DETERMINANTS OF GRI-ALIGNED CLIMATE DISCLOSURES AMONG EAST AFRICAN COMMERCIAL BANKS

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A Research Dissertation Submitted to Strathmore University Business School In Partial Fulfilment for the Degree of Masters of Science In Development Finance of Strathmore University

APRIL 2025

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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DEDICATION

To, Nala Moraa Arita my beloved daughter, my constant source of inspiration and motivation. Your unwavering love and support give me the strength to persevere. You are my greatest joy and achievement. You have taught me the true meaning of courage, love, sacrifice, and determination. May God keep you and bless you always.

ACKNOWLEDGMENT

I am grateful to God for giving me strength, wisdom, and good health without which this achievement would not have been possible. I would like to express my deepest gratitude to my supervisor, Dr. Farida Abdul, whose insight and guidance have been instrumental in shaping this Dissertation. My gratitude also goes out the entire MDF faculty at Strathmore Business School and my fellow students for their dedication to academic excellence. I am honoured to have this opportunity to walk this journey with you all. I am forever indebted to my parents, whose love, encouragement and unwavering support have been the cornerstone of my academic journey. Gratitude goes out to my daughter Nala, my pride and joy.

ABSTRACT

The banking sector faces increasing pressure to disclose climate risk management strategies, yet many institutions, especially in developing countries, provide limited information. In 2023, Kenyan banks launched a Climate-Related Financial Disclosures Template to enhance transparency. Globally, inadequate climate disclosures could expose financial assets to risks totaling up to $24.2 trillion. In East Africa, GDP per capita could decline by up to 16% by 2050 under high-warming scenarios. The data analysis offered some critical insight into the issues that influence the disclosure of climate related information. This study examined the influence of firm and corporate governance characteristics on climate-related disclosures among East African commercial banks. Using panel data, secondary panel data was sourced between 2017 to 2023 from published financial and sustainability reports of 37 banks that met the study criteria of disclosing Global Reporting Initiatives (GRI) and reported on environmental aspects resulting in a total of 197 observations. The study applied Feasible Generalized Least Squares (FGLS) regression to control for heteroskedasticity and panel-specific variations. The regression results revealed that Bank size, Bank profitability (ROA), Board independence, and gender diversity positively and significantly impacted climate-related disclosures, Conversely, financial leverage and board size exhibit a negative and significant effect on these disclosures. The study recommended the need for regulatory enforcement to standardize climate-related disclosures, banks to prioritize having more independent and gender-diverse boards, and balance financial risk and an effective and agile board to increase climate related disclosures. While the study provided valuable insights, it was confined to a single sector, limiting the generalizability of its findings. Additionally, reliance on publicly available disclosures and financial reports may have introduced data availability and reporting gaps. Future research should consider cross-sectoral analyses and incorporate more robust data collection methods to address these limitations.

Key words: *Global Reporting Initiatives, Climate risk, Disclosures, Sustainability, Banking sector, Financial risk, Feasible Generalized Least Squares,*

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ABBREVIATION AND ACRONYMS

BOD	-	Board of Directors
CPD	-	Carbon Performance Disclosure (CPD)
CSR	-	Corporate Social Responsibility
ESG	-	Environmental, Social, and Governance
GFANZ	-	Glasgow Financial Alliance for Net-Zero
GHG	-	Green House Gas (GHG)
GRI	-	Global Reporting Initiatives
IPCC	-	Intergovernmental Panel on Climate Change
ISSB	-	International Sustainability Standards Board.
NEDs	-	Non-Executive Directors
TCFD	-	Task Force on Climate-related Financial Disclosures

DEFINITION OF KEY TERMS

Climate risk: The possibility that climate change will have negative effects on natural or human systems (Keller & Srikrishnan,2021).

Corporate Governance: Structures, policies, and practices that govern how a corporation is directed and controlled (Ţurlea & Radu, 2010).

Firm characteristics: Specific attributes of a company that can influence its operations, performance, and financial outcomes (Soliman, 2013).

Greenhouse Gas (GHG) Emissions: The release of gases into the atmosphere that trap heat and contribute to global warming (Jain & Kaushik, 2015).

Voluntary climate disclosures: non-mandatory reports or statements by organizations about their climate related risks, impacts, and strategies.

Sustainable Development: Development that meets present needs without jeopardising the ability of future generations to meet their own (Asheim ,1994).

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Climate change encompasses variations in temperature, precipitation, and weather patterns, in addition to the gradual modification of the Earth's climate system due to human actions such as deforestation and the burning of fossil fuels (Shivanna, 2022). The rising level of Green House Gas (GHG) emissions in the atmosphere is one of the main drivers leading to climate change (Shen, 2020). Climate change is also associated with natural factors like solar radiation and volcanic eruptions (Nda & Daud, 2018). Conversely, climate-related disclosures are declarations made by organisations, including banks, institutions, and businesses, regarding the carbon footprint of their operations and the dangers they face from climate change (O'Sullivan,2021).

Risks associated with climate change generally refer to the dangers and susceptibilities brought about by the phenomenon of climate change itself, which result in losses and damages from extreme weather occurrences (Simpson & Trisos, 2021). The risks of climate change are significant for all countries, even those that rely less on carbon-intensive technology (Abbass, 2022). Physical, transition, and liability risks are the three main categories into which climate change risks are divided (CBK, 2021).

Climate change therefore affects the ecosystem's ability to deliver clean water, clean air, power, or land suitable for agriculture (Srivastav, 2021). Due to the detrimental effects of this degradation on the environment and human life, stakeholders and readers of annual reports have voiced concern and insisted that information about a firm's environmental impacts be reported on an annual basis, both quantitatively and qualitatively (Atang & Eyisi, 2020). Therefore, businesses are urged to release climate-related disclosures in a transparent manner, as withholding information can result in bad investment choices, asset losses, and the continuation of trade practices that worsen climate conditions (Eccles & Krzus, 2018).

Mou & Ma (2023). state that banks' loan exposures include a substantial amount of climate-risk-related assets, with the combined weather events in the US, EU, China, Japan, and Switzerland amounting to USD 1.6 trillion (Simpson & Trisos, 2021). The African Climate Policy Centre equally projects that climate change could result in loss and damage costs for Africa amounting to between US$ 290 billion and US$ 440 billion. This impact is anticipated to significantly reduce the Gross Domestic Product (GDP) of three major African sub-regions West, Central, and East Africa due to the effects of global temperature increases.

Organizations in environmentally sensitive industries have been the primary focus of previous research on sustainability or climate-related disclosures. Service companies have historically been thought of as being in the ecologically indifferent sector. Consequently, there aren't many research looking at financial organizations' disclosures relating to climate change. Service organizations do, however,

indirectly affect the climate and ecology. Financial institutions offer financial services to a wide range of businesses, whether they are in environmentally sensitive or non-sensitive sectors (Cosma & Stefano,2023).

Banks are now aware that their operations particularly their lending operations have an impact on the environment and are impacted by it (Herbohn et al., 2019). This is because they are one of the primary sources of capital and determine which projects to fund, banks are essential to both the economic and social well-being of society. For banks to ensure their own sustainable development and value creation to the entire world, banks must consider the risks that are currently and will likely arise in the future, especially those associated with global climate change (IPCC, 2014).

The concerns around climate change have driven banks to move swiftly, resulting in the formation of a new normal in which banks integrate climate strategy and disclosures in their operations (Demekas & Grippa, 2021). Furthermore, as banks acknowledge a rise in lawsuits against investment funds and businesses for neglecting to notify their beneficiaries of climate risks, the scope of climate change litigation is growing (Setzer & Byrnes, 2019). Due to banks' fiduciary duty to report on the risks connected with their operations and their need to comply with an increasingly strict regulatory environment, banking institutions should now be in the lead in climate strategy and disclosure (Fisher & Alexander,2019).

Banks used to get relatively less attention when it came to their climate change response because they emit fewer greenhouse gases directly than other companies. As a result, the significance of banks' climate change response was underestimated. (Lee & Bae ,2024). With their ability to allocate capital, manage portfolios, and mitigate risk, banks are essential to the shift to a low-carbon, sustainable economy. Their responsibility involves integrating sustainability standards into the credit risk management process (Campiglio, 2016).

Companies in Europe reported the most on all eleven of the suggested disclosures, in accordance with TCFD requirements. On average, 7.2 out of the 11 suggested disclosures were reported by the European companies under examination. Only 3.8 of the 11 suggested disclosures for development and value creation, as well as for global sustainable development and value creation, were made by businesses in the Middle East and Africa, in comparison to businesses examined in other regions (IPCC, 2014). Similarly, A report by (Ernst & Young, 2020) also identified how banks in countries globally excluding Africa perform in reporting climate related disclosures, the United States and Australia had the best disclosures in terms of their quality, banks in Kazakhstan, Russia, Kuwait, Saudi Arabia, mainland China, Taiwan, the Philippines, Indonesia, Mexico, and New Zealand were among the lowest performers, with all earning less than 10% for climate quality disclosures.

Another crucial element of climate reporting in Africa is who tells the narrative and how, even though the scope of reporting on climate change is steadily increasing, as climate change disclosures are yet to

be narrated and framed broadly (Muchunku & Ageyo, 2022). The long-term viability of African businesses is threatened by climate-related challenges, which also have an impact on their lenders, this has led to stakeholders' interest in how sustainability issues are managed (Nizam & Nkoba, 2019).

Even with the advancements in the world economy, climate change still presents a threat to the financial stability of developing nations like those in East Africa. Given the materiality of the climate risk exposure in relation to the low levels of greenhouse gas (GHG) emissions in many of these countries, this risk is frequently actually disproportionate. Diffenbaugh & Burke (2019) discovered that historical differences in energy consumption are linked to the 25% increase in global economic inequality between developed and developing countries since 1960 brought about by global warming.

However, Burritt & Schaltegger (2010), Thorne et al. (2014), Leung et al. (2015), and others claimed that the reporting of sustainability information has recently come under fire for being opportunistic, also known as green washing, lacking in authentic effort, and not living up to user expectations. Because sustainability reporting is seen as symbolic in nature and does not accurately reflect actual behaviours, scholars have severely criticised the veracity of corporations' sustainability information (Beltran & Uysal,2023).

There is research that has examined disclosures as a sector-focused study in the banking sector. For instance, Kılıç & Kuzey (2019) focused on climate disclosure quality, Caby & Lamarque (2020) addressed green governance integration, and Siong & Keang (2023) explored ESG reporting practices within the banking industry being in developed countries. While those done in emerging markets have embarked on other sectors such as oil industry and others in different regions within Africa such as Nigeria and in Asia (Usiomon & Iyoha, 2024; Sonali, & Shamil, 2023), Studies undertaken within East Africa include those in Kenya (Reuben,2023, Kimundi,2023) but not specifically on disclosures, this study sort to fill this gap.

1.1.1. Firm characteristics

Prior research indicates that firm characteristics influence environmental disclosure practices i.e. (Zhang & Wang, 2021; Williams & Robinson,2022; Huang & Lim,2023). Studies have utilized various firm characteristics such as age, size, firm performance, firm listing status, industry membership, foreign ownership, leverage and environmental certification.

1.1.1.1 Firm size

One of the factors most frequently cited in earlier research to explain why environmental information is published is firm size. (Chitechi & Kiiru, 2022; Shaidi & Suzan, 2023). Bank size is measured by total assets, market capitalization, or revenue (Beatty & Liao,2014). Since firm size has frequently been highlighted in the literature as a factor influencing climate-related disclosures, its effects and pressure must be discussed based on the supposition of economies of scale regarding the cost of producing

information (Akbaş & Canikli, 2018). In addition to this scale, there are disagreements over magnitude and the relationship between disclosure and agency theory and legitimacy theory.

The size of an organization is one of the factors considered that affects voluntary disclosures of organizations, a large company typically releases more information to increase trust and reduce costs. Voluntary disclosures reduce political costs which are higher for bigger organizations than for smaller ones (Goh, 2020). Due to stakeholder scrutiny, together with political and regulatory constraints, a company's chance of sharing environmental information grows with its size (Giannarakis & Sariannidis, 2019). Furthermore, because of increased public pressure, larger companies are required to disclose more information (Marrone & Oliva, 2020).

Large corporations are also more likely to reveal information about climate change since they have greater resources to assess and report GHG emissions than smaller ones (Chithambo & Tauringana, 2022). Furthermore, big companies are exposed are to more scrutiny than smaller ones, which means that the former get more media attention and are therefore compelled to implement GHG emissions-reduction strategies (de Abreu & Cavalcante, 2021). Companies' operational legitimacy may be questioned if society views them as environmentally irresponsible (Crossley & Ntim, 2021).

Larger companies also have access to more extensive financial resources, and cost analysis predicts that the disclosure process will be less expensive for them (Blankespoor, 2019). On the other hand, a company's environmental and climate obligations increase with its size, and it is also more likely to be observed by the media and government regulators. To satisfy the demands of its stakeholders and preserve its reputation and competitiveness across the board, the business will have to disclose more comprehensive climate information. Therefore, it is expected of large companies to use efficient disclosure channels in order to reduce political costs (Masud & Kim, 2019).

1.1.1.2 Profitability

The general public and investors increasingly expect profitable firms to provide greater disclosure. According to agency theory, voluntary disclosure is influenced by the associated costs and potential benefits, leading companies to engage in such practices based on their financial performance (Boshnak, 2022). When firms have adequate financial resources and find it beneficial, they initiate carbon transparency by disclosing their carbon emissions. Consequently, a company's financial condition, particularly profitability, plays a significant role in driving its carbon emissions disclosure practices.

The profitability ratio serves as a key indicator of a company’s performance and financial stability. It displays the business's capacity to turn a profit from its activities (Dirman, 2020). High profitability enables a company to meet its social and environmental responsibilities, especially when profits are derived from the efficient use of natural resources (Wahyuningrum et al., 2023). Previous research, by Nagendrakumar et al. (2022), highlights those corporate environmental policies, such as carbon emissions management, depend on sufficient financial resources. Strong financial performance equips

companies to disclose detailed information about their emissions (Hermawan & Gunardi, 2019; Zaidi et al., 2021).

Banks with strong financial standing can afford the substantial human and financial resources needed to implement environmentally responsible business practices. While unprofitable or less lucrative businesses might find it difficult to meet their financial goals, profitable businesses are less limited by financial resources while engaging in green initiatives (Bagadeem &Magry, 2024). Additionally, political cost theory contends that profitable businesses reveal more voluntary information to support their earnings (Frias-Aceituno et al., 2014).

Highly profitable companies ought to possess superior information systems to address the quality issue and be able to manage disclosure costs more readily, according to signaling theory and cost analysis (Wasara & Ganda, 2019). A company's performance can be measured by determining the ratio of return on asset, or by measuring operational efficiency using the return on turnover ratio (Rashid, 2021). Companies that generate profits or returns are motivated to set themselves apart from less profitable businesses in order to secure funding from current options (Jun & Yi, 2022).

Profitability of a company is a good indicator of voluntary disclosure as well; prior research indicates a positive correlation between the two (Monteiro & Barbosa, 2023). Profitable companies are typically more likely to reveal more information to stakeholders to promote a positive perception of their performance (Sufiati & Pura, 2023).

Because it may discourage potential investors from making an investment in the company, businesses that perform well are therefore more likely to disclose their risks and opportunities in the future (Tsang & Cao, 2023). Since investments also lead to profitability, encouraging businesses to disclose more information is a crucial indicator that the owner is making the right choices with their money (Kouaib, 2022).

1.1.1.3 Financial Leverage

Prior research on voluntary disclosure has indicated that companies with high levels of leverage typically report additional information to satisfy the demands of outside investors and allay debt holders' concerns about the possibility of transferring funds from debt holders to managers and shareholders (Chi & Zheng, 2020).

The corporation's debt to third parties is represented by its indebtedness; consequently, the larger the debt, the more power the creditor has over the company. Creditors typically impose limitations or conditions when granting credit. Companies with higher debt levels typically disclose more information in order to win over creditors. According to Hamrouni & Boussaada (2020), creditors are significant stakeholders who have the ability to affect a company's disclosures and operations since they are the suppliers of loan capital.

In the event that the company relies increasingly on debt financing, corporate management is expected to react to creditors' expectations regarding the firm's role in revealing essential information (Chitambo & Damoah, 2020). It is anticipated that creditors will demand even more transparency in the context of climate risks with regard to the climate impacts that companies are exposed to and the measures and policies put in place to address the issue (Kouloukoui & Torres, 2019).

Debtholders, as stakeholders, require knowledge of carbon-related liabilities in order to negotiate debt arrangements and reduce ambiguity and risk (Sra, 2022). Therefore, the pressure to disclose carbon information and the quality of that disclosure should increase with the bank's leverage and risk. Managers of highly leveraged companies, however, might conceal information that raises their risk profile and makes financing more challenging.

This study focused on bank size, leverage, and profitability, as the key firm characteristics to be evaluated. This is on the basis that prior studies have identified these firm characteristics as influential in reporting voluntary disclosures for banks such as (Nathan & El-Shreif, 2021; Adewale & Rahmou, 2014; Ahmed et al., 2014; Agyei-Mensah, 2012; Hossain & Haque, 2018). The specific characteristics selected for further examination in this study were chosen based on a combination of their relevance to the East African context and their potential to provide new insights. Additionally, studies have established mixed results for the case of Leverage (Maliah et al., 2014; Ohidoa et al., 2016; Dibia & Onwuchekwu, 2015; Prastiwi et al., 2016, and Suleiman et al., 2014).

Similarly, these variables have been tested in studies beyond the African context, majorly for developed countries and a case for developing countries was yet to be justified. East Africa, with its distinct economic dynamics and climate change impacts, presented a unique case that may differ significantly from findings in other regions.

1.1.2 Corporate governance characteristics

According to Zulfikar and Meutia (2020), corporate governance is the system of laws, rules, organizations, markets, contracts, and corporate policies and procedures like internal control systems, policy manuals, and budgets that have a direct impact on the decisions made by top decision-makers. Consequently, voluntary disclosures made by a company are influenced by corporate governance, and the connection between the two has been the focus of comparatively recent research.

1.1.2.1 Board size

The likelihood that a special committee or a dedicated individual will be tasked with overseeing environmental or climate information disclosure procedures increases with the size of the board of directors. This will assist the company in responding to climate risk.

The composition and traits of a bank's board of directors can affect how the bank discloses climate risk. According to academics studying corporate governance, a company's board of directors is the most

important control component (Albitar et al., 2020). Boards have an oversight responsibility to ensure that appropriate risk management policies, including those pertaining to climate risks, are in place (Nathalia, 2022). This implies that boards with larger capacity will be in a better position to guarantee high-quality reporting and comprehend the significance of disclosures related to climate change (Kirana & Prasetyo, 2021). The total number of directors on the board is one structural factor that affects board capacity.

Larger boards use a number of interconnected mechanisms to contribute to more comprehensive disclosure of climate risk. More directors specifically offer broader expertise because they can oversee disclosures with a wider range of specialized skills, such as experience with sustainability and climate change (Siong & Keang, 2023). Larger boards also improve bank management monitoring to guarantee proper reporting and assessment of climate risk. Larger boards are better equipped to respond to stakeholder demands for transparency and focus on disclosure issues due to their larger manpower (Gerged & Cowton, 2021).

Ultimately, as a board grows in size, its independence improves because a single director or small group cannot control decision-making, allowing independent boards to more effectively represent the informational needs of stakeholders. Larger boards are able to enable more thorough climate risk reporting due to the combined advantages of experience, monitoring, manpower, and independence (Endrikat, & Guenther, 2021).

On the other hand, other research that has already been done shows that smaller boards are better at keeping an eye on the CEO and limiting the likelihood of making broad decisions (Veltrop & Pugliese, 2021; Clarke & Hayes, 2021; Robinson & Davis, 2022). Larger boards do, in fact, improve monitoring capabilities, but this advantage may be offset by the rising expense of the poorer decision-making and communication that come with larger groups (Roffia, & Sendra, 2022).

1.1.2.2 Board Composition

According to principal agent theory, independent directors have an obligation to oversee management team behaviour to reveal more thorough climate data. Commercial banks must improve the professionalism and diversity of its independent directors and strengthen their capacity to carry out their responsibilities in the face of a financial climate that is becoming more complex and unstable. It should be the duty of independent directors to oversee the board of directors and management's disclosure of climate information, identify dangers, and suggest solutions (Chang,2023).

The board of directors of a company typically consists of executive and non-executive directors (NEDs). Executive directors are a part of the company's management, while NEDs are individuals whose only connection to the company is through their directorship (Yusuf & Sulung, 2019). According to the agency theory, having a higher percentage of NEDs on the board is an important corporate governance tool that guarantees efficient oversight of corporate managers when agency conflicts arise.

(Mithani, 2022). More thorough disclosure of climate risk is positively correlated with the independent board ratio, which is the percentage of independent directors on a bank's board (Noja & Grecu, 2021).

The agency theory states that the most significant variable is the board of directors' independence. According to Beretta and Sotti (2023), a number of studies have primarily assessed the board's independence by looking at whether or not its members are made up of people who are not affiliated with the management. It is generally acknowledged that the board's independence encourages voluntary disclosure, though there are many instances in which this is not the case. Because board members may have different interests and differ in their ability to make decisions based on the type of independent director, outside directors are not a homogeneous group (Matta & Kochhar, 2022).

According to Khandelwal & Pandey (2020), companies that have more independent non-executive directors on their board are likely to see an increase in voluntary disclosure. Moreover, the quality and comprehensiveness of disclosure are enhanced by the presence of independent non-executive directors on corporate boards (Katmon & Farooque, 2019). The inclusion of outside directors is essential to corporate governance and the disclosure of sufficient information. If there are more outside directors on the board, the company might disclose more information. It is more advantageous for independent directors to speak for broader stakeholder demands for objective climate reporting (Stein & Zhao, 2019).

1.1.2.3 Board Gender Diversity

Businesses with a higher proportion of female board members typically exhibit greater dedication and transparency (Kouloukoui et al., 2018; Pucheta & Gallego, 2020). It has been demonstrated that the quantity and quality of climate risk disclosures are positively impacted by the presence of more women directors on bank boards. One explanation for this is that, in comparison to male directors, female directors frequently demonstrate a stronger sustainability orientation and prioritize ESG issues like climate change (Haque & Jones, 2020).

Furthermore, the diversity of viewpoints, experiences, and values on boards is enhanced by the presence of female directors. Due to this diversity, boards are better able to recognize and respond to the needs of a wider range of stakeholders, including those for extensive disclosures pertaining to climate change (Pucheta, 2021). The presence of women on boards seems to influence positive changes in climate disclosure practices through both top-down oversight and bottom-up pressure (Siong & Keang, 2023).

Due to the collaborative assessment of the needs of various stakeholders, a higher proportion of female board members may encourage a better understanding of environmental issues (Kemp et al., 2023). According to Provasi & Harasheh's (2021) research, women are generally more aware of environmental damage than men are. They also have stronger ties to the community and a higher propensity for altruism.

However, the proportion of non-executive directors on audit committees, which affects CSR disclosure, is strongly correlated with the number of female directors on boards. Therefore, having female directors on the board reduces the detrimental effect that non-executive directors on audit committees have on CSR information reporting (Pucheta & Bel-Oms, 2021). Because CSR reporting rises when audit committees consist of non-executive or independent directors and financial specialists, companies benefit from having female directors on their boards. On the other hand, when boards include female directors, the audit committee's very existence deters the sharing of corporate social responsibility data (Guping & Vianna, 2020).

In Kenya a study by Ochenge (2024) spanning 2010-2022 found that women held about 19% of bank board seats, improving from 13%. Analysis of 21 banks revealed those with more women in bank boards exhibited less risky behaviour, suggesting a link between gender diversity and stability. Therefore, by focusing on East African banks this study contributed to a more comprehensive understanding of the role of women in boards and climate change disclosure practices in banks.

1.1.3 Climate Related Disclosures

Climate disclosure serves as a way for companies to engage with stakeholders by sharing information about the environmental effects of their management practices. Strong governance and accountability for the changing nature of company operations are expected of companies. Companies are urged by stakeholders and investors to determine, assess, and disclose publicly the financial effects of climate change on their operations.

As non-financial reporting continues to gain global traction, businesses' sustainability disclosures are increasingly scrutinized by various stakeholders. As a result, organizations will be expected to provide detailed responses addressing climate change concerns. Therefore, several global initiatives guide sustainability reporting by business entities. Companies can use the worldwide reporting standards as frameworks for their disclosures to guarantee clear, up-to-date, and comparable reporting. The term global financial initiatives refer to organisations or resources that offer statistics, procedures, or recommendations to support efficient disclosure of climate-related information. (Vivid,2021).

Some of these include the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), the International Integrated Reporting Council (IIRC), and the United Nations Global Compact (UNGC). While these frameworks address broader sustainability issues, others focus specifically on climate-related reporting for instance, the Climate Disclosure Standards Board (CDSB), the Climate Change Reporting Framework, and the Climate Disclosure Project (CDP) provide targeted guidelines for reporting on climate change impacts. Similarly, the Task Force on Climate-related Financial Disclosures (TCFD) supports organizations in disclosing climate-related risks and opportunities (Shirai, 2023).

A company's climate disclosure practices can be impacted by various factors, including the degree of carbon regulations in the nation or industry and the implementation of disclosure standards (Lee & Bae, 2024). A variety of organisations in the African region foresee regulatory moves in response to investor and development finance institution (DFI) requests. For instance, a number of financial institutions in South Africa, Zimbabwe, Morocco, and Egypt were among the first to formally adopt the TCFD recommendations.

Others, on the other hand, are building sustainability and climate plans, modifying credit rules, and interacting with counterparties on climate risks. These global initiatives include UNEP FI, Global Reporting Initiatives (GRI), and the Net Zero Banking Alliance (NZBA). In many nations, national industry initiatives like the Kenya Bankers Association Sustainable Finance Initiative act as stimulants for climate risk practices.

Within the African context while there were no compulsory specific climate risk-related regulatory requirements previously, some countries have started to approach climate risks through market discipline by requiring Financial Institutions to make climate or sustainability disclosures e.g. Kenya, Egypt, Tanzania who have, issued guiding principles of sustainable financing through their central banks on TCFD.

Among these frameworks, the Global Reporting Initiative (GRI) stands out as the most widely used and comprehensive framework for environmental and sustainability disclosures. While multiple standards address climate disclosures, GRI has been chosen for this study since many East African banks are already incorporating GRI-based sustainability reporting as part of voluntary disclosure efforts or in response to emerging regulatory expectations.

1.2 Statement of the problem

As climate change becomes an increasingly critical global issue, businesses, particularly those in the banking sector, are expected to disclose relevant and adequate information on how they address and manage climate risks. Climate-related disclosures are essential for financial institutions to comply with growing regulatory requirements and demonstrate their awareness and response to climate change (Hösli & Weber, 2022). Despite this, many organizations, particularly within the banking sector, provide minimal climate-related information in their sustainability reports (Kouloukoui et al., 2018).

In recent years, the banking sector has been relatively slow to adopt comprehensive climate disclosures and has not adequately responded to the challenges of climate change. The Carbon Disclosure Project (CDP) reported that in 2018, the average carbon disclosure score of 117 companies worldwide was just 2.79 out of 7, with banks performing moderately in terms of the completeness of their climate-related disclosures (CDP, 2018). The issue is especially pronounced in developing countries, where the absence of local mandatory disclosure frameworks and carbon audit professionals' hampers banks' ability to

provide accurate, quantitative climate-related data. These challenges contribute to the low quality and limited scope of climate disclosures, which remain a significant issue in the East African context.

For instance, Kenya, recognizing the gap in climate-related disclosures, initiated a pilot implementation of the Task Force on Climate-related Financial Disclosures (TCFD) framework in August 2024, following inadequate disclosures in 2023. This pilot served as a test phase rather than a mandatory adoption, aimed at assessing readiness and building capacity for future compliance. This highlights the urgency for banks to improve their climate change adaptation strategies. Globally, the financial industry has been criticized for its insufficient efforts in addressing climate risks. Despite advancements in certain sectors, the global financial system, including banks, is still not acting sufficiently or coherently to address climate risks, according to research by the French Prudential Supervision and Resolution Authority (ACPR) (Dietz et al., 2020).

The global financial assets at risk due to climate change are substantial, with estimates suggesting that banks' failure to disclose adequate climate-related information could lead to financial risks totalling up to $24.2 trillion (Caby, 2020). This is particularly alarming for East Africa, where regions are expected to be severely impacted by climate change. For example, in a low-warming scenario, GDP per capita could decrease by 9.9% by 2050, with losses increasing to 16.0% in a high-warming scenario.

Studies on climate-related disclosures have produced diverse findings, often influenced by the context and scope of analysis. Giannarakis & Sariannidis (2020) investigated the determinants of environmental disclosure, finding that corporate governance characteristics such as independent directors and the existence of a lead independent director positively influenced disclosure decisions, Luo, and Tang (2015) examined gender diversity, board independence, and environmental committees as drivers of greenhouse gas disclosures. Their study found that gender diversity and board independence were positively correlated.

Kılıç & Kuzey (2019) analyzed climate change disclosures in Turkish banks and revealed that factors such as bank size, profitability, and listing status significantly affected disclosure levels. While insightful, the study did not consider corporate governance characteristics. Onyebuenyi & Ofoegbu (2022) explored environmental sustainability disclosure in sub-Saharan Africa's oil and gas sector, linking disclosure to performance metrics such as gross profit and return on equity. However, the study's sectoral focus limits its applicability to the banking industry

Despite studies other studies carried out within the East African region, such as (Reuben 2023; Wambui 2023), they primarily focused on climate risks, and much of the existing research on climate-related disclosures has concentrated on developed economies. This study filled this gap by investigating the factors influencing climate-related disclosures among East African banks. It provided insights into how both firm characteristics, and corporate governance influence climate change reporting in this region.

By addressing this research gap, the study contributed to a better understanding of the dynamics between banks, corporate governance, and the adoption of climate disclosure standards in East Africa.

1.3 Research objectives

1.3.1. General objective

The study's general objective was to identify the factors influencing climate-related disclosure reporting among commercial banks in East Africa.

1.3.2 Specific objectives

The specific objectives of the study were

i. To determine the effect of firm characteristics on reporting of climate related disclosures amongst commercial banks in East Africa.
ii. To determine the effect of corporate governance characteristics on the reporting of climate-related disclosures amongst commercial banks in East Africa.

1.4 Research hypothesis

Firm characteristics

Bank size

$H1_0$: There is no significant relationship between bank size and climate-related disclosures among East African commercial banks.

$H1_a$: There is a significant relationship between bank size and climate-related disclosures among East African commercial banks.

Bank Profitability

$H1_0$: There is no significant relationship between profitability and climate-related disclosures among East African commercial banks.

$H1_a$: There is a significant relationship between profitability and climate-related disclosures among East African commercial banks.

Financial Leverage

$H1_0$: There is no significant relationship between Financial Leverage and climate-related disclosures among East African commercial banks.

$H1_a$: There is a significant relationship between Financial Leverage and climate-related disclosures among East African commercial banks.

Corporate governance characteristics

Board Size

$H1_0$: There is no significant relationship between Board Size and climate-related disclosures among East African commercial banks.

$H1_a$: There is a significant relationship between Board Size and climate-related disclosures among East African commercial banks.

Board Gender Diversity

$H1_0$: There is no significant relationship between Board Gender Diversity and climate-related disclosures among East African commercial banks.

$H1_a$: There is a significant relationship between Board Gender Diversity and climate-related disclosures among East African commercial banks.

Board Independence

$H1_0$: There is no significant relationship between Board Independence and climate-related disclosures among East African commercial banks.

$H1_a$: There is a significant relationship between Board Independence and climate-related disclosures among East African commercial banks.

1.5 Scope of the Study

The study focused on the determinants influencing the reporting of climate-related disclosures by commercial banks in East Africa. It encompassed banks in Kenya, Uganda, Tanzania, and Rwanda that are regulated by their respective central banks or securities exchanges, with a particular focus on all 37 commercial banks that have reported environmental disclosures. This ensured a comprehensive and representative analysis. The theoretical framework guiding the study was anchored on stakeholder theory, legitimacy theory, and agency theory. The study covered seven years from 2017 to 2023. The choice of a seven-year timeframe is deliberate and methodologically grounded. Longitudinal studies often adopt periods of five to ten years to ensure consistency, observe evolving trends, and capture the effects of regulatory or market changes on disclosure practices. A seven-year period strikes a balance between data availability and the ability to analyse meaningful patterns, making it particularly suitable for examining institutional behaviour over time. Additionally, this timeframe aligns with global climate-related policy shifts such as the adoption of the Task Force on Climate-related Financial Disclosures (TCFD) recommendations in 2017, allowing the study to observe the early and evolving adoption of climate reporting practices in the region (Smith & Adams, 2020).

1.6 Significance of the study

1.6.1 Bank regulators & Policymakers

This research can provide valuable insights for regulators monitoring financial risks and policymakers working toward low-carbon targets regarding strategies for encouraging banks to disclose information related to climate.

1.6.2 Commercial Banks

By examining the determinants influencing climate related disclosures, this study helps banks understand the drivers behind increased transparency. This can lead to more comprehensive and accurate reporting practices, which are crucial for building trust with stakeholders and the public.

1.6.3 Scholars

Finally, the study will be beneficial in supporting the body of knowledge for future research work.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter aims to provide a comprehensive review of the literature relevant to the study's variables. It first examines the theoretical foundations of the study, a review of literature, conceptual framework and the research gap.

2.2 Theoretical review

This section presents the theories behind the study. Climate change-related disclosures are influenced by multiple facets of organizational behaviour, including corporate governance, and firm characteristics. A single theory might fail to capture the multifaceted nature of these drivers and hence the application of 3 theories namely Stakeholder, Legitimacy and Agency theory.

2.2.1 Stakeholder theory

R. Edward Freeman formulated the stakeholder theory in 1984. The way in which organizations truly consider stakeholder interests is explained by stakeholder theory (Gilbert & Rasche, 2008). The theory describes the individuals affected by a company's activities and how they influence the objectives the company has for its enterprise. Stakeholder relations are important in stakeholder theory. According to the stakeholder theory, a company will receive support if it benefits society, especially when it comes to sustainability initiatives and operations. (Hatami & Firoozi, 2019)..

Stakeholder theory examines the demands for increased transparency placed on banks by activists, shareholders, and customers. The impact of stakeholder pressures on the quantity and caliber of sustainability disclosures made by banks has been the subject of related research (O'Dwyer & Unerman, 2020; Pucheta & Gallego, 2021; Beatty & Liao, 2014). According to stakeholder theory, companies can take actions and make disclosures to satisfy stakeholders and lessen coercive pressure (Kilic & Kuzey, 2019; Darus et al., 2020). Stakeholder theory therefore holds that businesses disclose information about their voluntary efforts to combat climate change because it has become a pressing social issue and because different stakeholders want to know how businesses are responding to it (Usiomon, & Iyoha, 2024).

Companies' social and environmental reporting is becoming increasingly important to a wide range of stakeholders (Arvidsson & Dumay,2022). A wide range of stakeholders, including activists, shareholders, regulators, and customers, are putting more and more pressure on banks to report climate risks in an open and transparent manner. The banks are better able to comprehend the expectations of their stakeholders regarding the reporting of issues related to climate change as they gain experience with sustainability reporting. As an illustration, investors have lately begun to request details about a company's GHG emissions, emission reduction plans, policies, and strategies (Ulpiani & Bertoldi, 2023).

The legitimacy theory and the stakeholder theory both describe the relationship between business attributes and environmental disclosure (Usiomon, & Iyoha, 2024). The stakeholder theory and legitimacy theory are compelling arguments for disclosing CSR information, as they explain that reports are designed to respond to the demands all stakeholders, exceed their expectations and to help banks obtain moral legitimacy in the eyes of the public (Wang et al., 2017; Hou, 2018).

The fact that Freeman emphasizes technique over theory is a criticism of this theory. One of his stated goals is to give management a useful strategic tool through his presentation of identifiable actors, but he falls short in offering a sufficient theoretical foundation to explain the behavior of the firm or individual actors internally or externally. Although he correctly points out that the economic model can no longer adequately explain the behavior of firms, he does not offer a substitute for the reinterpretation of the firm as a resource conversion entity that is affected by both internal and external actors. Freeman's work falls short in addressing the dynamics that connect the identified stakeholders to the firm.

Since stakeholder theory highlights the significance of identifying and resolving the interests and concerns of diverse stakeholders, it is pertinent to this study. Given that a wide spectrum of bank stakeholders places a high value on businesses' social and environmental reporting, this theory aids in explaining why banks may decide to voluntarily disclose information about climate change. According to stakeholder theory, management needs to weigh the interests of all parties.

Based on stakeholder theory, this study suggests that bank-level governance and resource variables affect responsiveness to demands for climate disclosure. A company's environmental and climate obligations increase with size, and it is more inclined to be observed by the media and government regulators. In particular, it is anticipated that climate risk reporting will be positively impacted by bank size, profitability, female board representation, board independence, and board size.

2.2.2 Legitimacy theory

In 1975, Dowling and Pfeffer established the legitimacy theory. According to the theory, companies continually strive to make sure that their operations conform to social norms and restrictions (Deegan et al., 2002). The legitimacy theory is a popular theory used to explain CSR reporting procedures of businesses in the industrialized world (Mehjabeen & Bukth, 2022). Since the company has profited from the use of a resource and wants to give back its profits to the community and environment, there is currently demand on companies that are not only focused on financial gain but also on community and environmental concerns.

Legitimacy theory states that an organisation must keep integrating its values with those of the social system in which it operates in order to attain legitimate status, which is the approval and support of society as well as the elimination of any dangers to its existence. Ashrafi et al., (2020) claim that businesses must utilize corporate social responsibility such as disclosure of information to justify their operations.

Thus, disclosure and immunity from the occurrence of legitimacy gaps are taken into account by the legitimacy theory. A common way to increase an organization's legitimacy through actions that support societal values and goals is to reveal the contributions the organisation has made to community-relevant issues, like sustainability and corporate social and environmental responsibility. (Al Amosh & Mansor, 2018).

There has been criticism to the legitimacy theory i.e. numerous scholars who have examined environmental disclosure have observed that by addressing public concerns, seemingly mitigating criticism, and promoting societal acceptability, environmental disclosures can and often do aid in the reestablishment of legitimacy. While many studies show that the legitimacy theory is applicable to accounting research, a larger body of research indicates otherwise. Therefore, it is imperative to recognize that the legitimacy theory's conviction and certainty in accounting research are not well supported by empirical data. People won't be held much or accountable for their actions unless society brings up particular issues (Martens, 2023).

This theory applies to this study as it relates to how organizations, including commercial banks, strive to align their actions with societal expectations to maintain their legitimacy. Climate-related financial disclosures have gained prominence globally as stakeholders increasingly demand transparency and accountability regarding environmental impacts. The legitimacy theory also discusses the size of the business, which has been brought up frequently in earlier research, with scholars arguing that larger companies typically engage with more stakeholders. According to legitimacy theory, big businesses typically behave honourably and reveal more information about climate-related issues, even though they get greater attention from stakeholders and authorities.

2.2.3 Agency theory

Ross (1973) and Mitnick (1973), founded the institutional and economic streams of agency theory, respectively, and were significantly responsible for the development of agency theory. Fundamentally, agency theory examines interactions that mimic agents acting for principles in a variety of contextual contexts (Mitnick, 2015; Mitnick, 2019). Economic agency theory, which presupposes that the principal and agent will try to maximise their positions through individual interpretation of the contract, has historically been the path taken by the classical method to understanding agency theory.

Agency theory's fundamental principle is that the principal-agent relationship should be based on effective information organization and risk-taking expenses (Tekin & Polat, 2020). The theory seeks to resolve agency problems that occur when the agent and principal pursue opposing goals and have varying risk tolerances. There are two parties involved in an agency partnership. One party is the organization's owners or principles, which in a corporate setting would be the shareholders; the other party is the organization's managers or agents. According to the principal agent theory, independent directors must oversee the management team's actions in order to reveal more detailed climate data.

The theory has also drawn criticism for encouraging short-termism, in which managers prioritize short-term financial gains over long-term strategy, innovation, and moral issues. Additionally, in an agency relationship, shareholders give management the power and duty to govern the company in the hopes that they will increase shareholder welfare. The agency problem, on the other hand, refers to the fact that management and shareholders' interests do not always coincide. When management's objectives diverge from those of shareholders, agency issues will worsen, particularly if management does not own a sizable amount of the company's shares. By giving shareholders precedence over other impacted parties, the idea disregards larger social and environmental obligations.

This theory is relevant to this study since an independent board, Board representation, helps reduce conflicts of interest by overseeing management activities on behalf of shareholders. Independent directors are more likely to hold executives accountable and reduce agency costs through effective oversight. In particular, it is anticipated that climate risk reporting will be positively impacted by board representation, board independence, and board size.

2.3 Empirical review

This section reviews research that will help in identifying the gaps that motivate this study. The selection of firm characteristics and corporate governance variables was guided by both theoretical frameworks such as stakeholder and legitimacy theories and empirical evidence from prior literature. These variables were chosen because they are among the most frequently cited determinants of environmental and climate-related disclosures in existing studies

2.3.1 Firm characteristics and climate change related disclosures

2.3.1.1 Bank Profitability

One of a company's most important financial metrics is profitability, which shows how profitable it is per unit of capital or equity. A company's management will be more inclined to pursue social performance beyond financial metrics if it is lucrative. Additionally, businesses must pay for addressing climate risks and making climate disclosures, which affects their bottom line. Profitability reduces the influence of disclosure costs, and companies are more likely to reveal climate information and respond to it.

There is a widespread belief that a business's profitability is positively correlated with its willingness to disclose information. It is believed that successful company managers release a lot of information to demonstrate to shareholders that they are working in their best interests and to support their pay packages (Elmagrhi & Zalata, 2020). Moreover, increased profit margins signify effective management, enabling bank executives to concentrate their attention on long-term concerns like climate change that present risks over a variety of time horizons (Giuzio & Radulova, 2019).

In particular, banks that exhibit greater profitability as determined by metrics such as return on equity, return on assets, or net interest income are more likely to disclose climate change risks and strategies in

a comprehensive and superior manner (Caby, 2020). This relationship can be explained, in part, by the fact that profitable banks can allocate more organizational and financial resources to climate risk reporting and analysis. Banks with higher profitability levels can more readily afford to pay for the creation of scenario analyses, disclosure frameworks that are aligned, and climate risk models (Baer, 2024).

Furthermore, investors and regulators worried about the implications for financial stability have less reason to push back against requests for banks with healthy profit margins to disclose more information about climate change (Platonova & Mohammad, 2018). While unprofitable banks might be reluctant to make what they perceive to be expensive disclosures, profitable banks also have a reputational incentive to show their commitment to social responsibility and the environment through sustainability reporting (Bolton & Kacperczyk, 2021). More profitable banks are better positioned and driven to provide comprehensive, high-quality disclosures about climate change risks, strategies, and governance, according to both theoretical and empirical research (Siong & Keang, 2023).

Ntui & Chalu (2021) investigated how firm characteristics affect environmental disclosures in Tanzania's extractive industry. They focused on factors such as firm age, size, industry type, capital structure, profitability, and ownership structure. The study utilized panel data from 18 firms over the period 2004 to 2018, as reported by the Tanzania Extractive Industry Transparency Initiative (TEITI). The findings suggest that these characteristics significantly influence the extent of environmental disclosures, with implications for legitimacy theory, as firms seek to align with societal expectations to maintain legitimacy.

Although some empirical studies produced conflicting findings, theoretical debates suggest that profitability and climate emissions declarations are positively correlated. For example, although Prado-Liao et al. (2015) found a negative association, Siong & Keang, (2023); Bolton & Kacperczyk, (2021); Gonzalez & Ramírez, (2016); Ben-Amar & McIlkenny, (2015); Eleftheriadis & Anagnostopoulou, (2015) indicated a significant positive association between profitability and climate disclosures. The purpose of this study is to investigate the relationship between bank disclosures about climate and profitability in the East African region.

2.3.1.2 Bank size

Compared to smaller businesses, large corporations are subject to more scrutiny and, as a result, receive more media attention forcing them to engage in GHG emissions-reduction practices (Hawn,2021). The legality of businesses' operations may be questioned if society views them as ecologically irresponsible (Gonzalez-Gonzalez & Ramírez, 2016). Because of their increased exposure and financial impact, legitimacy concerns encourage big businesses to disclose environmentally friendly initiatives (Crossley & Ntim,2021).

D'Amico et al. (2016) demonstrated that compared to small and medium-sized businesses, large corporations have more sophisticated internal control mechanisms and are subject to pressure from a greater variety of stakeholders. These factors make it less expensive for large companies to provide additional information. Larger companies are more likely to reveal information about climate change because they have the resources to monitor and disclose greenhouse gas emissions (Perera & Gopalan, 2019).

While smaller banks might not have the technical know-how, larger banks can dedicate more resources and capabilities to data analysis, integration into reporting processes, and climate risk assessment (Birindelli & Iannuzzi, 2022). Large banks are also more likely to have lending portfolios and business activities that are more diversified across industries and regions, which exposes them to a greater variety of climate risks that they must assess and report (Beltran & Uysal, 2023).

Banks with greater resources and greater public pressure are more likely to permit a more methodical and thorough disclosure of data related to climate change (González & Núñez, 2021). Given that this is frequently observed in larger companies, they are more inclined to reveal information regarding the environment in an attempt to lower the risk of regulation and stay out of trouble with the government. (Burgwal & Vieira, 2014).

Many prior studies have determined a significant association between firm size and climate change-related disclosures (Stanny and Ely, 2008; Prado-Lorenzo et al., 2009; Rankin et al., 2011; Choi et al., 2013; Luo et al., 2013; Chithambo & Tauringana, 2014; Ben-Amar & McIlkenny, 2015; Eleftheriadis & Anagnostopoulou, 2015; Gonzalez & Ramírez, 2016; Yunus et al., 2016; Kılıç and Kuzey, 2019; Nathalia & Setiawan, 2022; Tingbani & Papanikolaou, 2020) of which all determined that size is a significant determinant of voluntary CSR disclosures. However, these studies were done mostly in developed countries, this study is in pursuit to determine the influence of bank size on climate related disclosures for banks within the East African region, a region predominantly with developing countries.

2.3.1.3 Financial Leverage

As stakeholders engaged in debt contracts, debtholders are worried about carbon-related liabilities because they want to minimize risk and uncertainty. Therefore, as bank leverage and risk increase, so should the pressure to disclose carbon information and the quality of that disclosure (Luo & Tang, 2021). An additional factor cited in the literature from the past is that businesses typically reduce all expenses to boost profits and fulfil certain credit agreements (Patrick et al., 2017). According to Ding & Shahzad (2022). businesses with high levels of debt might not be able to pay for the expenses associated with creating and disseminating information about their environmental policies.

There aren't many empirical studies within the field on emerging economies. Ganda (2018) looks into the climate-related disclosure made by South African companies between 2010 and 2015. According to the paper, financial leverage and climate-related disclosure have a negative relationship, but asset

profitability and disclosure are positively correlated. Additionally, a 2019 study by Kumar & Firoz (2019) examined 137 Indian-listed companies from 2011 to 2015. The findings show that the voluntarily engagement in climate-related reporting in India was significantly positively impacted by the financial leverage ratio.

In their analysis of gender diversity and climate-related disclosure for BIST 100 index firms, Ararat & Sayedy (2019) found that companies with high financial leverage might want to raise their voluntary disclosure levels in order to reduce leverage-related agency costs. A study on carbon emission disclosures and leverage was conducted by Nisak & Yuniarti (2018) on companies that registered consecutively for sustainability reporting in India. The study found that organizations that were consistently mentioned in the Sustainability Reporting Award from 2014 to 2016 had negative leverage, which meant that as leverage increases, carbon emission disclosure will drop.

Since financial leverage is a crucial corporate attribute, there are numerous arguments demonstrating various relationships. Starting with studies proving a positive relation comes those of Dibia & Onwuchekwa, 2021; Patrick et al., 2017; Maliah et al., 2014; Andrikopoulos & Kriklani, 2013; and Clarkson et al., 2011. Conversely, Nur (2012), Gerged et al. (2023), and Ohidoa et al. (2016) argue that the companies' desire to avoid being placed in a position of focus by the creditors on accounts of negative relations. Lastly, several studies (Ohidoa et al., (2016); Dibia & Onwuchekwu, (2015); Martinez-Ferrero et al., (2013); Lastiningsih & Ermawati (2021); Prastiwi et al., (2016); Suleiman et al.,(2014) contend that there is no relationship between leverage and the sharing of environmental information.

The literature indicates that there is a non - availability of research on the impact of leverage on environmental disclosure in developing nations. This issue is made worse when differing conclusions are drawn about the influence of financial leverage. Furthermore, the global banking industry exhibits a highly heterogeneous financial landscape with respect to leverage and financial performance (Caby, 2020), thereby confirming the centrality of this research variable in addressing the disclosure gap on climate change.

2.3.2 Corporate governance characteristics and climate change related disclosures

2.3.2.1 Board Gender Diversity

The presence of women on corporate boards is frequently cited as the primary indicator of board diversity in research on corporate governance. It has been demonstrated that having more women on bank boards has a beneficial effect on the volume and calibre of climate risk disclosures (Liao & Tang,2015). Research indicates that banks with a greater proportion of female board members identify climate change risks and plans in a more thorough and superior way Akbas (2016); Jizi (2017); Liao et al. (2015).

These empirical results imply that the ethical principles, support for stakeholder orientation, and sustainability focus of female directors have real effects on bolstering banks' climate risk reporting. On boards, the presence of female directors promotes diversity in viewpoints, backgrounds, and values. Due to this diversity, boards are better able to recognize and respond to the needs of a wider range of stakeholders, including those for thorough disclosures regarding climate change (Tingbani & Papanikolaou, 2020).

Companies that have a larger percentage of female directors tend to be more dedicated and disclose more information (Sant'Anna et al., 2018; Pucheta-Martínez & Gallego-Álvarez, 2020). According to previous research Xiao & McCright (2020), Chen et al., (2022), women are more concerned about environmental issues than men are. In this context, studies by Liao et al. (2015), Ben-Amar et al. (2017), and Haque (2017) demonstrate that gender diversity on the board has a positive impact on voluntary carbon disclosure.

Despite some studies claiming that men and women have the same attitudes towards the environment, it has been empirically shown that women are typically more involved in environmental issues than men are (Huddart et al., 2021). Ibrahim et al., (2013) found that compared to their male counterparts, female directors show a greater propensity for corporate social responsibility. As a result, it is thought that female directors are crucial to advancing a business's CSR initiatives and improving its standing.

2.3.2.2 Board Independence

Empirically, research indicates that banks with greater independent director ratios offer climate disclosures of a higher caliber that are compliant with industry standards (Nathalia & Setiawan, 2022; Liao et al., 2015). More thorough disclosure of climate risk is positively correlated with the independent board ratio, which is the percentage of independent directors on a bank's board (Lessambo, 2016). Given that executive compensation is frequently correlated with short-term financial performance, independent directors contribute greater objectivity and mitigate conflicts of interest that may impede disclosure. Lastly, independent directors are in a better position to impartially represent the demands of a wider range of stakeholders for climate reporting (Gerged, 2021).

According to a study by Nguyen & Trinh (2020), it is critical to comprehend institutional context in order to appropriately assess the beneficial influence of outside directors on the transparency of sustainability reporting in an environment where ownership stakes held by outside directors are common. On the other hand, disclosure about green banking was not significantly impacted by the inclusion of outside directors on the board. According to Jizi et al., (2014) analysis of the relationship between board independence and size and CSR disclosure at major US banks, boards with larger memberships and higher percentages of outside directors typically disclose CSR information more effectively.

Githaiga & Kosgei (2023) investigated how firm characteristics affect environmental disclosures in East African listed firms, focusing on board characteristics, firm size, profitability, and ownership structure. They analyzed data from firms listed on the Nairobi Securities Exchange (NSE) over a period from 2010 to 2020. Their findings revealed that larger firms with higher profitability are more likely to disclose environmental information, aligning with legitimacy theory, as firms seek to fulfill stakeholder expectations and enhance their legitimacy in the market. Additionally, the study found that the presence of independent boards and gender-diverse boards positively influenced sustainability disclosures, suggesting that corporate governance practices play a crucial role in enhancing environmental transparency.

According to Bose et al. (2018), the Central Bank of Bangladesh's 2011 release of green banking regulatory guidelines had a favourable impact on the degree of green banking disclosure. Furthermore, they discover that the amount of green banking disclosure is positively impacted by corporate governance mechanisms (such as board size and institutional ownership), but not by the presence of independent directors. Research conducted in Australia by Lim & Chow (2022) revealed that independent directors supported the sharing of strategic and forward-looking information, but refrained from disclosing non-financial information, such as details about social responsibility and sustainability.

2.3.2.3 Board size

In particular, banks that exhibit greater profitability as determined by metrics such as return on equity, return on assets, or net interest income generally tend to furnish more comprehensive and superior quality disclosures concerning climate change risks and tactics (Caby, 2020). The composition and traits of a bank's board of directors can affect how the bank discloses climate risk. Boards have an oversight responsibility to make sure that suitable risk management policies, such as those pertaining to climate change, are in place (Nathalia & Setiawan, 2022).

A larger board can improve oversight while lowering managerial discretion on the board. A large board can also gain from having directors with a variety of backgrounds, as they can offer a broad range of knowledge and ideas to the company. Nonetheless, there are worries that a bigger board could result in longer deliberations, consensus-building procedures, and decision-making, which could lower the effectiveness of the monitoring function Katmon & Farooque (2019).

Conversely, a smaller board is thought to be more effective at making decisions, but it might be less able to keep an eye on executives (Guerrero et al., 2018). There is disagreement among empirical research findings about the relationship between voluntary disclosure and board size, and there is also a claim that the ideal board size for effective board operations exists, taking into account both viewpoints Abubakar, & Ahmadu, B. (2022).

Contradictory results are obtained from empirical research on the impact of board size in the context of CSR and climate disclosure. Some research indicates that improved disclosure practices are linked to a

larger board size e.g., Bose et al., (2017); Liao & Tang, (2015); Kilic & Kuzey, (2015), Guerrero Villegas et al., (2018) while others observe a tendency for reduced disclosure with a larger board size (Prado & Garcia, 2015).

Furthermore, a number of empirical studies have shown that board size has no discernible impact on climate disclosure e.g Lee & Bae (2024); Kilic, (2019); Fuento & Lazano, (2017); Puchenta & Nekhili, (2018); Akbas & Conikli, (2018). In order to investigate the impact of board size on climate disclosure for East African banks, this study adopts an exploratory methodology due to the validity and inconsistent empirical results of each argument.

2.4 Summary of research gap

Table 3-1:Summary of research gaps

Author	Title	Methodology	Research Findings	Gaps in the Study
Giannarakis, G., Andronikidis, A., & Sariannidis, N. (2020)	Determinants of environmental disclosure: investigating new and conventional corporate governance characteristics	Descriptive Regression analysis (Logit model)	The results showed that independent directors and the presence of a lead independent director were supportive of the decision to develop environmental disclosures, but the youngest director's age had a negative effect.	This study will focus on both firm and corporate governance characteristics. Different contextual setting: The study also focuses on developing countries within the East African region. This study specifically focuses on the Banking sector.

Liao, L., Luo, L., & Tang, Q. (2015)	Gender diversity, board independence, environmental committee and greenhouse gas disclosure	Descriptive Regression analysis (probit model)	Both the willingness and the depth of GHG information disclosure were found to be significantly positively correlated with the percentage of female directors on the board, which is a proxy for gender diversity. Furthermore, a board that has a larger number of independent directors or an environmental committee tends to be more ecologically transparent.	The study used a probit model, unlike this study which intends to use a Multiple Linear Regression. This study will focus on both firm and corporate governance characteristics.
Kılıç & Kuzey (2019)	Determinants of climate change disclosures in the Turkish banking industry	Descriptive Multiple regression and fractional regression analysis	The study shows that the amount of climate change disclosures is significantly and favourably impacted by bank age, size, profitability, and listing status.	The study did not look at corporate governance characteristics. The study focus was for a developed country unlike this study which focuses on developing countries.

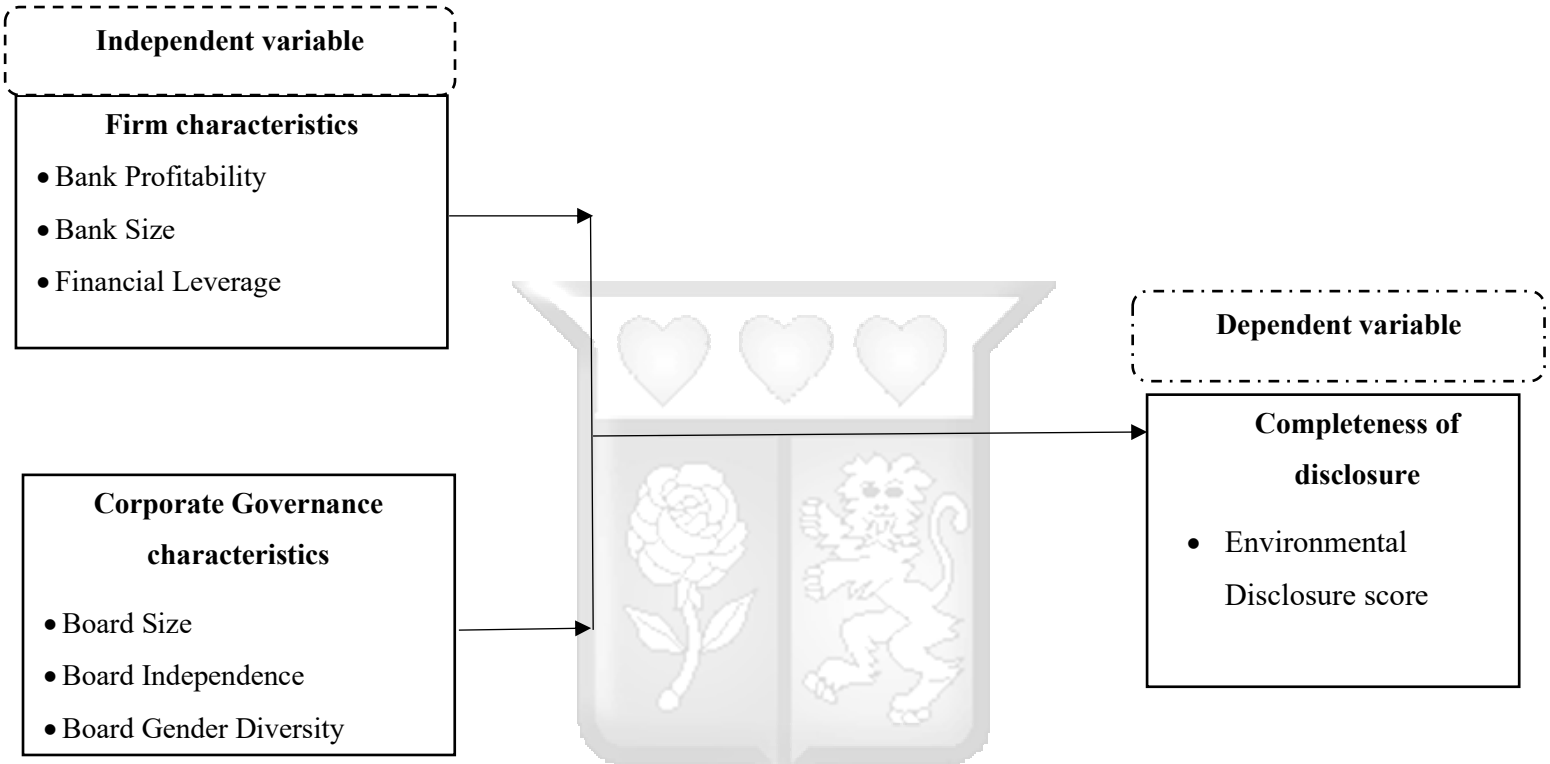
Onyebuenyi, & Ofoegbu (2022)	Environmental sustainability disclosure and firm performance of quoted oil and Gas companies in sub-Saharan Africa Countries	Descriptive and ex-post facto research Least Square Regression	According to the study, environmental disclosures are significantly positively affected by performance metrics such as gross profit after tax margin and negatively affect return on equity.	The study focused on performance only as an independent variable, this study includes other firm characteristics. The study focused on the oil and gas sector. This study includes a moderating variable on compliance with global reporting standards.
Ezhilarasi & Kabra (2017)	The Impact of Corporate Governance Attributes on Environmental Disclosures:Evidence from India	Panel regression model	According to the study, the primary factor in corporate governance that motivates companies to disclose environmental information is foreign institutional ownership. Furthermore, environmental disclosures were positively influenced by firm-specific factors like company size and environmental certification.	This study includes a moderating variable on compliance with global reporting standards which the study did not incorporate.

Source: Author (2025)

2.5 Conceptual Framework

The study's components are connected by the conceptual framework. The relationship between the independent and dependent variables is normally shown diagrammatically (Casula et al., 2013). The relationships between the study variables are displayed in the conceptual framework below.

Figure 3-1: Conceptual Framework



Source: Author's own (2025)

The expected relationship among the determinants influencing the reporting of voluntary climate related disclosures among East African banks suggests that both firm characteristics and corporate governance traits play a significant role. Higher bank profitability may lead to increased transparency and commitment to sustainability practices, encouraging more comprehensive disclosures. Additionally, larger banks might have more resources to invest in reporting mechanisms, thus enhancing the quality and quantity of their disclosures. Corporate governance characteristics, such as board size, independence, and gender diversity, are anticipated to positively influence reporting practices, as diverse and independent boards may prioritize environmental issues and foster a culture of accountability. Moreover, adherence to global reporting standards can serve as a crucial driver, as it not only provides a framework for disclosures but also enhances credibility and comparability. Overall, a positive correlation is expected between these determinants and the extent of climate change-related disclosures, reflecting a growing recognition of the importance of sustainability in the banking sector.

2.5.1 Operationalization of research variables

Table 3-2: Operationalization of research variables

Variable	Specific variable name	Type of variable	Measurement	Literature source	Data source
Dependent Variable					
Environmental Disclosure score	Completeness	Continuous	Actual score given to the Bank/ maximum score	Kuswanto (2019), Rakiv (2019)	Bank Annual Reports or Sustainability
Independent variables					
Firm characteristics	Bank size	Continuous	Log of total asset	Dissanayake et al., (2019); Sulistyawati & Qadriatin (2019).	Bank financial statements
	Bank Profitability	Continuous	ROA = Net profit/Total assets	Nathan & El-Shreif (2021); Hossain & Haque (2018).	Bank financial statements
	Financial Leverage	Continuous	Total liabilities / Total assets.	Clarkson et al. (2007); Stanny & Ely (2008).	Bank financial statements
Corporate Governance Characteristics	Board Gender Diversity	Continuous	Proportion of Women in a Bank's Board	Sant'Anna et al., (2018); Pucheta-Martínez and Gallego-Álvarez, (2020)	Bank Annual Reports
	Board Independence	Continuous	Proportion of independent directors in a Bank board	Velte et al., (2020); Liao et al. (2015); and Kiliç & Kuzey (2019).	Bank Annual Reports
	Board Size	Continuous	Log of Board Size	Bose et al., (2018); Luo et al., (2012).	Bank Annual Reports

Source: Author (2025)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methods used to analyse the relationship between the variables in the study. The research design, population, sampling, data collection techniques, and empirical model are described in this chapter.

3.2 Research philosophy

Saunders, Lewis, and Thornhill (2009) state that the word "research philosophy" refers to the systematic perspectives and theories on the process of knowledge development. The focus on quantitative methods for phenomenon investigation is what sets positivist philosophy apart Crossan (2013). Positivist theory involves operationalizing variables and measurements to validate beliefs or hypothetical positions. (Park, & Artino ,2020).

With the assumption that reality is objective and will be measured regardless of the observer and his instrument, positivism investigates previously held beliefs. Finding facts that can be observed and measured is the study's epistemological focus because only these facts can produce reliable and significant data (Crotty, 1998). In this study, the positivist research philosophy is applied to examine the determinants influencing the reporting of voluntary climate change-related disclosures among East African banks. Positivism emphasizes the use of empirical evidence and objective measurements to derive insights, making it particularly suitable for analysing quantifiable variables.

By employing a positivist approach, this research focused on observable data collected from annual reports and sustainability disclosures, allowing for the identification of patterns and relationships among various determinants. Additionally, the positivity philosophy is restricted to data collection and impartial measurement. Moreover, the study is grounded in quantifiable observations, which facilitated statistical analysis and the reporting of quantifiable results.

3.3 Research design

A research design, according to Cooper (2013), is a procedure for obtaining and analyzing data that will allow the researcher to completely answer the research question or evaluate the study hypotheses. Measurement, data analysis, and data collection are further components of the research design (Kothari, 2004). In this context, the study employed a Correlational Research Design to examine the nature of the relationships between the research variables. The descriptive correlational research approach was appropriate for this study because it demonstrated a strong relationship between the variables and, when feasible, allowed for the formulation of valid conclusions (Waringa & Stangor, 2014).

The descriptive correlational research design was suitable for this study as it facilitated the examination of the relationships between firm characteristics such as bank profitability, bank size, and financial leverage and corporate governance characteristics, including board size, board independence, and board gender diversity. This approach allowed for the identification of patterns and trends among these variables and their association with the reporting of climate related disclosures. By utilizing a descriptive correlational framework, the study effectively assessed whether these characteristics are linked to higher levels of disclosure practices in East African commercial bank.

3.4 Population

This section outlines the target population and the sample size that was used for the study.

3.4.1 Target Population

The study focused on commercial banks in Kenya, Uganda, Tanzania, and Rwanda that reported on environmental disclosures using the Global Reporting Initiative (GRI) framework. The GRI framework is a widely recognized set of standards for sustainability reporting, enabling organizations to communicate their Environmental, Social, and Governance (ESG) performance transparently, 37 commercial banks in East Africa met the study's criteria, which were;

i. Adoption of the GRI Framework: Banks that utilized the GRI standards for their sustainability reporting, ensuring comprehensive and comparable disclosures on environmental aspects.

ii. Environmental Disclosures: Banks that reported on environmental aspects, including policies, practices, and performance related to environmental sustainability.

Table 3-1 GRI-adopting commercial banks population distribution

Country	**Number of regulated commercial banks**
Kenya	15
Tanzania	8
Uganda	9
Rwanda	5
Total	**37**

Source: Country Central bank reports (2024)

The study used a census approach, which included all 37 commercial banks in East Africa. By utilizing a census approach, every unit within the population was examined. This method was chosen because the population size was manageable, and complete information for all units were obtained quickly (Kothari, 2004).

3.5 Data Collection Instrument and procedure

Secondary data, which involves using data previously collected for other purposes, was utilized in this study. According to Kothari (2004), secondary data gathering includes using published sources, journals, periodicals, books, magazines, newspapers, weblogs, diaries, letters, government documents, census data, e-journals, and public sector records, among other sources. This approach is time efficient and provides access to a high quality, extensive dataset that would be challenging to obtain through primary data collection.

For this study, panel data covering a period of 7 years from 2017 to 2023 in the banking industry was used as was in studies of similar nature e.g. (Branco & Rodrigues, 2006; Hossain and Reaz, 2007; Menassa, 2010; Khan et al., 2011; Kiliç et al., 2016; Kiliç, 2019).The year 2017 was chosen as a start period because 2017 aligned with increased focus by regulators and central banks including those in East Africa on sustainable finance and climate risk integration in the banking sector. The dataset was unbalanced due to missing observations for certain years for some commercial banks, primarily caused by variations in reporting requirements and data availability. Despite this, the unbalanced nature of the data allowed for a more comprehensive analysis by retaining all available information rather than restricting the sample to institutions with complete data across all periods. The total observations were 197.

This data was sourced from the annual reports or ESG reports of the commercial banks. Ethical clearance was granted by the Ethical Review Committee of Strathmore Business School before the research begun.

3.6 Data analysis

Data analysis involves extracting and organizing data to derive meaningful insights. To ensure data accuracy, the secondary data sources were reviewed for consistency and completeness. Stata 18 was employed to generate both descriptive and inferential statistics. The study utilized descriptive statistics, regression, and correlation analysis for inferential statistics. Findings were presented in tables and graphs.

3.6.1 Development of the Environmental Disclosure Score

The Environmental Disclosure Score (EDS) was developed based on a 31-item checklist primarily adapted from the Global Reporting Initiatives sustainability standards (GRI 301 – GRI 308).

3.6.1.1 Scoring and Classification

Each disclosure item was evaluated with a binary scoring system:

Score of 1: Relevant and complete disclosure.

Score of 0: Partial or non-disclosure.

The disclosure index for each firm was calculated as:

$$\boldsymbol{EDS} = \sum_{i=1}^{31}(d_i) / n$$

This unweighted approach was chosen based on studies e.g. (Giner, 1997) that highlight the arbitrariness of weighted indices, with findings showing little difference in outcomes between weighted and unweighted indices (Chow & Wong-Boren, 1987; Choi, 1973).

3.6.1.2 Reliability and Validation

To ensure the reliability of the EDS, coding rules were applied for disclosure items. A pilot data collection was conducted, utilising three banks' annual and sustainability reports to confirm that the tool is applicable and efficiently captures disclosure data.

The research objectives were analysed using the following models:

Main Effect of Firm and Corporate Governance Characteristics

Model 1: $EDS = \beta_{0it} + \beta_{1it}(BS) + \beta_{2it}(P) + \beta_{3it}(FL) + \varepsilon$……Firm characteristics

Model 2: $EDS = \beta_{0it} + \beta_{1it}(S) + \beta_{2it}(BC) + \beta_{3it}(BGD) + \varepsilon$…… Board Characteristics

Where:

EDS = Environmental Disclosure Score (Dependent Variable)

BS = Bank Size

P = Profitability

FL = Financial Leverage

S = Board Size

BC = Board Composition

BGD = Board Gender Diversity

β1, β2 … β6= coefficient of independent variables

ϵ = Error Term

i= Observations

t- Time period

3.6 Diagnostic Tests

Diagnostic tests, including Haussmann, autocorrelation, stationarity, normality, and heteroscedasticity were used in this study. The regression model's goodness of fit was also evaluated with the aid of these tests.

3.6.1 Multicollinearity Tests

This test's objective is to guarantee that the data obtained is impartial in every way (Disatnik & Sivan, 2016). Put simply, Multicollinearity occurs when there is exact linear correlation or nearly exact linear

correlation between a large number of independent variables. The study will use the Variance of Inflation Factor (VIF) to ascertain whether Multicollinearity exists or not. Values below 10 suggest that multi-collinearity is not an issue, whereas values above 10 suggest that it is.

3.6.2 Heteroscedasticity test

Panel data is typically more susceptible to heteroscedasticity issues; heteroscedasticity causes the variance of the coefficient estimates to increase, which leads to p-values that are smaller than they should be (Imbens & Kolesar, 2016). Therefore, the Breusch–Pagan test will be used in this study to check for heteroscedasticity. This test is used to check for heteroskedasticity in a linear regression model, if the error terms have a normal distribution. It ascertains if the variance of the regression errors is influenced by the values of the independent variables. The null hypothesis is rejected and there is strong evidence of heteroscedasticity if the p-value is 0.05 or below.

3.6.3 Autocorrelation test

Autocorrelation may arise in observations that depend more on aspects than on time (Vanhatalo & Kulahci, 2016). Because traditional research methods like ordinary least squares (OLS) require observation independence, autocorrelation can therefore pose problems. An autocorrelation will aid in determining the similarity between a given time series and a lag value over a given time series and a lag value over a given period. To test for the presence of autocorrelation in the panel data, the Wooldridge test for autocorrelation in panel data was employed. Unlike the Durbin-Watson test, which is more suited for time-series data, the Wooldridge test was specifically designed for use in panel settings. The test evaluates whether there is first-order serial correlation in the idiosyncratic errors of a panel regression model (Wooldridge, 2010). A significant F-statistic ($p < 0.05$) indicates the presence of autocorrelation, while a non-significant result implies that autocorrelation is not a concern. This method is widely used in econometric studies involving panel data because it provides robust results even in small samples and under unbalanced panels (Drukker, 2003)

3.6.4 Hausman test

A Hausman test was conducted to inform the utilisation and decide whether to employ a fixed effect or random effects because the data collected will be panel in nature. If the Hausman test rejects the null hypothesis, where the p-value is below 0.05 level it indicates that the fixed effects model is more appropriate because there is evidence that the random effects are correlated with the regressors.

3.6.5 Normality test

The normal distribution of the data based on the study population was ascertained using the normality test. The Shapiro-Wilk test, which basically helps determine data dependability and useful precision, was used in this study. The Shapiro-Wilk test p-value indicates that there may not be sufficient evidence to reject the null hypothesis of normality if it is higher than the selected significance level (0.05). The data, on the other hand, will show a significant departure from normality if the p-value is less than the significance level.

3.7 Ethical considerations

When conducting research ethically, considerations such as informed consent, confidentiality, and consequences should be made (Serem, & Wanyama, 2013). Obtaining authorization from the appropriate authorities is necessary before beginning any research project. In this case, there is no need for permission because the study utilized secondary data which is openly accessible. However, an ethical clearance from Strathmore University's Institutional Review Board (IRB) was granted. To prevent plagiarism, all used resources were appropriately attributed and text sources mentioned.

CHAPTER FOUR: FINDINGS

4.1 Introduction

This study's main aim was to determine the factors that affect East African commercial banks' climate related disclosures. The dependent variable used was the Environmental Disclosure Score, which was derived as per the Global Reporting Initiatives. The independent variables were firm characteristics and corporate governance characteristics, which were measured by Bank profitability, Bank size, financial leverage, and Board size, Board Independence, Board gender diversity, respectively. This chapter outlines the analysis findings based on the results of each specific objective. It starts with descriptive statistics for the panel data, followed by a detailed presentation of the results for each study objective.

4.2 Descriptive Statistics

The descriptive statistics of the 197 observations are presented in Table 4.1. While the census approach was applied, some banks were excluded due to lack of sustainability reports during the study period. The final dataset comprised 37 banks out of 119 banks in the region, accounting for 31% of the sector.

The mean Return on Assets (ROA), a measure of bank profitability, was 0.014 (SD = 0.050), indicating that, on average, banks generated a return of 1.4% on their assets. The ROA ranged from -0.206 (indicating losses) to 0.465 (high profitability), with a median value of 0.0153. The average total asset value was Kshs 121,927.7 million (SD = Kshs 217,940.2 million), with values ranging from Kshs 2,428.655 million (Min) to Kshs 1,425,370 million (Max). Since the standard deviation is quite large, this suggests significant variability in bank sizes. When measured in log form, the mean bank size was 4.598 (SD = 0.6361), with a range from 3.385 (Min) to 6.153 (Max). The mean financial leverage, measured as total liabilities divided by total assets, was 0.822 (SD = 0.1671), indicating that, on average, banks financed 82.2% of their assets through liabilities. The leverage ratio ranged from 0.016 (least) to 1.056 (highest).

Table 4-1 Summary of firm characteristics descriptive statistics

Descriptives	Bank Profitability (ROA)	Bank size (Total asset) Kshs Million	Financial Leverage (Ratio)
Mean	0.014	121,927.700	0.822
Standard Deviation	0.050	217,940.200	0.167
Min	-0.206	2,428,650	0.016
Max	0.465	1,425,370	1.056

Source: Author (2025)

Regarding corporate governance characteristics, the average board size was 10 members (SD = 3), with a minimum of 5 and a maximum of 21. This suggested that most banks maintain a relatively moderate board size. The mean number of independent directors was 5 (SD = 2), with values ranging from 1 (least independent) to 9 (most independent). This highlights differences in governance structures among

banks. Finally, The average number of female directors per board was 3 (SD = 1), ranging from 0 (no female representation) to 6 (higher female presence).

Table 4-2 Summary of corporate governance descriptive characteristics

Descriptives	**Board size**	**Independent Directors**	**Board Gender Diversity (Female directors)**
Mean	10	5	3
Standard Deviation	3	2	1
Min	5	1	0
Max	21	9	6

Source: Author (2025)

Table 4.3 below indicated that the average Environment Disclosure score was 0.3130, with a standard deviation of 0.189, a maximum EDS score of 0.935 and a Minimum of 0.065. The mean Environment disclosure was 9.7055, a maximum score of 29 and a Minimum of 2 with a standard deviation of 5.8723.

Table 4-3 Descriptive statistics for the dependent variable

Descriptives	**Environmental Disclosure**	**Environmental Disclosure Score ($\sum_{i=1}^{31}(d_i) / n$)**
Mean	9.706	0.313
Standard Deviation	5.872	0.189
Min	2	0.065
Max	29	0.935

Source: Author (2025)

4.2.1 Correlation analysis

Table 4.4 indicates the correlation matrix for all the research variables. Since the panel data was not normally distributed, a non-parametric correlation measure was used. In particular, Spearman's rank correlation coefficient was employed.

Table 4-4 Correlation matrix of the study variables

Variables	Bank size	Bank Profitability	Financial Leverage	Board Size	Board Independence	Board Gender	EDS
Bank Size	1.000						
Bank profitability	0.414 *** 0.000	1.000					
Financial Leverage	0.085 0.268	-0.355*** 0.000	1.000				
Board Size	0.245 *** 0.006	0.321*** 0.000	-0.168** 0.017	1.000			
Board Independence	0.135** 0.087	0.137** 0.082	0.146** 0.033	-0.115 0.111	1.000		
Board Gender Diversity	0.306 *** 0.000	0.304*** 0.000	-0.084 0.2421	0.518*** 0.000	0.095 0.186	1.000	
EDS	0.203*** 0.003	0.336*** 0.000	-0.178*** 0.009	-0.004 0.985	0.176** 0.024	0.171** 0.017	1.000
Spearman rho = 0.171							

Source: Author (2025)

The results show that Bank size exhibits a positive correlation with bank profitability (0.414, p = 0.000). However, its relationship with financial leverage is weak and statistically insignificant (0.085, p = 0.268). Bank size also has a weak but significant positive correlation with board size (0.245, p = 0.006). Furthermore, bank size is positively correlated with board gender diversity (0.306, p = 0.000). Additionally, bank size has a positive correlation with (EDS) (0.203, p = 0.003). Bank profitability shows a significant positive correlation with board size (0.321, p = 0.000). A negative correlation is observed between bank profitability and financial leverage (-0.355, p = 0.000). Additionally, board gender diversity has a strong positive correlation with profitability (0.304, p = 0.000). Profitability also exhibits a positive correlation with EDS (0.336, p = 0.000. Financial leverage is negatively correlated with profitability (-0.355, p = 0.000). Moreover, it has a weak negative correlation with board size (-0.168, p = 0.017). Similarly, financial leverage is negatively correlated with EDS (-0.178, p = 0.009). Board size has a positive correlation with profitability (0.321, p = 0.000). Additionally, board size is positively correlated with board gender diversity (0.518, p = 0.000). However, it has a weak and insignificant correlation with EDS (-0.004, p = 0.985). Board independence has positive correlations with financial leverage (0.146, p = 0.033) and profitability (0.137, p = 0.082), but these relationships are relatively weak. Its correlation with board size is insignificant (-0.115, p = 0.111), indicating no strong relationship between the two variables. Board gender diversity is positively correlated with bank size (0.306, p = 0.000) and profitability (0.304, p = 0.000). It also has a strong correlation with board

size (0.518, p = 0.000). However, its correlation with financial leverage is weak and insignificant (-0.084, p = 0.242). EDS has a moderate positive correlation with bank profitability (0.336, p = 0.000), suggesting that higher executive ownership is associated with better financial performance. However, it is negatively correlated with financial leverage (-0.178, p = 0.009). EDS also has a positive correlation with board independence (0.176, p = 0.024) and board gender diversity (0.171, p = 0.017).

4.3 Pre-estimation tests

Before executing a regression model to evaluate the study hypotheses, pre-estimation tests were carried out. Prior to executing the corresponding regression models, the Hausman test, tests of heteroskedasticity, normality test, autocorrelation test, and multi-collinearity were performed. These tests have been described in the subsection below.

4.3.1 Multicollinearity Test

This test was generally used to determine whether there is a high intercorrelation among two or more independent variables in a multiple regression model. In a perfect situation, independent variables are meant to be independent. Inaccurate forecasts result from high correlation between the variables, which inflate the standard errors and the coefficients. Depending on the other independent variables included in the model, the coefficient estimates can fluctuate greatly when multi-collinearity is included (Dodge,2008).

Table 4-5 Multicollinearity Test

Variable	VIF	Tolerance (1/VIF)
Board Gender Diversity	1.42	0.702
Board Size	1.30	0.768
Bank size	1.21	0.823
Bank profitability (ROA)	1.18	0.846
Financial Leverage	1.15	0.869
Board Independence	1.09	0.921
Mean VIF	**1.23**	

Source: Author (2025)

Table 4.5 presents the Variance Inflation Factor (VIF) analysis, a method used to detect the presence of multicollinearity in the data. Using the method, any values above 10 indicate that multi-collinearity exists but values below 10 indicate that there is none (Field, 2009). The VIF values of the study variables are below 10, hence, the data is fit for adopting regression analysis using the panel regression model.

4.3.2 Normality Test

In panel data modelling, assessing the normality of residuals is crucial for ensuring the validity of statistical inferences. While normality is not a strict assumption for Generalized Least Squares (GLS) or Fixed Effects (FE) models, it is essential for hypothesis testing and constructing confidence intervals (Baltagi, 2008). Finding out if the residuals follow a normal distribution can be aided by normality tests like the Skewness/Kurtosis test (D'Agostino et al., 1990) and the Shapiro-Wilk test (Shapiro & Wilk,

1965). If the residuals deviate significantly from normality, robust standard errors or transformation techniques may be necessary to address potential biases in parameter estimates (Wooldridge, 2010).

Table 4-6 Shapiro-Wilk test Normality Test

Variables	Prob >z
Bank profitability	0.000
Financial Leverage	0.000
Bank size	0.000
Board Gender Diversity	0.216
Board Independence	0.001
Board Size	0.165

Source: Author (2025)

The Shapiro-Wilk test was conducted to assess the normality of the variables in the study. This test evaluated whether the given dataset was drawn from a normally distributed population. The variable is said to be regularly distributed if the p-value is larger than 0.05, and to be deviant of normality if it is less than 0.05 (Shapiro & Wilk, 1965).

From the results, Board Gender Diversity (p = 0.216) and Board size (0.165) are the only variable that possess the attribute of normality. However, Bank Profitability (p = 0.000), Financial Leverage (p = 0.000), Return on Asset (p = 0.000), Board Independence (p = 0.001), all have p-values below the 0.05 threshold, indicating significant departures from normality. When distributions deviates from normality, possible solutions normally include transforming the data, removing outliers, or using an alternative analysis. After applying various data transformations to achieve normality in the study variables, these efforts were not successful for most of the variables excluding Board size and Board Gender Diversity. If transformations do not adequately address non-normality, using regression methods that are less sensitive to deviations from normality is allowed. This situation necessitated considering alternative regression methods that are less sensitive to deviations from normality such as the Generalized linear models (GLMs).

4.3.3 Hausmann Test

Both Fixed Effects (FE) and Random Effects (RE) models are frequently employed in panel modeling. A well-specified RE model encompasses all the benefits of a FE model while offering additional advantages, making it the preferred approach for many practitioners (Shor et al., 2007; Western, 1998). You can pick between a fixed effects model and a random effects model with the use of the Hausman test.

Table 4-7 Hausmann Test

	Coef.
Chi-square test value	16.222
P-value	0.013

Source: Author (2025)

Table 4.6 shows the Hausman test results. The Hausman test is important since It helps one evaluate if a statistical model corresponds to the data. The null hypothesis is that the preferred model is random effects; the alternative hypothesis is that the model is fixed effects. Therefore, a Hausman test was conducted to determine which model best suits the study. Hausman test results are typically easy to interpret; if the p-value is minimal (less than 0.05), the null hypothesis is rejected. In this case, the p-value is 0.013, which is less than 0.05, and therefore we reject the null hypothesis and choose the Fixed Effects (FE) model. However, given that traditional transformations have not achieved normality in the residuals, and considering the Hausman test results favouring the FE model, it was beneficial to explore Generalized Linear Models (GLMs) as an alternative approach. By enabling response variables with error distribution models other than a normal distribution, GLMs expand on linear modelling.

4.3.4 Heteroscedasticity test

Panel data is typically vulnerable to heteroscedasticity issues; this phenomenon causes p-values to be smaller than they should be since it raises the variance of the coefficient estimates. (Verbeek, Arno, 2004). Therefore, this study tested for heteroscedasticity using the Modified Wald test for groupwise heteroskedasticity in fixed effect regression model. This test is used for heteroskedasticity in a linear regression fixed effect model. It determines if the values of the independent variables affect the variance of the regression's errors. The null hypothesis is rejected and there is strong evidence of heteroskedasticity if the p-value is 0.05 or below. Given the nature of panel data, additional diagnostic tests were performed to assess whether the assumptions of homoskedasticity and no serial correlation hold.

Table 4-8 Modified Wald heteroskedasticity test

Ho: sigma(i)^2 = sigma^2 for all i
chi2 (37) = 1031.68
Prob > chi2 = 0.0000

Source: Author (2025)

Table 4.8 shows the heteroskedasticity test; the P-value was 0.000, which was below 0.05. The Modified Wald test results indicate significant heteroskedasticity within the panel data. To address this, along with potential serial correlation, the study employed the Feasible Generalized Least Squares (FGLS) regression method. This approach corrected for these issues, ensuring more reliable and efficient parameter estimates, thereby enhancing the validity of the study's findings.

4.3.5 Autocorrelation test

Autocorrelation in panel data was tested using the Wooldridge test for serial correlation, which examines whether the error terms in a regression model are correlated over time within individual panels. The Wooldridge test is preferred for panel data as it accounts for both cross-sectional and time-series dependencies, making it more robust than traditional time-series methods like the Durbin-Watson test.

Table 4-9 Wooldridge test

Ho: no first order autocorrelation
F(1, 31) = 8.576
Prob > F = 0.006

Source: Author (2025)

A p-value less than 0.05 indicates significant autocorrelation, meaning the residuals were correlated and could lead to biased standard errors and inefficient estimators. If the p-value is greater than 0.05, we fail to reject the null hypothesis, suggesting that no autocorrelation is present. Since the P-value was 0.0063, which was below 0.05, the study data indicated significant autocorrelation which further justified the use of the FGLS model.

4.4 Regression Analysis

Regression analysis examines the relationship between independent and dependent variables. A Feasible Generalized Least Squares (FGLS) regression model was used in this study because it effectively accounts for heteroskedasticity and panel-specific autocorrelation, which were detected in the data. The findings are presented at country and general setting level.

4.4.1 Country-specific findings

This section presents regression results at country level for Kenya, Uganda, Tanzania and Rwanda.

4.4.1.1 Kenyan

Table 4-10 Corporate Governance Characteristics Kenya regression results

EDS	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Board Size	-0.018	0.004	-4.23	0.000	-0.027	-0.01	***
Board Independence	0.016	0.007	2.28	0.022	0.002	0.03	**
Board Gender Diversity	0.021	0.011	1.98	0.048	0.000	0.042	**
Constant	0.403	0.067	5.98	0.000	0.271	0.535	***
Mean dependent var		0.348	SD dependent var			0.198	
Number of obs		85	Chi-square			23.772	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

The regression results for Kenyan commercial banks revealed several important insights into the relationship between corporate governance and firm characteristics and the environmental disclosure scores (EDS). Board size was found to have a negative and statistically significant relationship with EDS ($\beta = -0.018$, $p < 0.01$). Meaning that a unit increase in a board member leads to a 1.8% decrease in disclosures. This implied that larger boards are associated with lower levels of climate-related disclosures with Kenyan commercial bank. In contrast, board independence was positively and significantly associated with EDS ($\beta = 0.016$, $p < 0.05$), meaning that a unit increase in an independent board member lead to a 1.6% increase in disclosures suggesting that banks with a higher proportion of

independent directors are more likely to disclose climate-related information. Similarly, board gender diversity exhibited a positive and statistically significant effect (β = 0.021, p = 0.048), meaning that a unit increase in a woman in a board lead to a 2.1% increase in disclosures, indicating that boards with female representation tend to disclose more climate-related information. This finding supports the view that diverse boards are more responsive to broader stakeholder interests and are more likely to prioritize ethical governance and social responsibility (Liao et al., 2015).

Table 4-11 Firm Characteristics Kenya regression results

EDS	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bank Size	0.035	0.032	1.09	0.276	-0.028	0.097	
Financial Leverage	-0.081	0.287	-0.28	0.777	-0.645	0.482	
Bank Profitability	0.189	0.572	2.08	0.038	0.068	2.31	**
Constant	0.234	0.241	0.97	0.331	-0.238	0.707	
Mean dependent var		0.348	SD dependent var			0.198	
Number of obs		85	Chi-square			23.992	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

Bank profitability (measured by ROA) showed a strong positive and significant relationship with EDS (β = 0.189, p < 0.05). This meant that a unit increase in ROA lead to a 18.9 % increase in disclosures suggesting that more profitable banks disclose significantly more environmental information, possibly because they have greater resources to allocate toward sustainability reporting and a stronger incentive to signal long-term value creation to stakeholders (Dhaliwal et al., 2011; Wang et al., 2016).However, bank size (β = 0.035, p = 0.276) and financial leverage (β = -0.081, p = 0.777) were not statistically significant predictors of EDS in the Kenyan banking context. Although the positive sign for bank size aligns with previous literature suggesting larger firms face greater public scrutiny, the lack of significance implies that size alone does not explain disclosure behaviour in this context. Similarly, while the negative sign for leverage indicates that more indebted banks may be less likely to engage in voluntary environmental disclosures. These findings suggest that governance structures and profitability are stronger determinants of climate-related disclosure than size or leverage for Kenyan banks.

The overall model fit, reflected by a Chi-square value of 23.772 (p < 0.01) for the governance model and 23.992 (p < 0.01) for the firm characteristics model, confirms that the variables included significantly explain variation in the environmental disclosure score in Kenyan commercial banks.

4.4.1.2 Tanzania

The regression analysis for Tanzanian commercial banks reveals key differences in how corporate governance and firm characteristics influence environmental disclosure scores (EDS), compared to their Kenyan counterparts.

Table 4-12 Firm Characteristics Tanzania regression results

EDS	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bank Size	0.212	0.052	4.10	0.000	0.111	0.314	***
Financial Leverage	-0.111	0.111	-1.00	0.317	-0.328	0.106	
Bank Profitability	0.967	0.557	3.53	0.000	0.875	3.06	***
Constant	-0.575	0.214	-2.69	0.007	-0.994	-0.156	***
Mean dependent var		0.249	SD dependent var			0.152	
Number of obs		38	Chi-square			45.554	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

Bank size demonstrated a positive and statistically significant relationship with EDS ($\beta = 0.212$, $p < 0.01$). A unit increase in bank size is associated with a 21.2% rise in the environmental disclosure score, supporting the argument that size enhances a firm's capacity and incentive to adopt sustainability reporting practices. Additionally, bank profitability exhibited a strong positive and significant effect on EDS ($\beta = 0.967$, $p < 0.01$), suggesting that more profitable banks tend to disclose substantially more environmental information. A unit increase in ROA leads to a 97% increase in disclosure for Tanzania commercial banks. This result reinforces the notion that firms with better financial performance are more capable of allocating resources to sustainability initiatives and are also more motivated to signal long-term stability and legitimacy to investors and stakeholders (Dhaliwal et al., 2011; Wang et al., 2016).

On the other hand, financial leverage shows a negative but statistically insignificant relationship with EDS ($\beta = -0.111$, $p = 0.317$). Although the negative direction supports the idea that highly leveraged banks might reduce voluntary disclosures due to financial constraints or reputational risk, the lack of significance implies that leverage is not a strong determinant of environmental reporting among Tanzanian banks.

Table 4-13 Corporate Governance Characteristics Tanzania regression results

EDS	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Board Size	-0.009	0.006	-1.51	0.132	-0.02	0.003	
Board Independence	0.012	0.009	1.41	0.16	-0.005	0.029	
Board Gender Diversity	0.076	0.023	3.36	0.001	0.032	0.12	***
Constant	0.034	0.064	0.53	0.595	-0.092	0.16	
Mean dependent var		0.249	SD dependent var			0.152	
Number of obs		38	Chi-square			17.814	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

Board gender diversity stands out as the only governance variable with a positive and statistically significant impact on EDS ($\beta = 0.076$, $p < 0.01$). This suggests that banks with more gender-diverse boards are significantly more likely to engage in environmental disclosures. A possible explanation is

that gender-diverse boards bring a broader range of perspectives and a stronger orientation toward ethical practices, stakeholder engagement, and sustainability-related decision-making (Liao et al., 2015; Chithambo & Tauringana, 2020). A unit increase in women representation in boards in Tanzanian banks corresponds to a 7.6% increase in disclosure. However, board size (β = -0.009, p = 0.132) and board independence (β = 0.012, p = 0.160) were not statistically significant.

The model's overall goodness-of-fit, indicated by a Chi-square value of 45.554 (p < 0.01) for the firm characteristics' regression and 17.814 (p < 0.01) for the governance model, confirms that the variables included provide a statistically significant explanation for the variation in EDS.

4.4.1.3 Uganda

Table 4-14 Corporate Governance Characteristics Uganda regression results

EDS	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Board Size	-0.004	0.008	-0.45	0.652	-0.02	0.013	
Board Independence	0.031	0.008	3.64	0.000	0.014	0.047	***
Board Gender Diversity	0.065	0.011	6.05	0.000	0.044	0.086	***
Constant	-0.027	0.114	-0.23	0.815	-0.251	0.198	
Mean dependent var		0.318	SD dependent var			0.183	
Number of obs		45	Chi-square			65.269	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

Board independence is positively and significantly associated with EDS (β = 0.031, p < 0.01). This indicates that banks with a higher proportion of independent directors tend to disclose more environmental information in Uganda, with a unit increase in an independent board member leads to a 3.1% increase in disclosures. This finding aligns with existing literature that highlights the role of independent governance structures in improving the quality and frequency of voluntary sustainability disclosures (Liao et al., 2015).

Board gender diversity is also found to be positively and highly significant (β = 0.065, p < 0.01), suggesting that the inclusion of women on corporate boards has a meaningful impact on disclosure practices. A unit increase in a woman in a board is associated with a 6.5% increase in the environmental disclosure score for Ugandan banks. This supports arguments from gender-diversity literature, which emphasize that women are often more sensitive to social and environmental issues and are likely to influence a firm's sustainability agenda and ethical reporting (Chithambo & Tauringana, 2020). The magnitude and significance of this result indicate that gender inclusion may be a key driver of transparency in Uganda's banking sector.

In contrast, board size (β = -0.004, p = 0.652) was not statistically significant. Although the coefficient is negative, consistent with the idea that larger boards may hinder efficient decision-making or lead to weaker oversight, the result suggests no conclusive evidence that board size affects environmental disclosure in Uganda.

Table 4-15 Firm Characteristics Uganda regression results

EDS	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bank Size	-0.007	0.063	-0.10	0.917	-0.131	0.117	
Financial Leverage	-0.094	0.059	-1.58	0.114	-0.21	0.022	
Bank Profitability	0.368	0.263	1.40	0.161	-0.146	0.883	
Constant	0.376	0.285	1.32	0.187	-0.183	0.936	
Mean dependent var		0.318	SD dependent var			0.183	
Number of obs		45	Chi-square			7.035	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

The regression results show no statistically significant relationships between the financial indicators and environmental disclosure. Bank size (β = -0.007, p = 0.917) and profitability (β = 0.368, p = 0.161) both showed non-significant relationships with EDS. Interestingly, bank size even displayed a negative coefficient, although very weak, suggesting that in the Ugandan context, larger size does not necessarily correspond to higher levels of disclosure. Similarly, while the profitability coefficient is positive as expected from prior studies linking stronger financial performance to more voluntary disclosure the result is statistically insignificant, indicating that profitability alone may not be a strong motivator for climate-related reporting among Ugandan banks.

Financial leverage (β = -0.094, p = 0.114) also shows a negative relationship, which is consistent with theoretical expectations that firms with higher debt levels may avoid voluntary disclosures to prevent further scrutiny from creditors. However, the p-value suggests marginal significance at best, so the relationship remains inconclusive.

Overall, the governance model showed strong explanatory power, with a Chi-square value of 65.269 (p < 0.01), while the firm characteristics model had a much weaker fit (Chi-square = 7.035, not statistically significant), indicating that corporate governance factors are far more influential than firm-level financial indicators in determining EDS outcomes in Uganda.

4.4.1.4 Rwanda

The regression results for Rwandan commercial banks reveal a weak relationship between both firm characteristics and corporate governance variables and environmental disclosure scores (EDS), with no overall model showing strong statistical significance.

Table 4-16 Firm Characteristics Rwanda regression results

EDS	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bank Size	0.142	0.107	1.33	0.183	-0.067	0.352	
Financial Leverage	-0.208	0.196	-1.06	0.29	-0.593	0.177	
Bank Profitability	-0.381	1.477	-0.26	0.796	-3.277	2.514	
Constant	-0.181	0.546	-0.33	0.74	-1.25	00.889	
Number of obs		29	Chi-square			6.777	
*** p<.01, ** p<.05, * p<.1							

None of the three independent variables bank size, financial leverage, or profitability had a statistically significant effect on environmental disclosure. Bank size had a positive coefficient (β = 0.142) but a p-value of 0.183, indicating that although larger banks may be more inclined to disclose climate-related information, the result is not statistically robust. Financial leverage (β = -0.208, p = 0.290) showed a negative relationship, suggesting that more leveraged banks might disclose less, possibly due to the pressure to maintain investor confidence and avoid revealing additional risk exposure. However, this relationship also lacks statistical significance. Interestingly, bank profitability had a negative coefficient (β = -0.381, p = 0.796), which goes against expectations and is statistically insignificant. These findings suggest that firm-level financial performance may not play a meaningful role in driving environmental disclosure among Rwandan banks. The low chi-square value (6.777) further confirms the model's limited explanatory power.

Table 4-17 Corporate Governance Characteristics Rwanda regression results

EDS	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Board Size	0.039	0.025	1.55	0.12	-0.01	0.089	
Board Independence	0.01	0.017	0.58	0.559	-.024	0.044	
Board Gender Diversity	-0.081	0.034	-2.40	0.016	-0.147	-.015	**
Constant	0.089	0.212	0.42	0.676	-0.327	0.505	
Number of obs		29	Chi-square			12.527	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

While board size (β = 0.039, p = 0.120) and board independence (β = 0.010, p = 0.559) were positively associated with disclosure, neither relationship reached statistical significance. However, board gender diversity was found to have a negative and significant relationship with environmental disclosure (β = -0.081, p < 0.05). This is in contrast to findings in other countries like Uganda and Kenya, where gender diversity had a positive impact. A possible explanation for this result could be that in Rwanda, female representation on boards may be more symbolic.

The overall model for governance characteristics has a chi-square value of 12.527, indicating slightly better explanatory power than the firm characteristics model, but still relatively weak.

4.4.2 Generalized East Africa Commercial Banks Regression Results

4.4.2.1 Firm characteristics and climate-related disclosures

Table 4.10 displays the regression results under corporate governance characteristics, the independent variables included: Bank Size, Financial Leverage, and Bank Profitability.

Table 4-18 Firm characteristics and climate-related disclosures regression results

EDS	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bank Size	0.089	0.014	6.14	0.000	0.060	0.117	***
Financial Leverage	-0.086	0.046	-1.89	0.059	-0.176	0.003	*
Bank Profitability	0.450	0.184	2.45	0.014	0.090	0.809	**
Constant	-0.045	0.071	-0.64	0.521	-0.184	0.093	
Number of obs	196	Chi-square				66.170	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

The findings indicate a significant positive relationship between bank size (Log asset) and EDS environmental disclosures score ($\beta = 0.089$, $p < 0.01$) with a P-value of 0.000. This suggests that larger firms tend to disclose more climate-related information compared to smaller firms. The results also indicate that a-unit increase in bank size is associated with an 8.9% higher disclosure level. A possible explanation is that larger firms face greater stakeholder pressure (Freedman & Jaggi, 2005) and higher public scrutiny (Luo et al., 2012), making them more likely to engage in transparent environmental reporting (Chithambo & Tauringana, 2020).

Bank size, which was measured by Return on Assets (ROA), is positively associated with EDS ($\beta = 0.45$, $p < 0.05$) with a p-value of 0.014, indicating that more profitable firms disclose more climate-related information. The results showed that a unit increase in ROA leads to a 45% increase in disclosure. This supports the argument that firms with strong financial performance have the resources and incentives to engage in sustainability reporting (Dhaliwal et al., 2011). Profitability may also signal to investors and stakeholders that the firm can afford sustainability initiatives without compromising financial stability (Wang et al., 2016). This finding aligns with stakeholder and legitimacy theories, which suggest that profitable firms engage in environmental reporting to enhance reputation and maintain legitimacy (Gray et al., 1995).

Financial leverage for East African commercial banks ($\beta = -0.086$, $p < 0.10$) exhibits a negative relationship with environmental disclosures score with a p-value of 0.059, though it is only marginally significant. The results indicated that a unit increase in leverage leads to an 8.6% decrease in disclosure. This suggests that highly leveraged commercial banks may be less transparent in their climate-related reporting. One explanation is that firms with high debt levels prioritize financial obligations over

voluntary disclosures (Reverte, 2009), as they may fear negative investor reactions if environmental liabilities are perceived as costly. However, the p-value (0.059) suggests that this relationship is not strongly conclusive, indicating that further research is needed to establish a clearer link between financial leverage and climate disclosures.

The chi-square value (66.17, $p < 0.01$) indicates that the overall model is statistically significant, confirming that the included variables explain a meaningful portion of the variation in climate-related disclosures.

4.4.2.2 Corporate Governance characteristics and climate-related disclosures

Table 4.11 below displays the regression results under corporate governance characteristics, the independent variables included: Board Size, Board Independence, and Board Gender Diversity.

Table 4-19 Corporate Governance and climate related disclosures regression results

EDS	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Board Size	-0.01	0.002	-4.35	0.000	-0.015	-0.006	***
Board Independence	0.019	0.004	4.82	0.000	0.011	0.027	***
Board Gender Diversity	0.049	0.007	6.86	0.000	0.035	0.062	***
Constant	0.155	0.036	4.26	0.000	0.084	0.227	***
Number of obs			197	Chi-square			87.516
*** p<.01, ** p<.05, * p<.1							

Source: Author (2025)

The negative and significant relationship between board size and EDS ($\beta = -0.01$, $p = 0.000$) suggests that larger boards are associated with lower climate-related disclosure levels and a unit increase in board size amongst East African commercial banks leads to a 1% decrease in climate-related disclosures. This result aligns with the argument that larger boards can lead to inefficiencies in decision making and weak coordination, making it harder to implement sustainability initiatives (Jaggi & Leung, 2007). Smaller, more cohesive boards may be more effective in promoting ESG transparency (Issa, 2020).

The positive and significant relationship between board independence and climate disclosure ($\beta = 0.019$, $p = 0.000$) supports the idea that independent directors play a monitoring role that enhances transparency. The results also indicated that a unit increase in independent board members leads to a 1.9% increase in climate related disclosures among East African commercial banks. This supports the argument that independent board members are less likely to be influenced by management and more likely to advocate for stakeholder interests, including environmental responsibility (Hussain et al., 2018).

The strongest positive relationship is observed between board diversity and climate disclosures ($\beta = 0.049$, $p = 0.000$), indicating that firms with more gender-diverse boards disclose significantly more climate-related information. This also means that a unit increase in women within the East African commercial banks boards leads to a 4.9% increase in climate related disclosures. Gender-diverse boards

are often linked to greater stakeholder engagement, ethical decision-making, and sustainability efforts (Bear et al., 2010).

The chi-square value (87.516, $p < 0.01$) confirms that the model is highly significant, indicating that board characteristics meaningfully explain variations in climate-related disclosure.

CHAPTER FIVE: DISCUSSION, CONCLUSION, AND RECOMMENDATION

5.1 Introduction

The primary objective of this study was to examine the factors that influence climate-related disclosures among East African commercial banks. In line with this objective, this chapter discusses the findings, conclusions, and recommendations for future research based on the specific research objectives. Additionally, the chapter integrates the results with insights from the literature review.

5.2 Summary of research findings

5.2.1 Firm characteristics and climate-related disclosures

The findings of this study reveal that firm characteristics significantly influence climate-related disclosures amongst East African commercial banks similar to studies of (Zhang & Wang, 2021; Huang & Lim,2023). Specifically, firm size (log of assets) and return on assets (ROA) positively impact disclosure levels, while financial leverage does not exhibit a statistically significant relationship with climate-related reporting.

For instance, Gerged et al. (2021) found that larger firms tend to disclose more environmental information due to greater regulatory scrutiny and stakeholder pressure. Similarly, Kilic et al. (2021) highlighted that financially stable firms with higher profitability (ROA) are more likely to engage in climate-related disclosures as part of their corporate responsibility and risk management strategies.

The insignificant relationship between financial leverage and climate disclosures just like (Ohidoa et al., 2016; Dibia and Onwuchekwu, 2015; Martinez-Ferrero et al., 2013; Permana & Raharja, 2012; Prastiwi et al., 2016; Suleiman et al., 2014) contrasts with some earlier studies that found a link between leverage and sustainability reporting (Dibia & Onwuchekwa, 2021; Patrick et al., 2017; Maliah et al., 2014; Andrikopoulos & Kriklani, 2013; and Clarkson et al., 2011). However, Branco and Rodrigues (2008) suggest that firms with high leverage may prioritize financial stability over voluntary disclosures, which could explain the lack of significance in this study.

Larger firms attract more public attention and are more visible, which increases their need to address stakeholders' environmental and social concerns (Gerged et al., 2021; Kilic et al., 2021). However, the role of financial leverage in climate disclosures remains inconclusive, suggesting a need for further research into how capital structure influences environmental transparency.

Overall, these findings indicate that larger and more profitable banks are more likely to disclose climate-related information, likely due to increased stakeholder expectations and regulatory pressures. The finding that larger firms and more profitable banks tend to disclose more is consistent with the stakeholder theory.

5.2.2 Corporate Governance characteristics and climate related disclosures

The findings of this study indicated that corporate governance characteristics significantly influence climate-related disclosures among East African commercial banks. Specifically, board independence and board gender diversity positively impact disclosures, while board size has a negative effect.

These results are underpinned by several theoretical perspectives. From the agency theory viewpoint, the presence of independent directors helps mitigate agency conflicts between managers and shareholders by enhancing oversight and ensuring that management acts in the best interests of stakeholders (Albitar et al., 2020). Independent board members are more likely to demand transparent climate-related disclosures, reducing information asymmetry and improving accountability (Yusoff et al., 2021).

From a stakeholder theory perspective, gender-diverse boards are more attuned to broader stakeholder interests, including environmental and social concerns. Female directors often bring diverse experiences and values, leading to increased responsiveness to stakeholder expectations and stronger commitment to sustainability practices (Post et al., 2015; Dang et al., 2021). Thus, gender diversity contributes positively to climate-related disclosures by addressing the concerns of stakeholders such as investors, regulators, and the public.

Additionally, legitimacy theory supports the idea that firms enhance their environmental disclosures to maintain social legitimacy and demonstrate alignment with societal norms. As climate concerns gain prominence globally, companies particularly in regulated sectors like banking—use disclosure to legitimize their operations. A well-structured board with independent and gender-diverse members signals a commitment to transparency, strengthening the firm's legitimacy (Al-Shaer & Zaman, 2016).

Conversely, the negative relationship between board size and climate disclosures aligns with agency theory, which suggests that overly large boards may dilute responsibility and hinder effective monitoring. Coordination difficulties and reduced individual accountability in large boards may lead to weaker governance and less proactive climate-related reporting.

Overall, the study supports the notion that strong governance structures particularly independent and gender-diverse boards play a critical role in enhancing climate-related disclosures. These findings are consistent with agency, stakeholder, and legitimacy theories, all of which emphasize transparency, accountability, and responsiveness as core drivers of disclosure behavior in firms

5.3 Conclusion

The study finds that both firm-specific characteristics and corporate governance factors significantly influence climate-related disclosures among East African commercial banks. Key firm-specific indicators such as firm size and profitability positively impact disclosure levels, while financial leverage does not show a significant effect. Additionally, corporate governance characteristics such as board

independence and gender diversity enhance climate related disclosures, whereas larger board sizes negatively impact disclosures.

In conclusion, this study highlights the importance of both financial strength and governance effectiveness in driving environmental transparency. Policymakers and banking institutions should consider these factors when developing strategies to enhance climate-related disclosures and sustainability reporting.

5.4 Recommendations

The findings of this study emphasized the importance of both firm-specific and corporate governance factors in enhancing climate-related disclosures among East African commercial banks. Based on these results, several recommendations can be made, i.e., Banks should prioritize having a more independent and gender-diverse board, as these characteristics have been shown to positively impact transparency in climate-related disclosures. Regulators may also consider setting guidelines for board composition to encourage improved governance practices. Commercial banks within East Africa should also strengthen their financial performance by improving their profitability (ROA) and asset base. Equally, they should focus on strategies that enhance profitability, such as efficient asset management and sustainable investment decisions, which could lead to better environmental reporting. Since larger board sizes were found to negatively affect disclosure levels, banks should ensure that boards remain effective and agile, with an optimal size that fosters efficient decision-making and transparency. On the other hand, Policymakers should encourage mandatory and standardized climate-related disclosures to improve transparency across the financial sector. Regulatory frameworks should align with international sustainability reporting standards to promote best practices, and finally, since financial leverage did not show a significant impact on disclosure, banks should balance financial risk with sustainability commitments to ensure long-term resilience and transparent environmental reporting.

5.5 Limitation of the study

Although this study offers insightful information, there are a number of limitations that should be noted. The study focused solely on East African commercial banks, which may limit the generalizability of the findings to other industries and regions. Future research should consider a broader sectoral and geographic scope. The study also relied on publicly available disclosures and financial reports, but some banks did not consistently report their environmental data, leading to missing observations. Improving disclosure requirements and data accessibility would enhance the robustness of future research. Despite these limitations, this study provides a strong foundation for understanding the factors influencing climate-related disclosures in the banking sector within East Africa and offers insights for policymakers, financial institutions, and researchers seeking to improve transparency in climate-related reporting

5.6 Areas of further study

There is a possibility of expanding sectoral coverage for future studies, which could examine the relationship between corporate governance, firm characteristics, and climate-related disclosures in other sectors beyond banking, such as insurance, manufacturing, or energy, to assess whether similar factors influence disclosure practices across industries. Also, with increasing global emphasis on sustainability reporting and ESG regulations, future research could assess how new disclosure policies or international frameworks such as ISSB or TCFD guidelines, impact corporate climate disclosures in emerging economies.

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Appendix I: Data Collection sheet

			Independent Variable						Dependent Variable
Bank code	**Country**	**Year**	**Bank Prof**	**Bank Size**	**Financial Leverage**	**Board Size**	**Board Independence**	**Board Gender**	**Environmental disclosure score**
101		2017							
		2018							
		2019							
		2020							
		2021							
		2022							
		2023							
102		2017							
		2018							
		2019							
		2020							
		2021							
		2022							
		2023							

Appendix II: GRI-Environmental Disclosure Checklist

GRI standard	Disclosure	Score	Total Maximum score
GRI 301: Materials 2016	301-1 Materials used by weight or volume	1	3
	301-2 Recycled input materials used	1	
	301-3 Reclaimed products and their packaging materials	1	
GRI 302: Energy 2016	302-1 Energy consumption within the organization	1	5
	302-2 Energy consumption outside of the organization	1	
	302-3 Energy intensity	1	
	302-4 Reduction of energy consumption	1	
	302-5 Reductions in energy requirements of products and services	1	
GRI 303: Water and Effluents 2018	303-1 Interactions with water as a shared resource	1	5

	303-2 Management of water discharge-related impacts	1	
	303-3 Water withdrawal	1	
	303-4 Water discharge	1	
	303-5 Water consumption	1	
GRI 304: Biodiversity 2016	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	1	4
	304-2 Significant impacts of activities, products and services on biodiversity	1	
	304-3 Habitats protected or restored	1	
	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	1	
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	1	7
	305-2 Energy indirect (Scope 2) GHG emissions	1	
	305-3 Other indirect (Scope 3) GHG emissions	1	
	305-4 GHG emissions intensity	1	
	305-5 Reduction of GHG emissions	1	
	305-6 Emissions of ozone-depleting substances (ODS)	1	

	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	1	
GRI 305: Emissions 2016	306-1 Waste generation and significant waste-related impacts	1	5
	306-2 Management of significant waste-related impacts	1	
	306-3 Waste generated	1	
	306-4 Waste diverted from disposal	1	
	306-5 Waste directed to disposal	1	
GRI 308: Supplier Environmental Assessment 2016	308-1 New suppliers that were screened using environmental criteria	1	2
	308-2 Negative environmental impacts in the supply chain and actions taken	1	
Total		**31**	**31**

Appendix III: List of Banks

List of Commercial Banks in Kenya
1. Absa Bank Kenya
2. Access Bank Kenya
3. Bank of Africa
4. Bank of India
5. Bank of Baroda
6. Citibank

7. Cooperative Bank of Kenya
8. Commercial International Bank
9. Ecobank Kenya
10. Equity bank
11. Kenya Commercial Bank
12. Paramount Universal Bank
13. Stanbic Holdings plc
14. Standard Chartered Kenya
15. United Bank for Africa
Source: Banks supervision annual reports (2023)
List of Commercial Banks in Tanzania
1. United bank for africa tanzania limited
2. Ecobank tanzania limited
3. Citibank tanzania limited
4. Bank of baroda tanzania limited
5. Bank of india tanzania limited
6. Bank of africa tanzania limited
7. Kcb bank tanzania limited
8. Equity bank tanzania limited
Source : Financial sector supervision (2023)
List of Commercial Banks in Uganda
1. Bank of Africa Uganda Limited
2. Bank of Baroda Uganda Limited
3. Bank of India Uganda Limited
4. Absa Bank Uganda Limited
5. KCB Uganda Limited
6. Stanbic Bank Uganda Limited
7. Standard Chartered Bank Uganda Limited

8. Equity Bank Uganda Limited
9. Ecobank Uganda Limited
Source: Bank of Uganda website, Licensed Banks Report (2023)
List of Commercial Banks in Rwanda
1. Access Bank Rwanda
2. Bank of Africa Rwanda Plc
3. Bank of Kigali
4. Equity Bank Rwanda Limited
5. Ecobank Rwanda
6. GTBank Rwanda Plc
Source: National Bank of Rwanda website, Licensed Banks Report (2023)

Appendix IV: SU Ethical Approval

Strathmore UNIVERSITY

5th February 2025

Mr Omesa Arita,
omesahillary84@gmail.com

Dear Mr Omesa,

RE: Determinants of Reporting Climate Change Related Disclosures amongst East African Banks

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2517/24.** The approval period is from **5th February 2025 to 4th February 2026.**

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,