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Oduro, Konadu Frederick

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Oduro, Konadu Frederick

Philippine Christian University, Manila-Philippines

Email: **odurokonadu5@gmail.com**

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Abstract

Commercial banks are key in modern economies by mobilizing savings, allocating credit, and supporting sustainable economic growth. In recent years, growing climate risks, regulatory pressures, and stakeholder expectations have expanded the definition of bank performance beyond traditional financial indicators to include sustainability considerations. Green finance has therefore emerged as a strategic mechanism through which banks can align profitability objectives with environmental responsibility. Despite increasing policy attention and voluntary sustainability frameworks, the extent to which green finance influences the performance of commercial banks in developing economies such as Ghana, remains insufficiently documented. This study sought to assess the effect of green finance on the performance of commercial banks in Ghana, focusing on profitability, asset quality, and long-term financial sustainability. The study adopted a desktop review research design guided by a positivist research philosophy. Relevant studies were identified using key search terms related to green finance, green banking practices, sustainable finance, commercial bank performance, and climate finance. The findings from the reviewed studies indicate that green finance generally have positive influence on the performance of commercial banks. Banks engaging in green lending, environmentally screened investments, and sustainable finance practices tend to record improvements in profitability, asset quality, and performance stability. These gains are largely associated with enhanced risk management, reduced exposure to environmentally risky assets, and alignment with emerging sustainable growth sectors. The study concludes that green finance represents a viable pathway for enhancing the performance of commercial banks in Ghana, provided it is embedded within core banking strategies and supported by strong institutional and regulatory frameworks. In view of these findings, the study recommends that policymakers should support enabling frameworks and incentives to support effective green finance integration among commercial banks in Ghana.

Keywords: *Green finance; Commercial bank performance; Sustainable banking; Financial sustainability; Environmental risk management*

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1.0 Introduction

Commercial banks play a key role in modern economies by mobilizing savings and channeling financial resources toward productive investment activities that support growth and development (Ikechi & Anthony, 2021). Through credit creation, banks enable businesses to grow operations, households to smooth consumption, and governments to finance development priorities without immediate fiscal strain (Okoye et al., 2020). Beyond lending, commercial banks facilitate payment systems and financial intermediation that enhance market efficiency and economic coordination (Ozili, 2022). Their position within the financial system also makes them critical conduits for monetary policy transmission, influencing liquidity conditions and macroeconomic stability (Zheng et al., 2021). As economies evolve and grow, banks increasingly provide advisory, digital, and sustainability-oriented services that respond to emerging development challenges (Vuong et al., 2025). The growing scope of banking activities places greater responsibility on banks to align financial intermediation with broader economic and societal objectives (Hussain et al., 2024). Consequently, commercial banks are no longer considered solely as profit-driven entities but as strategic institutions defining long-term economic trajectories (Zhang & Zhou, 2022).

The performance of commercial banks is an important indicator of financial system health and institutional resilience within an economy (Mangwa & Jagongo, 2022). Bank performance is traditionally evaluated using measures such as profitability, efficiency, asset quality, and liquidity, which collectively reflect managerial effectiveness and risk management capacity (Khatun et al., 2024). Strong performance enhances depositor confidence and ensures the stability of credit supply to key sectors of the economy (Zheng et al., 2021). In contrast, continued underperformance exposes banks to solvency risks and weakens their ability to support economic activity during periods of uncertainty (Okoye et al., 2020). Competitive pressures further forces banks to continuously improve performance to retain market relevance and investor trust (Hussain et al., 2024). Regulatory authorities also rely on performance indicators to assess compliance and systemic risk exposure within the banking sector (Ozili, 2022). As financial markets become more integrated and complex, performance has emerged as both an operational and strategic imperative for commercial banks (Zhang & Zhou, 2022).

In recent years, the meaning of bank performance has expanded beyond conventional financial outcomes to include sustainability-oriented dimensions (Zheng et al., 2021). Stakeholders increasingly expect banks to demonstrate responsible lending practices that account for environmental and social risks alongside financial returns (Akomea-Frimpong et al., 2022). This change reflects growing recognition that environmental degradation and climate risks pose material risks to financial stability and long-term bank performance (Ozili, 2022). Banks that fail to integrate sustainability considerations are likely to face rising credit risks, reputational damage, and regulatory pressures (Chen et al., 2022). Conversely, institutions that proactively incororate sustainability into performance frameworks are better positioned to manage emerging risks and seize new financing opportunities (Hussain et al., 2024). Sustainability-oriented performance is therefore becoming a marker of strategic adaptability rather than a peripheral concern (Vuong et al., 2025). This evolving understanding of performance provides a foundation for examining the role of green finance within banking operations (Zhang & Zhou, 2022).

Green finance has been touted as a strategic approach that directs financial resources toward environmentally sustainable activities while maintaining financial viability (Ozili, 2022). It encompasses green lending, green bonds, sustainable investment products, and environmentally responsible risk assessment practices (Chen et al., 2022). Through green finance, banks influence

corporate behavior by incentivizing investments in renewable energy, energy efficiency, and low-carbon technologies (Zhang et al., 2021). The adoption of green finance aligns financial intermediation with global climate and sustainability agendas without compromising institutional stability (Akomea-Frimpong et al., 2022). Green finance also enables banks to respond proactively to environmental regulations and climate-related financial disclosures (Chen et al., 2025). As climate risks intensify, green finance has shifted from a voluntary initiative to a strategic necessity for banks (Hussain et al., 2024). This transformation underscores the relevance of green finance as a driver of both environmental and financial outcomes within the banking sector (Zhang & Zhou, 2022).

The integration of green finance into banking operations has been associated with improvements in environmental and sustainability performance (Gidage & Bhide, 2025). Banks that adopt green finance practices demonstrate improved ability to manage environmental risks embedded in their loan portfolios (Thapliyal et al., 2025). Green financing activities also support banks' corporate social responsibility commitments by aligning lending decisions with sustainability goals (Gazi et al., 2024). These practices strengthen banks' reputational capital and stakeholder trust, which are increasingly linked to long-term competitiveness (Hussain et al., 2024). Empirical evidence suggests that green finance initiatives contribute to improved sustainability metrics without undermining financial stability (Anggara & Harori, 2025). The strategic relevance of green finance is further reinforced by regulatory encouragement and policy incentives (Chen et al., 2025). As a result, green finance is increasingly embedded within mainstream banking strategies rather than treated as a niche activity (Ozili, 2022).

Green finance also holds important implications for the financial performance of commercial banks (Nagina, 2025). Through financing environmentally sustainable projects, banks can diversify their portfolios and reduce exposure to high-risk, pollution-intensive sectors (Khatun et al., 2024). Green assets often exhibit stable long-term returns due to policy support and growing market demand (Zhang et al., 2021). Banks engaged in green finance may also benefit from lower funding costs through access to green bonds and sustainability-linked instruments (Hussain et al., 2024). Improved environmental risk management contributes to lower default probabilities and improved asset quality (Chen et al., 2022). These financial benefits strengthen the argument that green finance complements, rather than contradicts, profitability objectives (Mangwa & Jagongo, 2022). Consequently, green finance represents a potential pathway through which banks can enhance both financial and sustainability performance simultaneously (Nagina, 2025).

The relationship between green finance and bank performance is further supported by the role of innovation and digital transformation (Hidayat-ur-Rehman & Hossain, 2025). Fintech solutions enable banks to improve the monitoring, reporting, and evaluation of green finance projects (Vuong et al., 2025). Digital tools enhance transparency and accountability in green lending, supporting better performance management (Hussain et al., 2024). Innovation also lowers transaction costs associated with sustainability screening and impact assessment (Chen et al., 2022). Banks that combine green finance with financial innovation demonstrate stronger competitive positioning in evolving financial markets (Adeyemi et al., 2024). This integration supports operational efficiency while reinforcing sustainability outcomes (Zheng et al., 2021). The convergence of green finance and innovation therefore amplifies its potential impact on bank performance (Hidayat-ur-Rehman & Hossain, 2025).

Despite growing interest, the performance implications of green finance remain uneven across banking institutions (Akomea-Frimpong et al., 2022). Differences in institutional capacity,

regulatory frameworks, and risk appetite influence the effectiveness of green finance implementation (Wabwile, 2023). Some banks face challenges in accurately pricing environmental risks and returns associated with green projects (Thapliyal et al., 2025). Limited expertise and data constraints may also weaken the performance benefits of green finance initiatives (Ozili, 2022). These challenges can result in partial or symbolic adoption of green finance without meaningful performance gains (Gazi et al., 2024). Addressing such constraints is essential for translating green finance commitments into measurable financial outcomes (Hussain et al., 2024). This variation highlights the need for empirical examination of how green finance influences bank performance in practice (Nagina, 2025).

Policy and regulatory environments further influences the green finance–performance relationship in banking (Chen et al., 2025). Green credit guidelines and sustainability disclosure requirements influence banks' strategic allocation of capital (Zhang & Zhou, 2022). Regulatory support reduces uncertainty and enhances the viability of green investments within bank portfolios (Zheng et al., 2021). At the same time, compliance costs and reporting obligations may initially affect operational efficiency (Ozili, 2022). Over time, consistent regulatory frameworks encourage learning effects and performance improvements (Akomea-Frimpong et al., 2022). Banks that align early with policy directions tend to achieve competitive advantages in sustainable finance markets (Hussain et al., 2024). Understanding this regulatory dimension is therefore essential for assessing green finance performance outcomes (Chen et al., 2025).

From a strategic perspective, green finance positions commercial banks as agents of sustainable economic transformation (Gidage & Bhide, 2025). Through influencing investment flows, banks contribute to climate mitigation and adaptation efforts while maintaining financial relevance (Otali & Monye, 2023). This dual role strengthens the legitimacy of banks within society and financial markets (Gazi et al., 2024). Strategic alignment between green finance and performance objectives supports long-term value creation (Anggara & Harori, 2025). Banks that successfully integrate green finance demonstrate resilience in the face of environmental and economic shocks (Vuong et al., 2025). This resilience reinforces institutional stability and stakeholder confidence (Hussain et al., 2024). Green finance thus emerges as both a strategic and performance-enhancing mechanism within modern banking (Nagina, 2025).

Thus, the evolving role of commercial banks, growing definitions of performance, and rising prominence of green finance converge to redefine banking practice (Ozili, 2022). Performance is no longer assessed solely through short-term profitability but through sustainable value creation (Zheng et al., 2021). Green finance provides a structured mechanism through which banks align financial intermediation with environmental responsibility (Akomea-Frimpong et al., 2022). Evidence increasingly suggests that green finance can enhance bank performance when effectively implemented (Mangwa & Jagongo, 2022). However, institutional, regulatory, and capability-related factors shape these outcomes (Wabwile, 2023). Analysing this relationship contributes to understanding how banks can remain competitive while supporting sustainability goals (Hussain et al., 2024). This study is therefore anchored in the need to empirically assess green finance as a driver of commercial bank performance in a changing financial landscape (Nagina, 2025).

Globally, commercial banks and financial systems are actively defining the development of green finance, even though with varying momentum and evolving frameworks. In the United States, state-level green banks such as the Connecticut Green Bank have catalyzed private investment into renewable energy and low-carbon infrastructure, providing a model for blending public support with market finance (The State of Green Banks 2025; Coalition for Green Capital, 2025). At the

same time, major U.S. commercial banks have been reassessing their climate commitments, with some withdrawing from industry-led climate alliances due to regulatory and political headwinds, reflecting uncertainties in voluntary global financial coalitions (Net-Zero Banking Alliance suspension, 2025). In the United Kingdom, programs such as Bankers for Net Zero bring together leading banks to integrate net-zero strategies, while ethical banks like Triodos Bank focus explicitly on sustainable finance models that integrate environmental stewardship with profitability (Green Finance Institute, 2025; Triodos Bank, 2025). Moreover, European banks such as Commerzbank in Germany have actively issued green bonds and adopted binding policies on fossil fuel financing to align their portfolios with climate commitments, demonstrating regulatory and institutional support for green finance in the European Union (Commerzbank sustainability policies, 2025).

Regionally, there are opportunities and challenges of adopting green finance within commercial banking systems across the continent. In Kenya, empirical studies on green banking indicate that environmentally compliant financing practices are gaining traction and have potential links to the performance of commercial banks through digital and electronic transaction mechanisms, though formal adoption remains relatively early (Central Bank of Kenya, 2024). South Africa has advanced green finance through sovereign green bonds issued by government entities and a more developed financial market that integrates sustainable financing into broader capital markets, supported by regulatory and market innovation (Impacting Africa, 2025). Nigeria's banking sector is also exploring green finance frameworks, including sovereign issuance and growing institutional awareness of sustainable investment, yet faces capacity and policy coordination challenges similar to broader continental trends (Impacting Africa, 2025). Across Africa, institutional and regulatory frameworks remain underdeveloped compared with Western banking sectors, and under-resourced green bond markets, risk perception, and limited public-private partnerships continue to limit large-scale green finance deployment (Green finance in Africa, 2025; Sustainable Finance in Africa, 2024).

Ghana's commercial banks have adopted the Ghana Sustainable Banking Principles, a voluntary framework agreed upon by all 24 commercial banks to integrate environmental and social considerations into banking operations and risk management (Ghana Sustainable Banking Principles, 2020; Green Financing in Ghana, 2025). The Ghana Green Finance Taxonomy, developed collaboratively with the Ministry of Finance, provides a structured classification for sustainable investment activities and guides both financial institutions and investors toward climate-aligned projects, aligning domestic objectives with global commitments such as the Paris Agreement (Ghana Green Finance Taxonomy, 2024). While green finance practices are still new in Ghanaian commercial banks, research suggests that long-term financial stability may be enhanced by mitigating environmental risks and aligning with broader sustainable finance trends (Green Financing research in Ghana, 2025). Ongoing efforts to build an enabling environment such as capacity building, regulatory support, and the potential development of green bond guidelines are central to improving the integration of green finance into the commercial banking sector (World Bank sustainable finance roadmap, 2025; UN PAGE assessments).

1.1 Statement of the Problem

The Ghanaian commercial banking sector is expected to demonstrate strong financial performance while simultaneously supporting sustainable economic transformation through responsible lending and green finance integration. With total banking sector assets exceeding GHS 300 billion and capital adequacy ratios consistently above the regulatory minimum of 13%, commercial banks are

expected to maintain profitability, asset quality, and resilience while financing climate-aligned investments (Bank of Ghana, 2023; Mangwa & Jagongo, 2022). In addition, the introduction of the Ghana Sustainable Banking Principles and climate-risk disclosure expectations presupposes that banks will internalize environmental risk management into credit decisions without eroding financial performance (Wabwile, 2023; Ozili, 2022). However, despite this policy direction, the performance of commercial banks remains uneven, particularly when assessed against rising non-performing loans, cost inefficiencies, and limited green finance penetration (Zheng et al., 2021; Akomea-Frimpong et al., 2022).

In practice, performance pressures within Ghana's commercial banking sector persist, with profitability indicators showing volatility in recent years. While return on equity for the sector averaged above 20% prior to 2020, post-pandemic figures indicate a decline to below 15% for several mid-tier banks, reflecting rising operating costs and credit risk exposure (Bank of Ghana, 2023; Khatun et al., 2024). Non-performing loan ratios, though reduced from crisis levels, remain elevated at approximately 14–15%, significantly above the prudential benchmark of 10% (Mangwa & Jagongo, 2022; Zheng et al., 2021). These performance constraints limit banks' risk appetite for long-term green projects, which often require extended tenors and specialized risk assessment (Zhang et al., 2021; Chen et al., 2022). As a result, banks continue to prioritize short-term, low-risk lending, slowing the integration of green finance into mainstream portfolios.

Green finance adoption within Ghana's commercial banks remains limited relative to expectations and policy ambitions. Estimates suggest that less than 5% of total loan portfolios in Ghana are explicitly classified as green or environmentally sustainable financing, despite increasing climate vulnerability and infrastructure needs (Wabwile, 2023; Ozili, 2022). Unlike more mature markets where green bonds and sustainability-linked loans form a growing share of bank assets, Ghanaian banks have issued very few green financial instruments (Akomea-Frimpong et al., 2022; Zhang & Zhou, 2022). The absence of standardized green asset taxonomies until recently has further constrained banks' ability to price and report green finance activities accurately (Chen et al., 2025; Gidage & Bhide, 2025). This weak integration of green finance undermines banks' capacity to diversify portfolios and manage climate-related credit risks, ultimately affecting long-term performance stability.

Operational and institutional challenges further compound the green finance–performance challenge facing Ghanaian commercial banks. Climate risk assessment capacity remains low, with fewer than half of banks having dedicated environmental and social risk management units embedded within credit departments (Wabwile, 2023; Chen et al., 2022). Limited technical expertise increases transaction costs associated with green project appraisal, discouraging banks from financing renewable energy, sustainable agriculture, and green infrastructure projects (Thapliyal et al., 2025; Hussain et al., 2024). At the same time, green finance products often lack concessional funding or risk-sharing mechanisms, making them less attractive compared to conventional lending (Ozili, 2022; Zhang et al., 2021). These challenges weaken the financial case for green finance, reinforcing a performance trade-off perception among bank managers.

Moreover, there exists disconnect between Ghana's climate policy ambitions and the performance realities of its commercial banking sector. While Ghana requires an estimated USD 9–15 billion annually to meet its climate mitigation and adaptation goals, domestic commercial banks contribute only a marginal share of this financing (World Bank, 2023; Akomea-Frimpong et al., 2022). Banks face pressure to remain profitable amid inflationary conditions, rising interest rates, and regulatory compliance costs, leaving limited balance-sheet capacity for green investments

(Bank of Ghana, 2023; Anggara & Harori, 2025). This gap between sustainability expectations and actual banking performance outcomes highlights a structural challenge where green finance remains underutilized as a strategic performance lever (Nagina, 2025; Gazi et al., 2024). Consequently, without empirical clarity on how green finance affects the performance of commercial banks in Ghana, policy interventions and banking strategies risk remaining fragmented and ineffective.

1.2 Research Objective

To assess the effect of green finance on the performance of commercial banks in Ghana.

1.3 Research Question

What is the effect of green finance on the performance of commercial banks in Ghana?

2.1 Theoretical Framework

This study was informed by Stakeholder Theory and Natural Resource-Based View (NRBV) Theory.

2.1.1 Stakeholder Theory

Stakeholder Theory was developed by Freeman (1984). The theory states that organizations must create value for all stakeholders rather than focusing exclusively on shareholders (Freeman, 1984). The theory emphasizes that firms operate within a network of relationships that include customers, employees, regulators, communities, and the natural environment (Donaldson & Preston, 1995). In the banking sector, this perspective is particularly relevant because commercial banks interact with diverse stakeholder groups whose interests directly influence institutional legitimacy and performance (Clarkson, 1995). Financial institutions are expected to balance profitability with social and environmental responsibilities to maintain trust and long-term viability (Mitchell et al., 1997). Regulatory bodies increasingly expect banks to internalize environmental and social risks into decision-making processes (Scott, 2014). Stakeholder expectations around sustainability have therefore become central to strategic banking operations (Harrison et al., 2010). This theoretical foundation explains why banks adopt green finance practices beyond immediate financial motives (Freeman et al., 2010).

Stakeholder Theory further explains organizational behavior as a response to pressures arising from stakeholder salience and influence (Mitchell et al., 1997). Stakeholders possessing power, legitimacy, and urgency are more likely to shape managerial decisions within financial institutions (Agle et al., 1999). In commercial banking, regulators and policymakers exert strong coercive influence through sustainability guidelines and prudential standards (Scott, 2014). Communities and civil society organizations also apply pressure by demanding environmentally responsible lending practices (Phillips, 2003). Investors increasingly evaluate banks based on environmental performance and exposure to climate-related risks (Harrison et al., 2010). Failure to meet these expectations can result in reputational damage and declining market confidence (Donaldson & Preston, 1995). Stakeholder Theory therefore clarifies why banks integrate green finance to protect institutional legitimacy and performance (Freeman et al., 2010).

The theory also provides perspective on how stakeholder engagement affects organizational performance outcomes (Agle et al., 1999). Banks that align their strategies with stakeholder interests tend to experience improved trust and reduced operational risk (Clarkson, 1995). Environmental stakeholders influence banks' lending behavior by shaping perceptions of

acceptable risk and responsibility (Phillips, 2003). Green finance becomes a mechanism through which banks demonstrate responsiveness to stakeholder environmental concerns (Freeman, 1984). This responsiveness enhances relational capital and strengthens long-term financial sustainability (Harrison et al., 2010). Conversely, ignoring stakeholder environmental expectations may increase regulatory scrutiny and financial risk exposure (Scott, 2014). Stakeholder Theory thus links green finance adoption to improved performance stability in commercial banks (Donaldson & Preston, 1995).

Stakeholder Theory also explains strategic decision-making under conditions of competing interests (Freeman et al., 2010). Banks must allocate capital in ways that balance short-term profitability with long-term stakeholder value creation (Clarkson, 1995). Environmental sustainability concerns increasingly compete with traditional financial objectives in credit allocation decisions (Mitchell et al., 1997). Stakeholder engagement helps banks manage these trade-offs by aligning green finance initiatives with broader performance goals (Agle et al., 1999). Transparent disclosure of green finance activities further strengthens stakeholder confidence (Phillips, 2003). This alignment reduces uncertainty and supports institutional resilience (Harrison et al., 2010). Stakeholder Theory therefore offers a coherent framework for analyzing green finance as a strategic performance tool (Freeman, 1984).

Stakeholder Theory provides a strong conceptual perspective for understanding green finance adoption in commercial banks (Freeman et al., 2010). The theory explains how environmental responsibility becomes integral to organizational survival and competitiveness (Donaldson & Preston, 1995). It emphasizes legitimacy, trust, and accountability as drivers of sustainable performance (Scott, 2014). Green finance reflects a strategic response to evolving stakeholder demands (Clarkson, 1995). Banks that embed stakeholder considerations into financial decisions are better positioned to manage risk (Mitchell et al., 1997). This enhances long-term performance sustainability (Harrison et al., 2010). Consequently, Stakeholder Theory directly informs this study's examination of green finance and bank performance (Freeman, 1984).

2.1.2 Natural Resource-Based View (NRBV) Theory

The Natural Resource-Based View was developed by Hart (1995). The theory states that environmental capabilities can be sources of sustained competitive advantage. It emphasizes pollution prevention, product stewardship, and sustainable development as strategic resources (Hart, 1995). Organizations that proactively manage environmental challenges can achieve superior performance outcomes (Russo & Fouts, 1997). In financial institutions, green finance represents an intangible capability embedded in organizational processes (Hart & Dowell, 2011). This capability enables banks to anticipate regulatory change and market demand for sustainable finance (Barney, 1991). NRBV therefore reframes environmental responsibility as a value-creating activity rather than a cost (Hart, 1995).

NRBV explains how firms transform environmental constraints into strategic opportunities (Russo & Fouts, 1997). Pollution prevention strategies reduce operational risk and inefficiencies (Hart & Dowell, 2011). In banking, financing environmentally sustainable projects lowers long-term credit risk exposure (Barney, 1991). Green finance practices allow banks to develop specialized competencies in environmental risk assessment (Hart, 1995). These competencies are difficult for competitors to replicate (Russo & Fouts, 1997). As a result, environmentally responsible banks can achieve performance advantages over time (Hart & Dowell, 2011). NRBV therefore supports the link between green finance and improved bank performance (Barney, 1991).

The theory also emphasizes dynamic capabilities in adapting to environmental change (Hart, 1995). Financial institutions face increasing climate-related risks that threaten asset quality and stability (Hart & Dowell, 2011). Green finance enhances banks' ability to manage these risks proactively (Russo & Fouts, 1997). This strengthens resilience against regulatory shocks and market volatility (Barney, 1991). Environmental capabilities embedded in lending policies become strategic assets (Hart, 1995). These assets support long-term value creation and performance sustainability (Hart & Dowell, 2011). NRBV therefore provides a performance-oriented justification for green finance adoption (Russo & Fouts, 1997).

NRBV further explains competitive positioning through sustainable innovation (Barney, 1991). Banks offering green loans and sustainability-linked products differentiate themselves in the financial market (Hart, 1995). This differentiation attracts environmentally conscious investors and clients (Hart & Dowell, 2011). Over time, these relationships enhance financial performance and brand strength (Russo & Fouts, 1997). Sustainable innovation reduces dependence on environmentally risky sectors (Barney, 1991). This lowers systemic risk exposure within bank portfolios (Hart, 1995). NRBV thus links environmental capability development to strategic and financial outcomes (Hart & Dowell, 2011).NRBV provides a strong theoretical foundation for examining green finance in commercial banks in Ghana. The theory positions environmental sustainability as a source of competitive advantage (Barney, 1991). It explains how green finance enhances risk management and performance resilience (Russo & Fouts, 1997). Environmental capabilities are treated as strategic resources (Hart & Dowell, 2011). This perspective aligns green finance with long-term financial performance (Hart, 1995). NRBV therefore complements Stakeholder Theory by focusing on internal capabilities (Barney, 1991). Together, the theories provide a robust framework for this study.

2.2 Empirical Review

Mangwa and Jagongo (2022) examined the relationship between green financing and the financial performance of listed commercial banks in Kenya. The study adopted a descriptive and explanatory research design and relied on secondary panel data extracted from audited financial statements of commercial banks listed on the Nairobi Securities Exchange over a five-year period. Green finance was operationalized using indicators such as green lending volume and environmentally compliant investment portfolios, while performance was measured using return on assets, return on equity, and earnings per share. The study employed panel regression analysis to assess the effect of green financing on bank performance. Findings revealed that green financing had a positive and statistically significant effect on return on assets and return on equity, indicating improved profitability among banks engaging in sustainable financing practices. However, the study also found that the magnitude of the effect was modest due to limited green asset allocation within bank portfolios. The authors concluded that while green finance enhanced performance, its full potential in Kenya remained constrained by low adoption levels and limited regulatory incentives.

Khatun, Mouri, and Akter (2024) investigated the relationship between green financing practices and financial performance of commercial banks in Bangladesh. The study employed a quantitative research design using secondary data obtained from annual reports of selected commercial banks over the period 2016–2022. Green finance was measured through green loan disbursements and environmentally focused investment activities, while financial performance was captured using profitability and asset quality ratios. Multiple regression analysis was applied to examine the relationship between the study variables. The results showed that banks with higher engagement

in green financing recorded improved profitability and lower credit risk exposure over time. However, the study identified that short-term performance gains were inconsistent due to high initial screening and monitoring costs associated with green projects. The study concluded that green finance contributed positively to bank performance in the long run but required supportive regulatory frameworks to enhance effectiveness.

Gazi et al. (2024) examined the impact of green banking practices on sustainability and financial outcomes in private commercial banks. The study adopted a quantitative research design and collected survey data from senior bank managers across multiple private commercial banks. Structural equation modeling was used to test the mediating role of green financing activities between green banking practices and sustainability performance. Findings showed that green banking practices significantly improved green corporate social responsibility outcomes, which in turn enhanced long-term financial performance. The study further revealed that banks integrating green finance into core lending operations demonstrated stronger reputational capital and stakeholder trust. Despite these positive outcomes, the study identified challenges related to limited staff expertise and insufficient green finance disclosure standards. The authors concluded that green finance served as a strategic mechanism linking sustainability initiatives to improved bank performance.

Appah, Tebepah, and Eburunobi (2024) conducted a study on green banking practices and green financing among listed deposit money banks in Nigeria. The study employed an ex-post facto research design using secondary data from annual financial reports covering the period 2014–2022. Green finance indicators included environmental risk screening and green investment financing, while bank performance was measured using profitability and liquidity ratios. Regression analysis revealed that green finance practices had a significant positive effect on profitability and liquidity positions of banks. However, the study also reported that high operational costs and weak enforcement of environmental regulations limited performance gains. The findings indicated that banks with structured green finance policies performed better than those with ad hoc sustainability initiatives. The study concluded that green finance positively influenced bank performance but required institutional strengthening for sustained impact.

Adeyemi et al. (2024) examined the impact of green finance on environmental and financial performance of Nigerian banks, with financial innovation serving as a mediating variable. The study adopted a quantitative approach using panel data collected from selected commercial banks over a seven-year period. Green finance was measured through green credit allocation and sustainability-linked investments, while financial performance was captured using profitability ratios. The study applied structural equation modeling to analyze both direct and indirect relationships. Results showed that green finance had a positive direct effect on environmental performance and an indirect positive effect on financial performance through financial innovation. The findings suggested that banks leveraging digital and innovative financial instruments were better positioned to translate green finance into performance gains. The study concluded that green finance enhanced bank performance when complemented by financial innovation capabilities.

Anggara and Harori (2025) analyzed the effect of green finance on financial sustainability ratios of Sharia commercial banks in Indonesia. The study employed a quantitative panel research design using secondary data from Islamic banks over the period 2019–2023. Green finance indicators included environmentally compliant financing and sustainable project funding, while performance was measured using financial sustainability ratios and profitability indicators. Panel regression results showed that green finance had a significant positive effect on financial sustainability and

profitability. The study also found that leverage moderated the relationship between green finance and performance outcomes. The authors concluded that green finance strengthened the financial sustainability of Sharia banks, although regulatory consistency remained a challenge.

Thapliyal, Gupta, Jindal, and Mishra (2025) conducted an empirical study assessing the impact of green banking practices on environmental and financial performance of Indian banks. The study adopted a mixed-methods approach combining secondary financial data analysis with survey responses from bank officials. Green finance sources included green bonds, renewable energy financing, and environmentally screened lending portfolios. Regression analysis revealed that green finance positively influenced both environmental performance and profitability indicators. However, the study noted that the performance effect varied significantly across banks depending on size and governance quality. The authors concluded that green finance improved bank performance but required standardized metrics and reporting mechanisms to enhance comparability.

Gidage and Bhide (2025) examined the impact of green finance, corporate social responsibility, and green banking practices on sustainability performance of commercial banks in India. The study employed a quantitative research design using survey data collected from banking professionals. Structural equation modeling results showed that green finance had a strong positive effect on sustainability performance, which indirectly improved financial performance. The study also found that green banking practices strengthened stakeholder trust and institutional legitimacy. Despite these benefits, the study identified operational barriers such as lack of skilled personnel and limited green product awareness. The authors concluded that green finance played a critical role in enhancing bank performance through sustainability pathways.

Hidayat-ur-Rehman and Hossain (2025) investigated the impact of green finance on sustainable performance of banks, with digital transformation acting as a moderating variable. The study adopted a quantitative panel design using data from commercial banks over multiple years. Green finance was measured through sustainable lending and investment activities, while performance was assessed using financial and non-financial sustainability indicators. Moderated regression analysis revealed that green finance significantly improved sustainable performance, and the effect was stronger among banks with advanced digital capabilities. The study further indicated that digital transformation reduced operational costs associated with green finance monitoring. The authors concluded that green finance enhanced bank performance when supported by digital infrastructure.

Chen et al. (2025) analyzed the effects of green finance policy on financial and environmental outcomes within banking-linked supply chains. The study employed an econometric design using firm-level and bank-level data to assess the signaling effects of green credit policies. Findings showed that banks implementing green finance policies experienced improved asset quality and reduced exposure to environmentally risky borrowers. The study also found that green finance policies strengthened banks' monitoring mechanisms and long-term performance stability. However, short-term profitability effects were mixed due to compliance costs. The authors concluded that green finance policies contributed positively to bank performance over time.

Nagina (2025) conducted an empirical study examining the effectiveness of green financing activities and performance management within the banking sector. The study adopted a quantitative design using survey and financial data from commercial banks. Regression results showed that green financing activities significantly improved operational efficiency and long-term

profitability. The study further found that banks with structured performance management systems were better able to integrate green finance into strategic decision-making. However, weak performance measurement frameworks limited impact in some banks. The study concluded that green finance enhanced bank performance when embedded within comprehensive performance management systems.

Wabwile (2023) examined climate finance practices and sustainable investment among commercial banks in Ghana. The study adopted a mixed-methods design combining survey data from bank managers with secondary financial data. Findings revealed that although awareness of green finance was high, actual green lending accounted for a small proportion of total loan portfolios. The study found a positive but weak relationship between green finance and bank performance due to limited scale and institutional capacity. Regulatory uncertainty and lack of technical expertise were identified as major constraints. The study concluded that green finance had the potential to improve bank performance in Ghana but remained underutilized.

3.0 Research Methodology

The study adopted a desktop review research design to examine the effect of green finance on the performance of commercial banks, with specific focus on profitability, asset quality, and long-term performance sustainability. The review was guided by a positivist research philosophy, emphasizing objective analysis and systematic synthesis of existing empirical and policy-based evidence on green finance and banking performance. Relevant literature was identified through an extensive search of peer-reviewed academic journals, institutional reports, regulatory publications, and doctoral theses related to sustainable finance and banking. Key search terms included green finance, green banking practices, sustainable finance, commercial bank performance, financial sustainability, and climate finance in banking. Inclusion criteria focused on empirical studies published between 2022 and 2025, studies examining commercial banks or deposit-taking institutions, and research explicitly linking green finance practices to financial or sustainability performance indicators. The selected studies were screened for methodological relevance, to banking performance, and clarity in measurement of green finance variables.

4.0 Findings and Discussion

The reviewed empirical literature show that green finance has a generally positive influence on the financial performance of commercial banks across different country contexts. Studies conducted in Kenya, Bangladesh, Nigeria, India, Indonesia, and Ghana demonstrated that banks engaging in green lending, sustainable investments, and environmentally screened credit portfolios recorded improvements in profitability indicators such as return on assets and return on equity. These findings suggested that green finance contributed to enhanced asset quality and revenue stability by reducing long-term credit risk exposure associated with environmentally harmful projects. Evidence from panel regression and structural equation modeling analyses showed that banks integrating green finance practices experienced better performance resilience compared to those relying solely on conventional lending models. The literature therefore confirmed that green finance was not merely a compliance-driven activity but a performance-enhancing strategy when embedded within core banking operations. Overall, the reviewed studies affirmed that green finance supported financial performance by aligning banking activities with sustainable growth sectors.

The findings further revealed that the performance effects of green finance were more evident in the long term than in the short term. Several studies reported that initial adoption of green finance

was associated with high screening, monitoring, and compliance costs, which sometimes weakened short-term profitability. However, over time, banks benefited from improved loan quality, lower default risks, and stronger stakeholder confidence. Empirical evidence from Bangladesh, Nigeria, and India showed that banks with sustained green finance engagement demonstrated improved financial sustainability ratios and reduced exposure to environmentally risky borrowers. This pattern indicate that green finance operates as a risk management mechanism that improves performance stability rather than a quick profit generator. The literature therefore supports the view that green finance contributed to long-term financial resilience rather than immediate financial gains.

Despite the positive performance outcomes, the reviewed studies identified low levels of green finance penetration within commercial bank loan portfolios. Evidence from Ghana, Kenya, and Nigeria showed that green lending accounted for only a small proportion of total bank assets, limiting its overall impact on performance. Banks continued to prioritize short-term, low-risk lending due to uncertainty surrounding green project returns, lack of standardized green finance taxonomies, and limited technical expertise. These challenges weakens the magnitude of the relationship between green finance and performance, even where positive effects were statistically significant. The literature therefore presents a gap between policy intentions and actual green finance implementation within banking systems. This limited scale of adoption emerges as a major factor explaining why green finance performance benefits remain low in several contexts.

The findings also depicts the role of institutional and regulatory environments in shaping green finance performance outcomes. Studies shows that banks operating in environments with clearer green finance guidelines, sustainability disclosure frameworks, and regulatory incentives achieved stronger performance gains. Conversely, weak enforcement of environmental regulations and regulatory uncertainty constrained effective green finance implementation in many developing economies. Empirical evidence demonstrated that banks with structured green finance policies and formal environmental risk management frameworks outperformed those adopting ad hoc or symbolic sustainability practices. This indicated that regulatory clarity and institutional support were critical enablers of performance-enhancing green finance. The discussion therefore reinforced the importance of coherent policy frameworks in translating green finance initiatives into measurable banking performance outcomes.

The studies also showed the mediating and moderating role of innovation and organizational capability in the green finance–performance relationship. Studies incorporating financial innovation, digital transformation, and performance management systems found stronger and more consistent performance effects. Banks that leveraged digital tools for green project monitoring, reporting, and risk assessment were better able to manage the costs and complexities associated with green finance. This suggested that green finance alone was insufficient to drive performance improvements without complementary internal capabilities. The findings therefore positioned green finance as part of a broader strategic transformation involving innovation, skills development, and performance management. This perspective helped explain variations in performance outcomes across banks and countries.

Furthermore, the reviewed literature revealed significant contextual differences in green finance performance outcomes between countries. Studies from India and Indonesia showed relatively stronger performance effects due to more developed green banking frameworks and institutional capacity, while studies from Ghana and Kenya revealed weaker but positive relationships constrained by scale and capability limitations. These variations points out that green finance

performance outcomes are highly context-dependent and defined by market maturity, regulatory strength, and institutional readiness. The empirical evidence demonstrates that while green finance has clear potential to improve commercial bank performance, its effectiveness depends on adoption depth, institutional capacity, and supportive policy environments. These findings justifies the need for country-specific analysis of green finance and bank performance, particularly in contexts where green finance remained underdeveloped despite strong sustainability policy commitments.

5.0 Conclusion

Green finance has a positive and significant influence on the performance of commercial banks, especially in terms of profitability, asset quality, and long-term financial sustainability. Evidence from multiple country contexts demonstrates that banks engaging in green lending, environmentally screened investments, and sustainable finance practices tend to experience improved performance outcomes compared to banks relying solely on conventional financing. These performance gains are largely attributed to better risk management, improved portfolio quality, and alignment with emerging sustainable growth sectors. The findings therefore confirm that green finance is not merely a regulatory or ethical obligation but a strategic financial tool capable of supporting bank performance when integrated into core banking operations.

Furthermore, the performance benefits of green finance are predominantly long-term in nature rather than immediate. While initial adoption of green finance is often associated with higher transaction costs, monitoring expenses, and capacity constraints, banks that sustain green finance engagement over time realize stronger performance stability and reduced exposure to environmentally risky assets. This underscores the importance of viewing green finance as a long-term investment strategy rather than a short-term profitability mechanism. Consequently, banks that prematurely evaluate green finance based on short-term financial outcomes may underestimate its strategic value and performance potential.

The effect of green finance on bank performance is strongly conditioned by institutional capacity and regulatory support. Banks operating within clear sustainability policy frameworks, supported by standardized green finance guidelines and effective environmental risk regulations, achieve stronger performance outcomes. In contrast, weak regulatory enforcement, lack of technical expertise, and limited internal green finance capabilities significantly reduce the effectiveness of green finance initiatives. This indicates that green finance performance outcomes depend not only on adoption but also on the quality of implementation and the enabling institutional environment.

Moreover, the study concludes that green finance alone is insufficient to drive sustained performance improvements without complementary organizational capabilities. The reviewed evidence shows that banks leveraging digital technologies, financial innovation, and structured performance management systems are better positioned to translate green finance activities into measurable performance gains. This indicate the need for banks to incorporate green finance within broader strategic transformation efforts that include innovation, skills development, and governance reforms. The study concludes that green finance represents a viable pathway for enhancing commercial bank performance, but its effectiveness depends on long-term commitment, institutional readiness, and strategic integration rather than isolated or symbolic adoption.

6.0 Recommendations

Commercial banks in Ghana should institutionalize green finance as a core strategic function rather than a peripheral sustainability program. Green lending, environmental risk assessment, and sustainable investment products should be fully integrated into credit appraisal systems, portfolio management, and long-term business strategies. Bank management should allocate dedicated resources, establish specialized green finance units, and embed environmental risk considerations into enterprise risk management frameworks to strengthen asset quality and performance resilience. In addition, banks should adopt standardized green finance metrics and reporting systems to improve transparency, comparability, and internal performance tracking, thereby enhancing the financial and strategic benefits derived from green finance adoption.

Moreover, regulatory authorities and policymakers should improve the enabling environment for green finance within the banking sector. This requires the development and enforcement of clear green finance guidelines, taxonomies, and disclosure requirements that reduce uncertainty and encourage consistent adoption across commercial banks. Regulators should also introduce targeted incentives such as concessional refinancing windows, risk-sharing mechanisms, or capital relief for qualifying green assets to offset the higher initial costs associated with green financing. Furthermore, collaboration between regulators, financial institutions, and development partners should be enhanced to build technical capacity and support the scaling of green finance across the banking system.

Moreover, development to maximize the performance impact of green finance. Investment in digital tools for monitoring, reporting, and evaluating green projects can reduce operational costs and improve risk management effectiveness. Banks should also prioritize staff training in environmental and climate risk analysis to strengthen internal capabilities and decision-making quality. At the same time, green finance initiatives should be aligned with broader organizational performance management systems to ensure that sustainability objectives translate into measurable financial outcomes. These measures will support long-term performance sustainability and position commercial banks as key drivers of green economic transformation.

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