, it becomes imperative for financial institutions to establish a well-defined strategy aimed at mitigating climate-related risks and constructing portfolios centered around climate-conscious businesses.	Technical assistance is required for adoption of international best practise
Nawaz et al., (2021)	The relationship between green financing and climate change mitigation in N-11 and BRICS nations is examined using an empirical estimating method called difference in differences (DID) methodology.	The study found that several factors have a significant impact on promoting green financing and climate change mitigation in the countries being studied. These factors include population, FDI, CO2 emissions, inflation, technical corporation grants, domestic credit to the private sector, and research and development.	The focus of the study was on BRICS and N-11 countries
Park & Kim, (2020)	The involvement of financial regulators and financial institutions in	Several banks have embraced sustainability by introducing green financial products. This move not	Further data is required to assess whether there is a link between environmentally

	the transition towards green banking.	only enhances their economic value but also demonstrates their commitment to corporate responsibility.	conscious and socially responsible banking practices and the financial and operational success of banks. The study showcased a clear causal effect.
Sharma, (2023)	Climate change financing in Nepal	The government of Nepal aims to graduate from least developing country by 2022 by establishing a climate fund and use of climate sensitive budget planning	Nepal relies on multilateral and bilateral sources of funding for climate change. It is silent on financial sector funds mobilization.
Yip & Bocken, (2018)	Archetypal models for sustainable business in the banking sector	The study presents archetypes for the banking industry, which can be used to foster innovation and conduct systematic analysis of sustainable banking practices.	The study centered on Banks in Hong Kong due to the presence of highly developed financial markets.
Rahman et al., (2022)	An exhaustive examination of green financing within the banking sector: insights from a developing nation	The study uncovers key factors that impact the green finance operations of banks in Bangladesh.	There may be a potential sampling bias in this study due to the use of reports exclusively in English and the limited time span from 2014 to 2022.

2.5 Conceptual Framework

The relationship between dependent and independent variables are diagrammatically presented in Figure 2.


Independent Variables
Dependent Variable
Bank Level Characteristics
Asset Quality
Profitability
Liquidity ratio
Capital adequacy ratio.
Board Characteristics
Gender ratio
Professional backgrounds
Independence of the board
ESG considerations
Banking Sector Regulations
Sustainable Finance Guidelines
Disclosure Frameworks
Prudential Regulations
Risk Management
Climate – related risks
Physical risks
Liability risks
Transitional risks
Strategies for managing risk.
Green Financing
Availability and diversity of green financial products
Green finance awareness
Control variables
Bank position
Bank category
Bank ownership

2.5.1 Bank level characteristics

Characteristics of firms are essential in shaping the implementation of green financing in commercial banks in Kenya. The quality of assets plays a crucial role in determining the acceptance of green financing. Financial institutions that have stronger asset quality are in a favourable position to allocate resources towards sustainable endeavours, such as green financing. Having a strong asset quality is crucial for minimizing credit risk and allowing the bank to support environmentally friendly projects without compromising financial stability (Cui et al., 2018). Profitability is an important factor that affects the acceptance of green financing. Financially robust banks have more resources to allocate towards sustainable practices. The bank's enhanced profitability is also seen as a testament to its dedication to environmental sustainability, which in turn attracts stakeholders who are interested in responsible investment (Cui et al., 2018). The liquidity ratio plays a crucial role in assessing a bank's ability to participate in green financing. Financial institutions that maintain higher liquidity ratios are better equipped to allocate funds towards environmentally-friendly initiatives without jeopardizing their ability to fulfil immediate financial obligations. Sufficient liquidity is crucial for banks to take advantage of opportunities for sustainable investments as they arise, thereby supporting the growth of green financing activities (Dietrich & Wanzenried, 2011).

The capital adequacy ratio plays a crucial role in determining the viability of green financing. Financial institutions that possess robust capital adequacy ratios have a firm financial footing to back up long-term endeavours. Having sufficient capital reserves is crucial for banks to mitigate potential losses related to green projects, which in turn motivates them to participate in environmentally friendly lending activities (Dietrich & Wanzenried, 2011).

2.5.2 Board Characteristics

The composition and characteristics of the board have a significant influence on the adoption of green financing in commercial settings. The gender balance in the boardroom plays a significant role in influencing the acceptance of green financing. Boards that have a range of gender representation tend to place a higher emphasis on sustainability matters, such as green financing. Research indicates that boards with a diverse composition, including a balanced gender ratio, are more likely to prioritize environmental and social factors (Lai & Sohail, 2022).

The professional backgrounds of board members are crucial in driving the advancement of green financing. Boards consisting of individuals with a range of professional backgrounds, including

expertise in environmental sciences, sustainable finance, or related fields, are more capable of spearheading sustainability initiatives within banks. This well-rounded skill set ensures that environmental factors are carefully considered and incorporated into decision-making processes (Lai & Sohail, 2022).

Ensuring the board's independence is crucial in cultivating a strong dedication to green financing. Independent boards are less prone to external pressures and are more inclined to prioritize long-term sustainability objectives over immediate profit maximization. An impartial board can offer unbiased supervision and assistance for green financing initiatives, guaranteeing that environmental factors remain at the core of the bank's operations (Lai & Sohail, 2022).

Taking into account environmental, social, and governance (ESG) factors as part of board responsibilities is a crucial aspect that affects the adoption of green financing. Boards that incorporate ESG considerations into their oversight responsibilities are more likely to support sustainability initiatives, such as green financing. By assigning dedicated board committees or officers to oversee ESG matters, banks showcase a proactive dedication to harmonizing corporate governance with environmental sustainability objectives (Lai & Sohail, 2022).

2.5.3 Banking Sector Regulations

The regulations in the banking sector play a vital role in shaping the adoption of green financing in commercial banks in Kenya. This includes the framework, guidelines, and regulations that are in place. Guidelines on sustainable finance issued by regulatory authorities play a crucial role in incorporating environmental factors into banking operations. These guidelines provide a comprehensive framework for integrating sustainability principles, including green financing, into banks' practices. When financial regulators establish clear and comprehensive sustainable finance guidelines, commercial banks are motivated to align their strategies and products with these standards to ensure compliance and mitigate risks (Zhixia et al., 2018).

Regulatory requirements for disclosure frameworks also play a significant role in promoting the use of green financing. Regulatory mandates necessitate that banks provide transparent reports on their environmental and social impacts, thereby disclosing their sustainability efforts and green financing initiatives. Transparency is crucial for accountability and trust among stakeholders, such as investors, customers, and regulators. Disclosure frameworks play a key role in promoting this transparency. Banks that follow comprehensive disclosure frameworks are in a favourable position

to showcase their dedication to environmental sustainability and attract investments for eco-friendly initiatives (Durrani et al. 2020).

Regulatory measures, such as capital adequacy requirements, have a significant impact on the adoption of environmentally friendly financing practices. Regulatory frameworks that integrate sustainability considerations into prudential regulations motivate banks to invest in environmentally friendly projects and initiatives. Through the incorporation of sustainability metrics into capital adequacy assessments, regulators encourage banks to prioritize investments in environmentally friendly assets and manage environmental risks within their portfolios. Prudential regulations play a crucial role in fostering sustainable finance and maintaining the stability and resilience of the banking sector (Durrani et al. 2020).

2.5.4 Risk management

Climate-related risks present a complex challenge for commercial banks, including physical risks, liability risks, and transitional risks. Understanding and addressing these risks plays a crucial role in the acceptance of green financing by commercial banks in Kenya. Physical risks arise from the direct consequences of climate change, like severe weather events that have the potential to harm assets and interrupt operations. Financial institutions that incorporate climate risk assessments into their strategies are more inclined to utilize green financing to fund projects that support climate resilience and adaptation (Zheng et al., 2021a). Liability risks stem from the possible legal and financial repercussions linked to environmental harm. By implementing sustainable practices and green financing, banks can minimize liability risks through adherence to environmentally responsible standards, thereby decreasing the chances of facing legal repercussions and harm to their reputation.

Transitional risks arise from the transition to a low-carbon economy and evolving market preferences. Financial institutions that foresee and adjust to these transitions are well-equipped to navigate market changes and take advantage of emerging opportunities (Krosinsky & Purdom, 2016). Implementing strategies to manage these risks, like integrating ESG criteria into lending decisions, creating green financial products, and engaging in sustainable initiatives, demonstrate a proactive approach to risk management. Kenyan commercial banks that implement these strategies show a dedication to tackling climate-related risks. This highlights the significance of embracing

green financing to align their operations with the changing sustainable finance landscape and support wider climate resilience initiatives.

2.5.5 Control variables

The ownership structure and listing status of the bank can have a significant impact on its strategic priorities, decision-making processes, and access to financial resources. As an illustration, banks that are publicly listed may encounter increased pressure from shareholders to focus on immediate financial performance rather than long-term sustainability objectives. On the other hand, banks that are privately owned or have a cooperative structure may have greater freedom to pursue sustainable initiatives without being pressured for immediate returns (Rasheed & Siddiqui, 2019). Considering ownership structure and listing status can provide insights into the factors that influence the adoption of green financing, taking into account organizational priorities and constraints.

2.5.6 Operationalization of the Variables

Table 2.5.1: Variable definitions

Variables	Measures	Measurement Scales	Data Analysis
Bank Level Characteristics	• Asset Quality • Profitability • Liquidity ratio • Capital adequacy ratio.	Primary Data	Descriptive analysis Correlation analysis Regression analysis
Board characteristics	• Gender ratio • Professional backgrounds • Independence of the board • ESG considerations	Primary Data	Descriptive analysis Correlation analysis Regression analysis
Banking Sector Regulations	• Sustainable Finance Guidelines • Disclosure Frameworks • Prudential Regulations	Primary Data	Descriptive analysis Correlation analysis Regression analysis

Risk management	• Climate – related risks - Physical risks - Liability risks - Transitional risks • Strategies for managing risk.	Primary Data	Descriptive analysis Correlation analysis Regression analysis
Green Financing	• Availability and diversity of green financial products • Green finance awareness	Primary Data	Descriptive analysis Correlation analysis Regression analysis

2.6 Chapter summary

The literature review chapter initiates with a comprehensive introduction that sets the stage for an in-depth exploration of the determinants influencing the adoption of green financing by commercial banks in Kenya. Within this introduction, the overarching goal is established—to unravel the intricate interplay of factors shaping the integration of sustainable financial practices within the Kenyan banking sector. By introducing the context and significance of the research, the chapter lays the foundation for a nuanced examination of firm-level characteristics, banking sector regulations, board composition, and risk management strategies.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter covered the research techniques to be used. More precisely, this part aimed to clarify the study concept, specify the selected population, describe the sampling methodology, and provide a comprehensive account of the procedures used for data collecting. Moreover, it explored the methodologies for data processing and emphasized any diagnostic examinations that were performed. The last component of the study discussed the ethical issues that are intrinsic to the research method.

3.2 Research Philosophy

The notion of research philosophy pertains to the approach utilized in the collection, examination, and implementation of evidence concerning a specific phenomenon (Saunders, 2016). The foundation of philosophical methods lies in the ability to formulate logic and sound reasoning in arguments. In order to assess the soundness of their observations and construct logical arguments, historical philosophers devised two principal modes of reasoning: positivism, also known as phenomenological philosophy, and constructivism (Cooper & Schindler, 2008). The foundation for the logical analysis that propels scientific progress and investigation is this form of reasoning (Hoagwood, 2015). Positivism, according to Bryman and Bell (2011), is the study of social actuality employing methods comparable to those utilized in the natural sciences. Consequently, positivism, specifically post positivism, has been selected as the research philosophy for this investigation.

Post-positivism recognizes the subjective nature of human observation and interpretation of social phenomena, acknowledging that researchers cannot be completely objective and that their values and perspectives shape the research process (Guba & Lincoln, 1994). Positivism emphasizes empirical observation and the application of scientific methods, similar to those used in the natural sciences. On the other hand, post-positivism incorporates critical reflection and acknowledges the limitations of objectivity in social research (Bryman, 2008). Researchers working within a post-positivist framework acknowledge that knowledge is tentative and can be revised as new evidence and perspectives emerge.

In the context of this study on the determinants of adoption of green financing by commercial

banks in Kenya, a research philosophy that embraces a more nuanced understanding of the complexities involved is employed. Instead of only emphasizing objective observations, post-positivism urges researchers to take into account control variables that could impact the interpretation of data. In addition, post positivism is compatible with the open-ended nature of the questions in the questionnaire. It enables the exploration of various perspectives and the inclusion of qualitative insights alongside quantitative data.

3.3 Research Design

Kothari (2004) posits that a research design encompasses choices pertaining to what, where, when, how much, and by what methods concerning a particular research study. In the context of this study, a descriptive research design was employed. Mugenda (2013) states that descriptive research aims to determine and report the current state of the population being studied. This design has several advantages. Firstly, it is an effective method for gathering data from a large population. Secondly, it is a versatile and standardized approach, which reduces the likelihood of errors and simplifies the administration process. Additionally, this design allows researchers to closely align their study with the specific phenomena they wish to investigate. A descriptive study aims to depict distinct attributes of a given subject (Kothari, 2008). This type of study focuses on making specific predictions by narrating information. The current study aimed to investigate the factors that determine the adoption of green financing by commercial banks in Kenya.

3.4 Population and Sampling

3.4.1 Population of the Study

According to Kimberlin and Winterstein (2008), any persons or organizations who share the research's interest in common features are considered part of the target population. Specifically, the 2018 rankings of registered commercial banks in Kenya as published by the Central Bank of Kenya will be the focus of this research. The current count stands at 39 operational banks in Kenya, constituting the study's population. The unit of analysis consisted of bank officials occupying roles such as compliance and governance managers, operational risk managers, ESG and sustainability manager, enterprise risk manager and credit risk manager. These individuals were chosen as they hold senior positions and are expected to possess substantial knowledge about the adoption of green finance by the commercial banks.

3.4.2 Sampling Design and Sample Size

The sampling frame refers to the collection of units from which a researcher selects a sample (Namusonge, 2010). For the sample frame to be ideal, it should closely resemble the population of interest. The term "sampling frame" refers to the essential material or technique used to choose a sample (Kimberlin & Winterstein, 2008). The study sample consisted of senior managers employed in Kenya's 39 commercial banks. Sampling refers to the process of selecting and analyzing a smaller portion of the overall population in order to get a deeper understanding of a certain phenomenon (Serem, Boit, & Wanyama, 2013). In this study, a census of all the commercial banks was conducted because of the small number. The sample size for the study was 39 officials drawn from the 39 commercials banks.

3.5 Data Collection Methods

The methods and tools used to get significant data from participants are referred to as tactics and instruments (Kothari, 2008). The researcher used primary sources for this study. The collection of primary data included the use of a well-organized questionnaire. Questionnaires provide researchers with a simple method of collecting objective data that may be quickly analyzed (Serem, Boit, & Wanyama, 2013). The structured questionnaire included background information and remarks about the dependent and independent variables being studied.

3.6 Data Analysis

Data analysis involves the systematic application of statistical or logical methods to understand, explain, evaluate, summarize, recapitulate, and present data. This process entails the refinement, conversion, and shaping of data values to derive meaningful insights that can be condensed and utilized to understand the relationships between variables (Grant, 2020). The data that was gathered was subjected to a series of procedures including data cleaning, processing, and analysis. The data processing and analysis was conducted using SPSS Version 24 software. The research utilized a combination of descriptive and inferential statistical methods to analyze the data. These measures included mean, standard deviation, and regression analysis. Multiple regression analysis is a reliable method for studying the connections between several independent variables and a single dependent variable. The study therefore employed multiple regression.

$$GFP = \beta 0 + \beta 1BLC + \beta 2BSR + \beta 3BC + \beta 4RM + Control\ Variables + \varepsilon$$

Where GFP is the adoption of green financing practices

BLC is bank level characteristics.

BSR is banking sector regulations.

BC is board characteristics.

RM is risk management.

(β0, β1, β2, β3, β4) are the beta coefficients.

The control variables – bank position, category and ownership

Ɛ is the error term

3.7 Diagnostic tests

3.7.1 Heteroscedasticity Test

One fundamental assumption of multiple linear regression is homoscedasticity. According to this concept, the probability of the error terms remains consistent across all results (Gujarati, 2018). Essentially, the standard deviation varies consistently across all levels of the explained variable. Quasi variance, also known as quasi of variance, occurs when non-constant quantities do not share the same variance (Bedru & Seid, 2019). The researchers used the Breusch-Pagan or Chef tests to identify issues related to homoscedasticity. If the P-value was significant at a 95% confidence level, it indicates the presence of heteroscedasticity; conversely, if the P-value was not significant, the data does not exhibit heteroscedasticity (greater than 0.05).

3.7.2 Multicollinearity Test

When specific explanatory variables in a regression model have an exact linear relationship, it is known as multicollinearity. When independent variables exhibit multicollinearity, there is correlation or sharing of predictive power. The study utilized VIFs to assess multicollinearity. If the VIFs exceed 10, it suggests the presence of multicollinearity. The P-value highlights how multicollinearity can make important variables seem unimportant by reducing the significance of t-statistics. Due to multicollinearity in the regression results, significant factors may be identified as insignificant variables.

3.8 Research Quality

The quality of research is determined by the rigorous scientific approach taken in every aspect of the study, such as the design, methodologies, subject selection, outcome measurements, and

safeguards against bias (Ashby, 2003). There are two main categories that can be used to evaluate the quality of research: Exploring the Reliability and Validity of Research.

3.8.1 Research Reliability

Research reliability pertains to the extent of consistency and dependability of results over a duration. When the findings of a study can be consistently reproduced using a similar methodology, it signifies a higher degree of reliability. In essence, reliability is associated with the accurate representation of the entire research population. Should the research outcomes be replicable under similar methods, the research instrument is deemed reliable (Golafshani, 2003).

In this study, the research was conducted on operating banks under the regulation of the Central Bank of Kenya (CBK). According to Vaske et al. (2015), Cronbach's alpha, often represented by the Greek letter α, is frequently employed to assess the internal consistency or reliability of summated rating scales. The study's equipment's internal consistency and dependability was validated using the Cronbach Alpha reliability test. The researcher utilized a cut-off of 0.7 Alpha, which, as stated by Gliem and Gliem (2003), is considered an acceptable threshold in the field of social sciences. Failure to meet this criterion would render the instruments unreliable.

3.8.2 Research Validity

Validity, as per Bryman and Cramer (1997), is a crucial aspect for researchers to ensure that a questionnaire measures what it is intended to measure. This process involves checking whether the tool aligns with its theoretical objectives. Construct validity, a facet of validity, evaluates the extent to which the tool correlates with other theoretical propositions. In my study, this construct validity was assessed by knowledgeable supervisors who are well-versed in the subject matter.

A pilot study was also conducted to determine the validity of the research instrument. The questionnaire was distributed to 10 respondents from the target population who were not part of the main study. Their responses were used to determine whether the questionnaire was collecting the relevant information for the study.

3.9 Ethical Issues in Research

Ethical aspects in research encompass elements like informed consent, confidentiality, and potential consequences for participants (Serem et al. 2013). These were meticulously addressed. A research permit from NACOSTI was obtained and university clearance acquired from the

Ethical Commitee. The introductory part of the questionnaire explicitly stated its voluntary nature, ensuring participants' informed consent. To uphold confidentiality, respondents' identities were made optional. Additionally, a clear assurance was provided that all information collected was strictly intended for research purposes. The research design focused on organizational matters rather than personal issues, mitigating the possibility of using the collected information against participants. By attending to these ethical considerations, my study adhered to ethical standards, ensuring that the well-being and rights of the participants are upheld.

3.10 Chapter summary

The chapter looked at the research design for the study. It also looked at the population, sampling design, sampling frame and sampling techniques that were used in the study. The sample size was also calculated, and the primary data collection method was outlined. A description of the instruments used to collect data was also outlined. A detailed description of the steps taken in the research procedure were outlined and finally, the data analysis methods was discussed.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter delves into the research findings, guided by the research objectives, and as discussed in the methodology chapter. The chapter presents an analysis and discusses the findings of the study, considering the empirical literature. The chapter offers a thorough examination of the findings, encompassing descriptive statistics, inferential statistics, and any pertinent visual representations like tables.

4.2 Response rate

A total of 39 questionnaires were administered to the sampled respondents, out of which 34 questionnaires were properly filled and returned. This represented an overall successful response rate of 87.18%. According, to Mugenda and Mugenda, (2003) a response rate of 50% or more is adequate. Babbie, (2020) also asserted that return rates of 50% are acceptable to analyze and publish, 60% is good and over 70% is very good. The response rate is presented in table 4.1 below.

Table 4.1 Response rate

	Frequency	**Percentage**
Returned	34	87.18%
Unreturned	5	12.82%
Total	**39**	**100**

4.3 Validity and Reliability test of the instrument

Reliability was evaluated using the Cronbach's Alpha Reliability test. In social science research, a reliability coefficient of higher than 0.70 is regarded as acceptable, according to Gliem & Gliem (2018). This scale will be utilized in the current investigation to clarify the reliability, or lack thereof, of the research instrument (Cronbach, 1951). The results were recorded in table 4.2 below.

Table 4.2 Reliability test results

Variables	Cronbach's Alpha
Bank level characteristics	0.79
Board characteristics	0.82
Banking sector regulations	0.78
Risk management	0.75
Adoption of green financing	0.83
Overall	**0.8**

The findings indicate that the construct of Bank level characteristics had a Cronbach's reliability alpha of 0.79, Board characteristics had a Cronbach's reliability alpha of 0.82, Banking sector regulations had a Cronbach's reliability alpha of 0.78, Risk management had a Cronbach's reliability alpha of 0.75, and Adoption of green financing had a Cronbach's reliability alpha of 0.83. The study questionnaire demonstrated satisfactory reliability, with a coefficient (α) of 0.8.

4.4 Demographic information

This section consists of information that describes basic respondent general information. They include gender, age, educational level, department, and the characteristics of the bank they work in.

4.4.1 Gender of the respondents

The respondents were asked to indicate their gender. The results are shown in Table 4.3 below.

Table 4.3 Gender of the respondents

Gender	Frequency	Percentage
Male	23	67.6
Female	11	32.4
Total	**34**	**100.0**

According to the analysis of the findings, it emerged that a majority of the respondents were male accounting for 67.6% while the female counterparts were 32.4%.

4.4.2 Age of the respondents

The respondents were asked to indicate their age bracket. The results are shown in Table 4.4 below.

Table 4.4 Age of the respondents

Age	Frequency	Percent
25 - 34 years	7	20.6
35 - 44 years	20	58.8
45 - 54 years	5	14.7
55 - 64 years	2	5.9
Total	**34**	**100**

The results indicated that the majority of the respondents that is 58.8% were between 35-44 years, followed by 20.6% between ages 25-34 years, 14.7% were between 45-54 years and finally, 5.9% were between the ages of 55-64.

4.4.3 Level of education

The respondents were asked to indicate their highest level of education. The results are shown in Table 4.5 below.

Table 4.5 Level of education

Level of education	Frequency	Percent
Bachelor's degree	17	50.0
Master's degree	17	50.0
Total	**34**	**100**

Results indicate that half of the respondents had attained a bachelor's degree, and the other half had a Master's Degree level.

4.4.4 Department of the respondent

Concerning the roles of the study participants in their respective commercial banks, the study established the distribution of the respondents as presented in Table 4.6 below.

Table 4.6 Department of the respondent

Department	Frequency	Percentage
Credit department	10	29.4
Compliance and Risk Management	15	44.1

Sustainability	6	17.7
Operations department	3	8.8
Total	**34**	**100**

From the table, majority of the respondents are in the Compliance and Risk Management department (44.1%), followed by the credit department at 29.4%. The sustainability department was represented by 17.7% of the respondents while the operations department had only 8.8% of the respondents.

4.4.5 Bank position

The respondents were asked to indicate the tier in which their bank belongs to. The results are shown in table 4.7 below.

Table 4.7 Bank position

Bank position	Frequency	Percent
Tier I Bank	17	50.0
Tier II Bank	8	23.5
Tier III Bank	9	26.5
Total	**34**	**100.0**

According to the analysis of the findings, it emerged that a majority of the respondents belonged to a tier I bank (50%), followed by tier III (26.5%) and finally tier II banks were represented by 23.5% of the respondents.

4.4.6 Bank category

The respondents were asked to indicate whether their bank is listed or not. The results are shown in table 4.8 below.

Table 4.8 Bank category

Bank category	Frequency	Percent
Listed	19	55.9
Not listed	15	44.1
Total	**34**	**100.0**

From the findings in table 4.7 above, 55.9% of the banks were listed while 44.1% of the banks were not listed in the Nairobi securities exchange.

4.4.7 Bank ownership

The respondents were asked to indicate indicate the ownership of the bank. The results are shown in table 4.9 below.

Table 4.9 Bank ownership

Bank ownership	Frequency	Percent
Local	11	32.4
Foreign	13	38.2
Joint venture	10	29.4
Total	**34**	**100.0**

From the findings in table 4.9 above, 38.2% of the banks were foreign, 32.4% were locally owned and 29.4% were a joint venture between local and foreign entities.

4.5 Empirical Analysis

4.5.1 Effect of firm level characteristics

The respondents were asked to indicate the extent that they agree with the statements on impact of firm level characteristics on adoption of green financing by commercial banks in Kenya. The findings are as shown in table 4.10 below.

Table 4.10 Effect of firm level characteristics and Adoption of Green Financing

Firm level characteristics	Mean	Std dev
Our bank has specific criteria for assessing the environmental risks associated with its assets.	3.772	1.1097
Our bank closely monitors the quality of its asset portfolio in relation to environmental risks.	3.636	1.0930
Asset quality considerations impact our bank's decision-making process for green financing.	3.545	1.1434
Profitability considerations shape our bank's prioritization of green financing.	3.272	.8827
Green financing is perceived as a profitable business opportunity for our bank.	3.272	1.0319
Our bank's Liquidity Ratio adequately supports our green financing activities.	3.409	1.1405

Our bank actively manages its liquidity position to facilitate green financing initiatives.	3.046	1.2140
Our bank's Capital Adequacy Ratio (CAR) is sufficient to support our green financing initiatives.	3.818	1.1806
Our bank's CAR meets regulatory requirements.	4.318	.9945
Our bank considers its CAR when making decisions regarding green financing initiatives.	3.409	1.2212
Weighted mean	**3.550**	

From the responses in table 4.9 above; majority of the respondents strongly agreed that their bank's CAR meets regulatory requirements (Mean= 4.3182), respondents also strongly agreed their bank's Capital Adequacy Ratio (CAR) is sufficient to support our green financing initiatives (Mean= 3.818) and their bank has specific criteria for assessing the environmental risks associated with its assets (Mean=3.772). Some of the respondents agreed that their bank closely monitors the quality of its asset portfolio in relation to environmental risks (Mean=3.636) and asset quality considerations impact their bank's decision-making process for green financing. (Mean= 3.545). Additionally, the respondents agreed that their bank's Liquidity Ratio adequately supports their green financing activities, and their bank considers its CAR when making decisions regarding green financing initiatives (Mean =3.409). The respondents also agreed that profitability considerations shape their bank's prioritization of green financing and green financing is perceived as a profitable business opportunity for their bank (3.272). Finally, some of the respondents were in agreement that their bank actively manages its liquidity position to facilitate green financing initiatives (Mean=3.046). The weighted mean is 3.550 which shows that majority of the respondents slightly agree that firm level characteristics influence the adoption of green financing in commercial banks.

The respondents were asked what other characteristics of their bank shape its commitment to incorporating green financing initiatives. From the responses, key factors include internal capacity and capability to structure green financing, adherence to regulatory requirements, and group strategy as a partially owned subsidiary. Green financing is treated like other financing activities, primarily needing to meet the bank's credit policy. Customer demand, the ability to secure

affordable financing from development finance institutions, and the need for capacity building and staff training to understand the importance of going green also play significant roles.

Investor interests, strategic aspirations, and the bank's values are crucial, alongside market uptake and knowledgeable employees. The commitment to the Sustainable Development Goals (SDGs), partnerships, and the bank's niche target segments and risk-based approach to borrowers are essential factors. The bank has robust risk management processes that consider environmental risks, ensuring sustainable investments. Its wide branch network, mechanisms to identify environmental and social risks, and accreditation to the Green Climate Fund (GCF) further support green financing efforts.

The bank's brand and reputation, strategic partnerships for climate finance, and established targets on sustainable finance also influence its green financing initiatives. Collaborations with development finance institutions, such as IFC and AFDB, and specific requirements from partners drive these efforts. The yearly strategic plan, support from the board and top management, and publicized performance commitments enhance the bank's adaptation of green financing, ultimately bolstering its reputation and attracting investments.

4.5.2 Role of banking sector regulation

The participants were asked to indicate the extent that they agree with the statements on role of banking sector regulations on adoption of green financing by commercial banks in Kenya. The findings are as shown in table 4.11 below.

Table 4.11 Role of banking sector regulations and adoption of green financing

Role of banking sector regulations	Mean	Std dev
The current regulatory environment is effective in providing clear guidance and incentives for commercial banks to integrate green financing initiatives into their operations.	3.181	1.3322
Regulatory policies are focused on environmental sustainability contribute significantly to shaping the strategic decisions of commercial banks regarding green financing	3.545	1.1434

Our bank aligns with the compliance requirements set forth by regulatory bodies in promoting and implementing green financing options	4.227	.8125
Our bank values transparency and actively discloses information related to its environmental and social impacts.	4.000	.9759
Our bank complies with regulatory requirements for disclosing environmental, social, and governance (ESG) information.	4.091	.8111
Our bank incorporates environmental and social risk considerations into its prudential risk management frameworks.	4.000	.9759
Compliance with prudential regulations helps our organization effectively manage environmental and social risks associated with banking activities.	4.045	.9501
Weighted mean	**3.869**	

The findings indicated that majority of the respondents were in agreement that their bank aligns with the compliance requirements set forth by regulatory bodies in promoting and implementing green financing options (Mean=4.227), their bank complies with regulatory requirements for disclosing environmental, social, and governance (ESG) information (Mean=4.091), compliance with prudential regulations helps their organization effectively manage environmental and social risks associated with banking activities (Mean=4.045). Some of the respondents also agreed that their bank incorporates environmental and social risk considerations into its prudential risk management frameworks and their bank values transparency and actively discloses information related to its environmental and social impacts (Mean=4.000) respectively. Finally, the respondents agreed that regulatory policies are focused on environmental sustainability contribute significantly to shaping the strategic decisions of commercial banks regarding green financing (Mean=3.545) and the current regulatory environment is effective in providing clear guidance and incentives for commercial banks to integrate green financing initiatives into their operations (Mean=3.181). The weighted mean is 3.869 which shows that majority of the respondents moderately agree that banking sector regulations influence the adoption of green financing in commercial banks.

The respondents were further asked what regulatory challenges their bank faced in the approach to adopting green financing practices. The responses highlighted various regulatory challenges

faced by the bank in adopting green financing practices. A lack of regulation and inconsistency in embedding climate risk and finance across the sector were noted as significant hurdles. The complex nature of green financing practices, non-streamlined reporting, and difficulty in analyzing portfolios for carbon footprint were also mentioned.

Some respondents pointed out the absence of specific guidelines, limited standardization within the industry, and the lack of globally accepted approaches for carbon credits trading and pricing. Others cited challenges in measuring the impact and ensuring post-approval compliance. The evolving regulatory framework and policy measures across different asset classes create additional complexities.

Internal challenges include limited fiscal incentives, the need for technical assistance, and insufficient capacity building. The lack of a clear and standardized regulatory framework for green finance, particularly in relation to green bonds and loans, adds to the difficulty. Banks face an ever-changing regulatory environment, which can be resource-intensive and require significant adaptations in policies and procedures.

Moreover, the lack of common standards for risk-based prudential requirements and the need for more uniformity in how banks approach green financing were emphasized. Finally, respondents highlighted the necessity for updated guidelines and incentives to encourage more capital allocation towards green projects, as well as the need for improved compliance with existing regulations.

4.5.3 Board characteristics

The participants were asked to indicate the extent that they agree with the statements on role of board characteristics on adoption of green financing by commercial banks in Kenya. The findings are as shown in table 4.12 below.

Table 4.12 Board characteristics and Adoption of Green Financing

Board Characteristics	Mean	Std Dev
Our bank actively promotes gender diversity in leadership positions, including the board of directors.	4.117	.9459

Gender diversity is considered important for promoting environmental sustainability and green financing within our organization.	3.617	1.1810
Having a diverse board composition, including members with environmental expertise, positively influences a bank's adoption of green financing practices.	3.764	1.2567
The inclusion of environmentally conscious individuals on the board enhances the likelihood of actively pursuing and implementing green financing initiatives.	4.176	.9991
It is important for the board of the bank to actively oversee and ensure the integration of green financing considerations into the overall corporate strategy.	4.264	1.0242
ESG factors are integrated into our board's oversight of risk management processes.	3.941	.8507
The board of the bank plays a crucial role in setting and enforcing policies related to green financing.	4.088	.8657
Board members of our bank demonstrate independence in decision-making, free from influence from management or external stakeholders.	3.911	.9650
Weighted mean	**3.985**	

From the findings, majority of the respondents strongly agreed that it is important for the board of the bank to actively oversee and ensure the integration of green financing considerations into the overall corporate strategy (Mean=4.264), the inclusion of environmentally conscious individuals on the board enhances the likelihood of actively pursuing and implementing green financing initiatives (Mean=4.176) and that their bank actively promotes gender diversity in leadership positions, including the board of directors (Mean=4.117). Some of the respondents agreed that the board of the bank plays a crucial role in setting and enforcing policies related to green financing (Mean=4.088), ESG factors are integrated into their board's oversight of risk management processes (Mean=3.941), and board members of their bank demonstrate independence in decision-making, free from influence from management or external stakeholders (Mean=3.911). Finally, the respondents agreed that having a diverse board composition, including members with environmental expertise, positively influences a bank's adoption of green financing practices (Mean=3.764) and gender diversity is considered important for promoting environmental

sustainability and green financing within their organization (Mean=3.617). The weighted mean is 3.985 which shows that majority of the respondents generally agree that board characteristics influence the adoption of green financing in commercial banks.

The respondents were then asked to share any additional comments or insights regarding the role of board characteristics in driving green financing adoption in their organization. The responses underscore the significant role that board characteristics play in driving the adoption of green financing within the organization. A recurring theme is the necessity for the board to invest in training and awareness programs to equip relevant personnel with the skills needed to evaluate and manage green financing options. Several respondents emphasized that the board must foster an appetite for pursuing green financing and support the development of related policies and strategies. They noted that while compliance with regulatory guidelines is currently a focus, the board's commitment is crucial for the gradual incorporation of green financing practices.

The board's role in setting policies, formulating guidelines, and establishing risk acceptance parameters were highlighted as vital. It's essential for the board to ensure management can demonstrate the impact of green financing initiatives and integrate these principles into the organization's strategy. Boards are also responsible for overseeing risk management practices, which now include environmental factors, regulatory compliance, and reputational risks associated with green financing.

Some respondents suggested that a separate board committee dedicated to ESG (Environmental, Social, and Governance) matters could be beneficial, along with regular reporting on environmental performance and green financing metrics to hold the board accountable. The board's support in these areas helps build transparency and trust among stakeholders.

Additionally, board diversity and expertise in environmental science, sustainability, and climate risk were noted as key factors that can accelerate the adoption of green financing. Boards that prioritize sustainability in their mission are more likely to champion green financing initiatives effectively. There were also calls for creating dedicated sustainability boards, aligning board terms of reference (ToRs) and key performance indicators (KPIs) with green financing goals, and ensuring top-level support for successful adoption. Overall, board involvement is seen as crucial, with the need for clear goals, timelines, and strong leadership to drive the green financing agenda forward.

4.5.4 Risk Management

The participants were asked to indicate the extent that they agree with the statements on risk management on adoption of green financing by commercial banks in Kenya. The findings are as shown in table 4.13 below.

Table 4.13 Risk Management and Adoption of Green Financing

Risk management	Mean	Std Dev
Commercial banks should consider physical climate-related risks, such as extreme weather events, when making decisions about adopting green financing practices.	4.411	.7433
Liability risks associated with climate-related events, such as legal actions or reputational damage, are significant in influencing commercial banks to adopt green financing initiatives.	4.088	.7926
Transitional risks, such as regulatory changes and market shifts related to climate issues, play a substantial role in shaping the decision-making processes of commercial banks regarding green financing.	4.117	.9459
Our bank conducts thorough environmental risk assessments before approving green financing projects to evaluate potential environmental impacts.	3.911	.9650
Banks with comprehensive risk adaptation strategies are better positioned to navigate uncertainties associated with environmental changes and, consequently, more likely to embrace green financing	4.411	.7014
Weighted mean	**4.188**	

From the findings, majority of the respondents strongly agreed that commercial banks should consider physical climate-related risks, such as extreme weather events, when making decisions about adopting green financing practices (Mean=4.411), banks with comprehensive risk adaptation strategies are better positioned to navigate uncertainties associated with environmental changes and, consequently, more likely to embrace green financing (Mean=4.411) and transitional risks, such as regulatory changes and market shifts related to climate issues, play a substantial role in shaping the decision-making processes of commercial banks regarding green financing

(Mean=4.117). Finally, the respondents agreed liability risks associated with climate-related events, such as legal actions or reputational damage, are significant in influencing commercial banks to adopt green financing initiatives (Mean=4.088) and their bank conducts thorough environmental risk assessments before approving green financing projects to evaluate potential environmental impacts (Mean=3.911). The weighted mean is 4.188 which shows that majority of the respondents strongly agree that risk management influences the adoption of green financing in commercial banks.

The respondents were further asked how their bank assess and manages the risks associated with green financing, and how it impacts the decision-making process. From the responses, the respondents said that the bank follows a board approved ESG policy and integrates ESG risks into its enterprise risk management framework. This includes considerations during product design and execution. Risk assessments involve evaluating climatic and ESG risks and computing climatic exposure. These assessments inform decision-making by leading to adjustments in sectorial limits and ensuring alignment with green financing principles.

For manufacturing and construction projects, the bank requires a National Environment Management Authority (NEMA) certificate to ensure environmental compliance. It implements a robust environmental and social risk management system and uses a green financing assessment framework outlined in its policies and procedures, guiding decisions based on identified deviations and remediation plans.

Transactions are categorized based on their environmental impact, with a focus on gradually reducing financing for non-green transactions. The bank has a rating framework with decision thresholds to support this process. The ESG risk team conducts thorough risk analyses of borrowers' activities, ensuring they do not contribute to CO2 emissions and protect workers and communities. The bank uses Environmental Social Due Diligence templates and systems to evaluate ESG benchmarks during loan appraisals.

Environmental risk considerations are integrated into every stage of green financing, from project origination to portfolio management. The risk management framework evaluates these risks alongside financial risks, informing investment decisions and resource allocations. The bank regularly updates its policy documents and uses toolkits like environmental and social due diligence to manage risks effectively. Strategic reviews using forward-looking models help

identify and assess environmental risks such as climate change and water scarcity. These assessments influence investment decisions and risk management, integrating ESG factors for sustainable finance. Comprehensive due diligence evaluates the environmental and social impacts of potential green projects. Projects are screened using ESG criteria to meet sustainability standards, influencing project selection, pricing, and financing tenure.

Some respondents said that their bank has an independent ESG risk team and detailed environmental and social (E&S) evaluation procedures at the credit-granting stage. This includes enhanced due diligence and the use of an exclusion list for high-risk applicants. The risk department, in collaboration with the credit department, analyzes all risks associated with green financing and advises on necessary mitigations.

4.5.5 Adoption of green financing practices

The respondents were asked to indicate to what extent their bank adopted green financing practices. The results are shown in table 4.14 below.

Table 4.14 Adoption of green financing practices

	Frequency	**Percentage**
Great extent	12	35.3
Low extent	4	11.8
Moderate extent	17	50.0
No extent	1	2.9
Total	**34**	**100.0**

The findings indicate that the banks have adopted green financing practices to varying degrees. A significant proportion, 50%, reported a moderate extent of adoption, while 35.3% indicated a great extent of adoption. A smaller segment, 11.8%, reported a low extent, and a minimal 2.9% stated that there has been no adoption of green financing practices at all. Overall, the majority of responses suggest that green financing practices are being integrated to some degree within the banks, with a notable portion achieving substantial progress.

The respondents were also asked to indicate the extent that they agree with the statements on adoption of green financing by commercial banks in Kenya. The findings are as shown in table 4.15 below.

Table 4.15 Green financing practices

Green financing practices	Mean	Std Dev
Our bank provides loans specifically designated for environmentally friendly projects, such as renewable energy installations, energy-efficient building construction, or sustainable agriculture.	3.676	1.2725
Our bank offers financing for businesses and individuals to implement energy-efficient technologies and upgrades, such as energy-efficient appliances, and lighting.	4.000	1.0730
Our bank supports the construction or retrofitting of buildings that adhere to green building standards, emphasizing energy efficiency, water conservation, and sustainable materials.	3.882	.9774
Our bank offers loans for farmers adopting sustainable agricultural practices, promoting organic farming, agroforestry, and environmentally friendly irrigation methods.	3.794	1.0668
Our bank receives funding from large development finance institutions for onward lending to businesses engaged in sustainable activities.	3.382	1.4357
Our bank has a formal strategy or policy framework in place to guide our green financing initiatives.	4.088	.9001
Our bank actively promotes awareness of its green financing products among customers.	3.705	1.1685
Weighted mean	**3.790**	

From the findings, majority of the respondents strongly agreed that their bank has a formal strategy or policy framework in place to guide their green financing initiatives (Mean=4.088), their bank offers financing for businesses and individuals to implement energy-efficient technologies and upgrades, such as energy-efficient appliances, and lighting (Mean=4.000) and their bank supports

the construction or retrofitting of buildings that adhere to green building standards, emphasizing energy efficiency, water conservation, and sustainable materials (Mean=3.882). Some of the respondents were in agreement that their bank offers loans for farmers adopting sustainable agricultural practices, promoting organic farming, agroforestry, and environmentally friendly irrigation methods (Mean=3.794) and their bank provides loans specifically designated for environmentally friendly projects, such as renewable energy installations, energy-efficient building construction, or sustainable agriculture (Mean=3.676). Finally, the respondents agreed that their bank actively promotes awareness of its green financing products among customers (Mean=3.705) and their bank receives funding from large development finance institutions for onward lending to businesses engaged in sustainable activities (Mean=3.382). The weighted mean is 3.790 which shows that majority of the respondents moderately agree that green financing practices have been adopted in commercial banks.

The respondents were asked to indicate the challenges faced by commercial banks in adoption of green financing. From the responses, commercial banks face several significant challenges in the adoption of green financing, stemming from both internal and external factors. One of the primary issues is the general lack of awareness about green financing among both banks and their customers. Many banks struggle to find enough environmental, social, and governance (ESG) projects and to embed ESG principles effectively into their customer value propositions. Internally, banks face challenges related to capacity and data measurement, particularly in ensuring the quality of such measurements. There is also a notable skill gap among credit staff, who may lack the necessary expertise to manage green financing. This is compounded by a broader lack of trained personnel to champion green finance initiatives within the institution.

Another significant obstacle is the cost of funds needed for onward lending towards green projects. Many banks lack access to cheap, dedicated funding for green financing and sophisticated systems to track the specific impacts of these projects, such as carbon emissions. Additionally, there is a scarcity of long-term capital, which is essential for the viability of green financing. Banks also face difficulties in securing collateral and managing costs associated with green financing. De-risking the green portfolio is a complex task, and there is often a lack of expert knowledge on sustainable finance initiatives. Understanding and balancing the regulatory environment with risk

and profitability further complicates matters, as does the inherent credit risk, and return on investment considerations for green projects.

Assessing and managing environmental risks requires specialized expertise and tools, which many banks currently lack. Sector-specific lending influences green financing significantly, and clients frequently demand concessional rates, adding to the financial strain. The availability of funds and the level of awareness on green financing remain considerably low, and banks often lack sustainable external support and funding. Regulatory gaps, particularly in emerging markets, can hinder the implementation of sustainable finance initiatives, while poor incentives for local firms to adopt ambitious climate goals further complicate the situation. Global initiatives often prioritize advanced economies, leaving the unique characteristics of emerging markets' financial sectors overlooked.

Additionally, the respondents were asked to state some opportunities that their banks can consider in terms of the development and marketing of green financial products. Firstly, banks should prioritize developing a suite of green products. This involves designing financial products that embed the benefits of more affordable capital for green financing directly into the product design and customer value proposition. Financial innovation can lead to targeted products that support recycling initiatives, solar and wind power projects, electric vehicle financing, and other renewable energy (RE) and energy efficiency (EE) projects. The specific focus of these products can be guided by the bank's customer base, targeting sectors like agriculture, manufacturing, and clean energy.

Offering slightly lower and better pricing for green financing projects, along with long-term loan options, can make these initiatives more attractive to clients. Establishing robust policies to support these products will be essential. Expanding the target client base and adapting to the needs of diverse sectors can also drive growth in green financing. Supporting sustainable agriculture through partnerships with Agri-insurance FinTech’s, and offering products for climate-smart agriculture and clean energy, can enhance the bank’s portfolio. Engaging with stakeholders, including other financial institutions, environmental organizations, and government agencies, to co-develop and co-market green financial products can leverage additional expertise, networks, and resources, accelerating the adoption of sustainable finance.

The banks can also capitalize on the country's growing focus on electric vehicles and related infrastructure, supporting the transition to a sustainable electric motor industry. By developing products like green loans that meet specific environmental criteria and structuring loans with lower interest rates for borrowers who meet ESG requirements, the bank can promote sustainable practices. Offering products for WASH (Water, Sanitation, and Hygiene) and climate-smart agriculture, along with training, business development, and sourcing of funds, can further support the bank's green financing initiatives.

4.6 Diagnostic tests

A regression analysis was conducted to investigate the relationship between the independent and dependent variables. Regression analysis requires testing the assumptions to ensure their validity before conducting the analysis. These tests encompass heteroscedasticity test and multicollinearity test.

4.6.1 Heteroscedasticity Test

A heteroscedasticity test was done using the Breusch- Pagan test to confirm whether the residuals are constant or not with the *Ho:* Residuals are homoscedastic. It assumes that the error terms have a normal distribution. The null hypothesis is rejected if the *P*-value is significant. The results from the test are as shown below;

Table 4.16 Heteroscedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity			
Ho: Constant variance			
Variables: fitted values of currency exchange rate			
	chi2 (1)	=	1.44
	Prob> chi2	=	0.2576

Table 4.16 above provides the results. The value of the chi-square equals 1.34, which has a *p*-value of 0.2576 that is above 0.05. This leads to failure to reject the null hypothesis (H0) because there is constant variance in the data set.

4.6.2 Multicollinearity Test

The study conducted multicollinearity tests in order to validate the presence of any statistically significant correlations among the variables. The determination of this was made by the measurement of variance inflation factors (VIF). Prior studies have shown that a Variance Inflation Factor (VIF) value below 10 does not reflect the presence of multicollinearity (Mega & Rawina, 2021).

Table 4.17 Multicollinearity Test

Variable	VIF	Tolerance (1/VIF)
Bank level characteristics	2.166	.462
Banking sector regulations	2.677	.374
Board characteristics	2.720	.368
Risk management	2.301	.435

The results show that the individual values of VIF of the variables were below the recommended threshold of 10; implying that the model was not affected by multicollinearity among the predictors of the model.

4.7 Regression analysis

Conducting diagnostic tests in regression analysis is essential for assessing model validity and detecting specification errors, ensuring accurate and reliable results. After conducting the above tests, multiple regression analysis was conducted by the researcher to identify a link between the independent variables (bank level characteristics, banking sector regulations, board characteristics and risk management) and the dependent variable (adoption of green financing practices) under investigation. The results are shown in the tables provided below.

4.7.1 Model summary

Table 4.18 presents the model summary findings which shows the results of coefficient of the correlation and coefficient of determination.

Table 4.18 Model summary

Model	R	R square	Adjusted R Square	Std error of the estimate
1	.931[a]	.867	.815	.9674

a. Predictors: (Constant), bank level characteristics, banking sector regulations, board characteristics, risk management

The study examined four independent variables, which accounted for 86.7% of the variance in adoption of green financing, as indicated by the R^2. It can be inferred that there are additional factors, which were not examined in this study, that account for 13.3% of the variation in the dependent variable. This indicates that, all else being equal, bank level characteristics, banking sector regulations, board characteristics, and risk management have a significant impact on the adoption of green financing by commercial banks in Kenya.

4.7.2 Analysis of Variance

Analysis of variance was conducted to show the significance level of the model. The results are shown in table 4.19 below.

Table 4.19 Analysis of Variance

Model		**Sum of squares**	**df**	**Mean square**	**F**	**Sig.**
1	Regression	17.916	4	4.479	4.785	.004[b]
	Residual	27.143	29	.936		
Total		45.059	**33**			

a. Predictors: (Constant), bank level characteristics, banking sector regulations, board characteristics, risk management

From the table 4.19 above, the p-value is 0.004, which falls below the threshold of 0.05. Therefore, the model holds statistical significance in predicting the adoption of green financing by commercial banks in Kenya. The F statistic value at a significance level of 5% was 4.785, which

is considered critical. Since the estimated F value exceeds the threshold F value (9.475), it suggests that the entire model has achieved statistical significance.

4.7.3 Regression coefficients

The study conducted regression coefficient to determine how each individual independent variable influences the adoption of green financing practices in commercial banks. The generated results are in Table 4.20.

Table 4.20 Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. error	B		
1	Constant	.472	.966		.489	.001
	Bank level characteristics	.502	.235	.409	5.023	.000
	Banking sector regulations	1.776	.113	.500	5.739	.001
	Board characteristics	.686	.344	.224	4.117	.001
	Risk management	0.702	0.864	0.359	8.41	.000

The resultant equation becomes:

Y = 0.472 + 0.502BLC + 1.776 BSR + 0.686 BC + 0.702 RM

Table 4.20 shows that when holding all variables constant, the adoption of green financing in commercial banks in Kenya will be at 0.472. There was a positive and significant effect of bank level characteristics on adoption of green financing in commercial banks in Kenya ($\beta = 0.502$, p value <0.05). Banking sector regulations also have a positive and significant effect on adoption of

green financing in commercial banks in Kenya (β = 1.776, p value <0.05). Board characteristics have a positive and significant effect on adoption of green financing in commercial banks in Kenya (β = 0.686, p value <0.05) and risk management has a positive and significant effect on adoption of green financing in commercial banks in Kenya (β = 0.702, p value <0.05).

4.8 Control effect of bank characteristics on adoption of green finance practices

Table 4.21 Control variables effect

		R squared	F Change	Significance(p)
Bank position	Model 1	0.867	4.785	0.004
	Model 2	**0.531**	**3.215**	**0.01**
Bank category	Model 1	0.867	4.785	0.004
	Model 2	**0.472**	**2.307**	**0.02**
Bank ownership	Model 1	0.867	4.785	0.004
	Model 2	**0.524**	**3.081**	**0.01**

The direct linear relationship before the interaction was significant before the control variable was introduced. After the interaction with the control variable, the linear relationship remained significant for all the variables. This means that the bank characteristics have an effect on the adoption of green financing practices. There is a significant control effect of bank characteristics on the relationship between availability and diversity of green financial products and green finance awareness as measures of green financing (P<0.05). The results indicated that bank characteristics, such as ownership, tier classification, and listing status, significantly control the relationship between the availability and diversity of green financial products and green finance awareness. Locally owned banks, especially those in Tier I, tend to have better access to local markets and regulatory environments, allowing them to offer a wider range of green financial products and foster greater awareness. Additionally, listed banks, which are subject to higher transparency and reporting standards, are more likely to implement comprehensive green finance strategies, thereby enhancing awareness and adoption of green financial products among their customers.

4.9 Chapter summary

This whole chapter concentrated on the demonstration of the findings that were obtained from the study. The research findings were presented in order of the research objectives. Data analysis relied on descriptive analysis and inferential analysis, mainly regression analysis. The study found that the four independent variables examined, accounted for 86.7% of the variance in adoption of green financing. The model was statistically significant with a p value of 0.004 which is <0.05. All the variables had a positive significant influence over the adoption of green financing in commercial banks with banking sector regulations having the highest effect with a β of 1.776.

CHAPTER FIVE

SUMMARY, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The main objective of the study was to investigate the determinants of adoption of green financing by commercial banks in Kenya. The chapter highlights the summary, conclusions, and recommendations arising from the study. It further presents suggestions that may be picked for further research, which would enhance the body of knowledge.

5.2 Summary of findings

The study sought to investigate the determinants of adoption of green financing by commercial banks in Kenya. The first objective was to examine the impact of bank level characteristics on adoption of green financing by commercial banks in Kenya. The respondents largely affirmed that their banks' Capital Adequacy Ratio (CAR) meets regulatory standards and supports green financing initiatives, with strong agreement on the sufficiency of CAR and specific environmental risk assessment criteria. They moderately agreed that asset quality and liquidity considerations impact green financing decisions, and profitability considerations also influence these initiatives. Other significant factors shaping the banks' commitment to green financing include internal capacity, regulatory adherence, and strategic alignment as a subsidiary, customer demand, and securing affordable financing. Key drivers also include investor interests, strategic aspirations, employee expertise, commitment to Sustainable Development Goals (SDGs), partnerships, and robust risk management processes. The banks' extensive branch networks, risk identification mechanisms, and accreditation to the Green Climate Fund (GCF) further support green financing efforts. Strategic partnerships, support from management, and publicized performance targets enhance the banks' green financing initiatives, boosting their reputation and attracting investments.

The second objective was to determine the effect of board characteristics on the adoption of green financing by commercial banks in Kenya. The findings highlight the crucial role of bank boards in integrating green financing into corporate strategy, with strong agreement on the importance of board oversight, inclusion of environmentally conscious individuals, and promotion of gender diversity. The board's role in policy setting, enforcing green financing practices, and integrating ESG factors into risk management is emphasized, along with the independence of board members.

Diverse board composition and gender diversity are seen as positively influencing green financing adoption. Additional comments underscore the need for board investment in training, commitment to green financing, and the establishment of dedicated ESG committees. Regular reporting on environmental performance, board expertise in sustainability, and alignment of board goals with green financing objectives are also highlighted as essential for driving adoption.

The third objective was to assess the effect of banking sector regulations on the adoption of green financing by commercial banks in Kenya. The findings revealed that that respondents widely agreed their banks comply with regulatory requirements for green financing and ESG disclosures, effectively managing environmental and social risks. They acknowledged that regulatory policies focused on environmental sustainability shape strategic decisions and provide some guidance and incentives for integrating green financing. However, banks face significant regulatory challenges, including inconsistent climate risk regulations, complex green financing practices, non-streamlined reporting, and difficulties in portfolio carbon footprint analysis. Additional hurdles include a lack of specific guidelines, industry standardization, globally accepted carbon credit trading approaches, and challenges in measuring impacts. Evolving regulatory frameworks, limited fiscal incentives, and insufficient capacity building further complicate the adoption of green finance. The absence of standardized frameworks for green bonds and loans and the need for uniform risk-based prudential requirements were also highlighted as critical issues. Respondents emphasized the need for updated guidelines and incentives to enhance capital allocation toward green projects and ensure better compliance.

The fourth objective was to examine the effect of risk management on the adoption of green financing by commercial banks in Kenya. The findings reveal that respondents strongly agreed on the importance of considering physical climate-related risks and having comprehensive risk adaptation strategies for green financing. Transitional risks and liability risks also significantly influence banks' green financing decisions. Banks conduct thorough environmental risk assessments, integrating ESG risks into their enterprise risk management frameworks. These assessments inform decisions by adjusting sectoral limits and ensuring alignment with green financing principles. Banks require environmental compliance certificates, use robust risk management systems, and employ ESG benchmarks during loan appraisals. Environmental risks are evaluated at every financing stage, influencing investment decisions and resource allocations.

Independent ESG risk teams and detailed E&S evaluation procedures are also in place, emphasizing enhanced due diligence and risk management.

5.3 Discussion of findings

5.3.1 Impact of firm level characteristics

The research suggests that commercial banks in Kenya are influenced by a range of factors, both internal and external, when it comes to their adoption of green financing. Important factors include a strong Capital Adequacy Ratio (CAR), compliance with regulatory standards, thorough evaluations of environmental risks, and careful analysis of asset quality, liquidity, and profitability. The findings align with the research conducted by Hwang et al. (2017), which emphasized the factors driving banks' adoption of green financing. These factors include regulatory compliance, risk management frameworks, and strategic alignment with sustainability goals. The study also emphasized the significance of capital adequacy ratio (CAR) and internal capacity in this context.

The results align with the findings of Gör & Tekin (2023), which identified many characteristics that influence green financing methods, including derivative financial assets, loans, physical assets, equity capital, firm size, female participation on boards, existence of audit committees, and corporate experience. Similarly, Yasmin & Akhter (2021) also discovered comparable findings indicating a cyclical association between green credit, profitability, and financial stability. The findings indicate that banks with higher profitability and financial stability provide a greater amount of green credit.

5.3.2 Role of banking sector regulations

The findings indicate that banks generally adhere to regulatory requirements for green financing and ESG disclosures, effectively managing environmental and social risks. However, they do encounter notable regulatory obstacles. These challenges encompass a range of issues, such as varying climate risk regulations, intricate green financing practices, uncoordinated reporting, and the complexities of analysing portfolio carbon footprints. There are some challenges that need to be addressed, such as the absence of clear guidelines, the lack of industry standardization, the need for globally accepted carbon credit trading approaches, and the difficulties in measuring impacts. The adoption of green finance is further complicated by evolving regulatory frameworks, limited

fiscal incentives, and insufficient capacity building. One of the key concerns was the lack of standardized frameworks for green bonds and loans, as well as the importance of having consistent risk-based prudential requirements. The study's findings align with those of Zhang et al., (2022), highlighting the shared regulatory challenges faced by European banks. These challenges include inconsistent regulations and intricate green financing practices. The study emphasizes the importance of standardization and clearer guidelines to effectively facilitate green financing efforts. These findings are similar to those of Shafique & Majeed, (2020) who also found that Policy Guidelines, Attitude towards usage, Central Bank Regulations, and Management commitment and support influence bankers' intention to adopt green banking.

5.3.3 Board characteristics

The findings highlight the crucial importance of bank boards in integrating green financing into corporate strategies. There is a widely shared agreement regarding the significance of board oversight, the inclusion of individuals who prioritize the environment, and the promotion of gender diversity. The board places strong emphasis on its responsibilities in policy setting, enforcing green financing practices, integrating ESG factors into risk management, and maintaining independence in decision-making. The adoption of green financing is positively influenced by having a diverse board composition and gender diversity. Further analysis emphasizes the importance of board investment in training, strong commitment to green financing, establishment of dedicated ESG committees, regular reporting on environmental performance, and alignment of board goals with green financing objectives as crucial factors for promoting green financing initiatives. In a similar vein, Lai & Sohail (2022) discovered that companies with diverse boards and environmental expertise tend to be more proactive in implementing sustainability measures, such as green financing. This implies that boards with a range of perspectives and knowledge are more effective in spearheading environmental initiatives.

In a similar vein, separate research conducted by Khalid et al. (2022) discovered that the governance framework of companies, including factors like as board size, board independence, and cross-listing, had a significant impact on the disclosure of environmental, social, and governance (ESG) information. Furthermore, a lower impression of corruption is associated with increased disclosure of environmental, social, and governance (ESG) information by the enterprises being studied.

5.3.4 Risk management

The findings highlight the importance that banks give to considering physical climate-related risks and developing comprehensive risk adaptation strategies for green financing. Transitional and liability risks are important factors that influence the decisions regarding green financing. Banks perform comprehensive environmental risk assessments and incorporate ESG risks into their enterprise risk management frameworks, which impact sectoral limits and adhere to green financing principles. They insist on obtaining environmental compliance certificates, implementing rigorous risk management systems, and incorporating ESG benchmarks into loan appraisals. Environmental risks are carefully assessed at each stage, influencing investment decisions and resource allocations. Emphasizing the importance of thorough due diligence and risk management, companies have implemented independent ESG risk teams and rigorous environmental and social evaluation procedures. In a study conducted by Chen et al. (2019), it was discovered that banks have incorporated environmental risk assessments into their risk management frameworks. This includes the implementation of compliance certificates and strong management systems to facilitate green financing. These findings highlight the importance of comprehensive ESG evaluations throughout all stages of the process. The findings align with the results of the previous study.

The findings are also similar to those of a recent study by Chiu and Lai (2019) who found that banks' involvement in green financing is influenced by regulatory compliance, strategic investor interests, and environmental risk assessments. This highlights the importance of strong risk management and strategic partnerships.

5.4 Conclusion

Larger and more profitable banks with strong internal capacities are more likely to adopt green financing. This aligns with Resource Based Theory (RBT) emphasis on leveraging unique internal resources (financial strength and organizational capabilities) to gain competitive advantage. Environmental awareness within banks acts as an intangible resource that differentiates green financing leaders from laggards. Diverse and environmentally knowledgeable boards promote green financing. This supports RBT's view that human resources (skills, expertise, and diversity) are critical to strategic success. Investment in training and development for board members enhances the bank’s unique capabilities, making green financing initiatives more effective and

sustainable. Comprehensive risk management frameworks and ESG assessments are internal capabilities that provide banks with the confidence and ability to engage in green financing. This reflects RBT's focus on inimitable and non-substitutable internal processes that enhance strategic positions.

The influence of regulatory frameworks and compliance requirements on green financing adoption highlights the role of external pressures in shaping organizational behaviour. This aligns with Institutional Theory, which posits that organizations conform to regulatory, normative, and cognitive pressures to gain legitimacy and stability. The emphasis on governance structures, such as diverse boards and dedicated ESG committees, underscores the impact of institutional norms and practices. Boards adopt green financing to align with broader societal and regulatory expectations, reinforcing Institutional Theory's emphasis on conformity to external norms. Adoption of rigorous ESG risk management practices and compliance with environmental standards reflect institutional pressures to mitigate environmental risks and align with global sustainability standards. This supports the theory that external institutional forces drive banks to incorporate green financing.

A combined approach leveraging both internal capabilities and external compliance can enhance the adoption and effectiveness of green financing initiatives, leading to sustainable competitive advantage and societal legitimacy.

5.5 Recommendations of the study

To address the challenges posed by inconsistent climate risk regulations and the lack of standardized frameworks, it is recommended that regulatory bodies in Kenya develop and implement comprehensive, uniform guidelines for green financing. These should include clear standards for carbon footprint analysis, reporting requirements, and procedures for green bonds and loans. Additionally, creating globally accepted approaches for carbon credit trading can further streamline green financing practices.

Banks should invest in regular training programs for board members and staff to enhance their understanding of environmental, social, and governance (ESG) issues and green financing principles. Establishing dedicated ESG committees within the board can ensure focused oversight

and integration of green financing into corporate strategies. Emphasizing gender diversity and inclusion of individuals with environmental expertise on the board can also drive more effective decision-making and commitment to sustainability goals.

Banks should continue to refine their risk management frameworks to better integrate ESG risks and adaptation strategies. This includes conducting thorough environmental risk assessments at every financing stage, using robust risk management systems, and requiring compliance with environmental standards such as NEMA certifications. Banks should also regularly update their risk management policies and procedures, incorporating forward-looking models to assess and mitigate the impacts of climate-related risks on their portfolios.

5.6 Recommendations for further research

Future research should conduct longitudinal studies to evaluate the long-term impact of green financing on the financial performance and sustainability practices of commercial banks in Kenya. This can provide insights into the effectiveness of green financing initiatives over time and help identify best practices and areas needing improvement.

Further research should explore the adoption of green financing within specific sectors, such as agriculture, manufacturing, or energy. Understanding sector-specific challenges and opportunities can guide tailored green financing strategies, helping banks develop more effective approaches to support sustainability within key industries.

Investigating the role of technological innovations, such as fintech and blockchain, in facilitating green financing can provide insights into how emerging technologies can overcome existing barriers and enhance green financing practices. This research can also explore the potential of digital tools in improving transparency, reporting, and risk management in green financing.

5.7 Limitations of the study

The research encountered many constraints, such as a lack of data, a limited sample size, and possible biases arising from banks' self-reporting. To tackle these challenges, the inclusion of contributions from chosen departments expanded stakeholder viewpoints, resulting in a reduction of bias and the provision of a comprehensive understanding of the elements that influence green funding. Notwithstanding these efforts, the study recognized the changing regulatory landscape and cultural perspectives on sustainability as persistent obstacles that may impact future research.

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APPENDICES

Appendix 1: Research questionnaire

SECTION A: GENERAL INFORMATION

1. Gender of the respondent

   a) Male () b) Female ()

2. Indicate by ticking your age bracket.

   a) 24 yrs. & below [ ] b) 25-34 years [ ]

   c) 35-44 years [ ] d) 45-54 years [ ]

   e) 55 years & above [ ]

3. Kindly indicate your highest level of educational qualification (tick)

   a) Certificate or diploma [ ]

   b) Bachelor's degree [ ]

   c) Master's degree [ ]

   d) PhD [ ]

4. Please specify your current department and role within the bank:

   ……

5. Kindly choose the option that corresponds to your bank.

   a) Tier I [ ]
   b) Tier II [ ]
   c) Tier III [ ]

6. Kindly indicate the category your bank belongs to.
    c) Listed [ ]
    d) Not listed [ ]
7. Kindly indicate the ownership of the bank
    a) Local [ ]
    b) Foreign [ ]
    c) Joint venture [ ]

SECTION B: IMPACT OF FIRM LEVEL CHARACTERISTICS

Kindly indicate the extent that you agree with the statements below on impact of firm level characteristics on adoption of green financing by commercial banks in Kenya. (1- Strongly Disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly Agree)

Firm level characteristics	**1**	**2**	**3**	**4**	**5**
Our bank has specific criteria for assessing the environmental risks associated with its assets.					
Our bank closely monitors the quality of its asset portfolio in relation to environmental risks.					
Asset quality considerations impact our bank's decision-making process for green financing.					
Profitability considerations shape our bank's prioritization of green financing.					
Green financing is perceived as a profitable business opportunity for our bank.					
Our bank's Liquidity Ratio adequately supports our green financing activities.					
Our bank actively manages its liquidity position to facilitate green financing initiatives.					
Our bank's Capital Adequacy Ratio (CAR) is sufficient to support our green financing initiatives.					
Our bank's CAR meets regulatory requirements.					
Our bank considers its CAR when making decisions regarding green financing initiatives.					

In your opinion, what other characteristics of your bank shape its commitment to incorporating green financing initiatives?

……
……
……

SECTION C: ROLE OF BANKING SECTOR REGULATIONS

Kindly indicate the extent that you agree with the statements below on role of banking sector regulations on adoption of green financing by commercial banks in Kenya. (1- Strongly Disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly Agree)

Role of banking sector regulations	**1**	**2**	**3**	**4**	**5**
The current regulatory environment is effective in providing clear guidance and incentives for commercial banks to integrate green financing initiatives into their operations.					
Regulatory policies are focused on environmental sustainability contribute significantly to shaping the strategic decisions of commercial banks regarding green financing					
Our bank aligns with the compliance requirements set forth by regulatory bodies in promoting and implementing green financing options					
Our bank values transparency and actively discloses information related to its environmental and social impacts.					
Our bank complies with regulatory requirements for disclosing environmental, social, and governance (ESG) information.					
Our bank incorporates environmental and social risk considerations into its prudential risk management frameworks.					
Compliance with prudential regulations helps our organization effectively manage environmental and social risks associated with banking activities.					

In your view, what regulatory challenges have your bank faced in the approach to adopting green financing practices?

……
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……
……

SECTION D: BOARD CHARACTERISTICS

Kindly indicate the extent that you agree with the statements below on impact of board characteristics on adoption of green financing by commercial banks in Kenya. (1- Strongly Disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly Agree)

Board Characteristics	**1**	**2**	**3**	**4**	**5**
Our bank actively promotes gender diversity in leadership positions, including the board of directors.					
Gender diversity is considered important for promoting environmental sustainability and green financing within our organization.					
Having a diverse board composition, including members with environmental expertise, positively influences a bank's adoption of green financing practices					
The inclusion of environmentally conscious individuals on the board enhances the likelihood of actively pursuing and implementing green financing initiatives.					
It is important for the board of the bank to actively oversee and ensure the integration of green financing considerations into the overall corporate strategy.					
ESG factors are integrated into our board's oversight of risk management processes.					
The board of the bank plays a crucial role in setting and enforcing policies related to green financing					

Board members of our bank demonstrate independence in decision-making, free from influence from management or external stakeholders					

Please share any additional comments or insights regarding the role of board characteristics in driving green financing adoption in our organization:

……

……

……

SECTION E: RISK MANAGEMENT

Kindly indicate the extent that you agree with the statements below on risk management on adoption of green financing by commercial banks in Kenya. (1- Strongly Disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly Agree)

Risk management	**1**	**2**	**3**	**4**	**5**
Commercial banks should consider physical climate-related risks, such as extreme weather events, when making decisions about adopting green financing practices.					
Liability risks associated with climate-related events, such as legal actions or reputational damage, are significant in influencing commercial banks to adopt green financing initiatives.					
Transitional risks, such as regulatory changes and market shifts related to climate issues, play a substantial role in shaping the decision-making processes of commercial banks regarding green financing.					
Our bank conducts thorough environmental risk assessments before approving green financing projects to evaluate potential environmental impacts.					
Banks with comprehensive risk adaptation strategies are better positioned to navigate uncertainties associated with environmental changes and, consequently, more likely to embrace green financing					

How does your bank assess and manage the risks associated with green financing, and how does it impact the decision-making process?

……
……
……...

SECTION F: ADOPTION OF GREEN FINANCING PRACTICES

To what extent has your bank adopted green financing practices?

No extent [ ]

Great extent [ ]

Moderate extent [ ]

Low extent [ ]

Kindly indicate the extent that you agree with the statements below on adoption of green financing by commercial banks in Kenya. (1- Strongly Disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly Agree)

Green financing practices	**1**	**2**	**3**	**4**	**5**
Our bank provides loans specifically designated for environmentally friendly projects, such as renewable energy installations, energy-efficient building construction, or sustainable agriculture					
Our bank offers financing for businesses and individuals to implement energy-efficient technologies and upgrades, such as energy-efficient appliances, and lighting.					

Our bank supports the construction or retrofitting of buildings that adhere to green building standards, emphasizing energy efficiency, water conservation, and sustainable materials.					
Our bank offers loans for farmers adopting sustainable agricultural practices, promoting organic farming, agroforestry, and environmentally friendly irrigation methods.					
Our bank receives funding from large development finance institutions for onward lending to businesses engaged in sustainable activities					
Our bank has a formal strategy or policy framework in place to guide our green financing initiatives.					
Our bank actively promotes awareness of its green financing products among customers.					

In your opinion, what are the challenges faced by commercial banks in adoption of green financing?

……
……
……
……

In your view, what are some opportunities that your bank can consider in terms of the development and marketing of green financial products.

……
……
……

Thank you for your participation! Your responses will remain confidential and will be used solely for research purposes.

Appendix 2: Research License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **464378**

Date of Issue: **30/April/2024**

RESEARCH LICENSE

This is to Certify that Ms.. Juliet Ngina Maingi of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: DETERMINANTS OF ADOPTION OF GREEN FINANCING BY COMMERCIAL BANKS IN KENYA for the period ending : 30/April/2025.

License No: **NACOSTI/P/24/35148**

464378

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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See overleaf for conditions

Appendix 3: Ethical Review

Strathmore UNIVERSITY

22nd April 2024

Ms Maingi Juliet,
jngina@gmail.com

Dear Ms Maingi,

RE: Determinants of Adoption of Green Financing by Commercial Banks in Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** research proposal. Your application reference number is **SU-ISERC2177/24.** The approval period is from **22nd April 2024 to 21st April 2025.**
This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

STRATHMORE UNIVERSITY INSTITUTIONAL SCIENTIFIC AND ETHICAL REVIEW COMMITTEE
(SU-ISERC)
22-Apr-2024
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