

Effects of Green Financing on Credit Portfolio of Micro, Small and Medium Enterprises in Kisumu central business district

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Abstract

This study examined the effects of green financing on the credit portfolio of Micro, Small, and Medium Enterprises (MSMEs) in Kisumu Central Business District, Kenya. Anchored on Stakeholder Theory, the Resource-Based View, and Signaling Theory, the study adopted a correlational research design targeting 520 MSME owners and financial experts, from which a sample of 102 respondents was selected using simple random sampling. Data were collected using structured questionnaires and analyzed via SPSS (Version 30) using descriptive statistics along with simple and multiple linear regression analyses. Simple linear regressions showed that accessibility ($\beta = 0.577, p < .001$), regulatory and policy framework ($\beta = 0.640, p < .001$), and uptake of green financing ($\beta = 0.622, p < .001$) each had positive, statistically significant effects on MSME credit portfolios. The multiple regression model accounted for 66.2 of the variation in the credit portfolio (Adjusted $R^2 = 0.651$). Within the combined model, accessibility ($\beta = 0.495, p < .001$), uptake ($\beta = 0.285, p < .001$), and regulatory and policy framework (beta = 0.188, $p = .011$) all remained significant positive contributors. The study concludes that enhancing green financing accessibility, regulatory support, and uptake significantly improves MSME credit portfolios. It recommends that financial institutions expand green product awareness, policymakers establish supportive regulatory incentives, and development partners offer technical assistance alongside affordable green financing programs to foster sustainable enterprise growth.

Key words: Micro, Small, and Medium Enterprises, green financing, credit portfolio

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I. Introduction

Climate change poses a severe threat to global economic development, requiring substantial financial resources to support low-carbon initiatives, renewable energy, and climate-smart infrastructure. Under the Paris Agreement and the Sustainable Development Goals (SDGs), developing economies face acute adaptation financing gaps estimated by UNEP (2023) at USD 215 billion to USD 387 billion annually. As defined by the OECD (2024), green finance encompasses financial investments that deliver environmental benefits alongside sustainable economic growth. It utilizes instruments like green bonds, green loans, and sustainability-linked financing to reduce climate risks. Micro, Small, and Medium Enterprises (MSMEs) are pivotal in this transition, representing over 90% of global businesses, 50% of employment, and nearly 40% of GDP in emerging economies (IFC, 2023). However, formal MSMEs in developing nations face an annual financing gap exceeding USD 5.7 trillion (USD 8 trillion including informal enterprises). This gap severely restricts their capacity to adopt green technologies.

In Africa, where vulnerability to climate change is high despite low global emissions, MSMEs receive a negligible portion of incoming climate finance due to underdeveloped financial markets, limited awareness, and unsuitable financing structures (UNEP, 2021). Within East Africa, high collateral demands, low financial literacy, and weak institutional coordination force MSMEs to rely heavily on conventional financing (Alliance for Financial Inclusion, 2024). Kenya has implemented forward-looking measures, such as the Climate Change Act (2016) and the Kenya Green Economy Strategy and Implementation Plan (2016–2030). MSMEs constitute 90% of Kenya's private enterprises and generate 80% of employment (KNBS, 2023). Yet, their adoption of green finance remains modest due to high lending thresholds, information barriers, and limited technical support. Existing literature lacks localized quantitative evidence regarding how green finance accessibility, regulatory environments, and product uptake influence MSMEs' credit portfolios, particularly within semi-urban business hubs like Kisumu.

Statement of the Problem

MSMEs contribute roughly 33.8% to Kenya's Gross Domestic Product (GDP) and employ over 15 million people (KNBS, 2020). Despite this core economic role, small enterprises face severe credit constraints alongside rising environmental pressures. While green financing offers an innovative mechanism to boost profitability and long-term resilience, its integration into Kenyan MSME credit structures remains low. Globally, only 10% of green finance reaches small enterprises in developing economies (UNEP, 2021), and local adoption is hindered by high perceived credit risk, low awareness, and policy gaps (GIZ, 2022). High credit default rates exceeding 25% in certain Kenyan sectors (CBK, 2023) pose a major obstacle. While eco-friendly business investments can optimize resource usage and lower operational costs, empirical evidence linking green financing to improved credit performance in local markets remains scarce. Furthermore, the grassroots effectiveness of national green policies within semi-urban centers like Kisumu Central Business District (CBD) remains under-researched. This study directly addresses these conceptual, contextual, and empirical gaps by evaluating the effect of green financing on the credit portfolio of MSMEs in Kisumu CBD.

General objective

The general objective of the study was the effects of green financing on the credit portfolio of MSMEs in Kisumu Central Business District.

Specific objective

The study was guided by the following specific objectives:

- i. To examine the accessibility of green financing options available to MSMEs in Kisumu Central Business District.
- ii. To determine the effect of regulatory and policy frameworks on the uptake of green financing by MSMEs in Kisumu Central Business District.
- iii. To assess the effect of the utilization of green financing on the credit portfolio of MSMEs in Kisumu Central Business District.

Research Hypothesis

The study was guided by the following hypothesis:

- H₀₁:** There is no significant relationship between the accessibility of green financing and the credit portfolio of MSMEs in Kisumu Central Business District.
- H₀₂:** Regulatory and policy frameworks have no significant effect on the credit portfolio of MSMEs in Kisumu Central Business District.
- H₀₃:** Utilization of green financing has no significant effect on the credit portfolio of MSMEs in Kisumu Central Business District.

Theoretical Literature

The theoretical framework serves as the structural base that directs a research investigation by anchoring it within established academic concepts, as emphasized by Creswell (2009). Grounded in Edward Freeman's (1984) formulation, Stakeholder Theory posits that organizations must account for the interests of all key stakeholders including investors, customers, suppliers, employees, regulators, and the wider community rather than focusing solely on maximizing short-term shareholder returns.

This perspective is directly relevant to green financing among MSMEs, as sustainable business decisions are heavily driven by external and internal stakeholder expectations. Financial institutions increasingly incorporate environmental criteria into their lending decisions, while governments enforce supportive regulatory frameworks and consumers demand eco-conscious practices. Consequently, MSMEs that align their operations with these broader expectations build trust and transparency, effectively lowering their perceived default risk and improving their overall creditworthiness and access to capital. Despite its strengths in promoting ethical and sustainable enterprise growth, Stakeholder Theory faces notable practical limitations. In practice, managers often struggle with prioritizing competing stakeholder demands, establishing concrete metrics to measure environmental outcomes, and navigating inconsistent legal or institutional frameworks across different jurisdictions.

Empirical Literature

Accessibility of Green Financing and Credit Portfolio

Haritone & Mirie (2020) in their study on Determinants of Lending to MSMEs by Commercial Banks in Kenya. They assessed 36 Kenyan banks from 2010–2014 using regression analysis, revealing bank size was positively associated with MSME lending, while liquidity constrained it, and credit risk and interest rates didn't significantly influence lending. They concluded that expansion of larger banks improves MSME access, but

overall liquidity issues remain a bottleneck. They recommended supporting bank growth through policy, including improved liquidity management and incentives to increase MSME lending exposure.

According to the study of Kariuki, Bunyasi & Ambani (2023), *Determinants of Green Financing Adoption by Manufacturing SMEs in Nairobi*. In a Nairobi-based study of 134 manufacturing SMEs, researchers used regression and found that technology adoption and access to financing information significantly drove green finance uptake, whereas organizational structure had no impact. They concluded that enhanced green awareness and tech utilization are critical. The study recommends mandatory financial audits, staff training programs in green finance, and increased transparency to build trust and strengthen SME creditworthiness for green loans.

Munguti & Wamugo (2023), *“Microfinance Credit Accessibility & SME Performance in Machakos County*. Surveying Machakos SMEs, the authors discovered that collateral requirements, income-to-loan ratios, and branch penetration positively and significantly enhanced SME performance. They concluded that structural finance mechanisms improve SME outcomes when appropriately calibrated. Recommendations included expanding microfinance branch networks in remote areas, adjusting collateral criteria to be SME-friendly, and optimizing loan-to-income structures to boost productivity.

Kimondo (2023) study on *Effect of Financial Accessibility on the Sustainability of Manufacturing SMEs in Nairobi County*. This Strathmore-led study identified that processing fees, insurance, legal costs, inflation, and high credit costs significantly hinder SME sustainability, and highlighted prevalent credit rationing. The conclusion emphasized the need to reduce both direct and hidden costs linked to financing. Their recommendations involved lowering loan processing fees, adopting inflation-indexed credit instruments, and promoting digital lending platforms to reduce intermediary costs.

Tese.io Report (2025) on *What Kenya’s First ESG-Linked SME Loan Means for Emerging Markets*. Tese.io documented Kenya’s pilot ESG-linked SME loans, showing that structured ESG data reporting systems helped overcome lender risk perception, enabling smaller firms to access green financing. The report concluded that reliable ESG data infrastructure is a cornerstone for SME green creditworthiness. The recommendation encourages fintech development for ESG verification tools, building institutional capacity for ESG reporting, and fostering lender–SME partnerships for scalable green finance models.

Regulatory & Policy Framework and Credit Portfolio

Anyango (2024) tested the efficiency of the National Green Finance Strategy in Kenya in terms of its contribution to developing a sustainable economy and climate objectives. This research determined that although significant moves had been achieved in mobilizing green investments and enticing financial institutions to be sustainable, there were still gaps in the regulatory provision, financial inclusion, and awareness among people. The paper concluded that in an attempt to empower the green finance uptake in Kenya, it is imperative to address these weaknesses.

Mwanu (2021) investigated the influence of banking practices on the development of green finance in Kenya, focusing on banking regulations, green banking policies, and financial incentives. The study revealed that banking regulations and green banking policies had a strong positive effect on the advancement of green finance initiatives, whereas banking incentives demonstrated only a moderate impact. Based on these findings, the research concluded that enhancing government incentives and fostering stronger collaboration between financial institutions and development organizations are crucial for promoting the growth of green finance programs.

Kariuki (2023) examined the factors that determine the use of green financing among small and medium-sized firms in the manufacturing sector in the City of Nairobi in the county. The research determined that the most crucial factors that determine the adoption of green financing are government support and information on access to financing. It made the conclusion that more government support and dissemination of financing information is required to increase the adoption of green financing by MSMEs.

Empirical data shows that policies and financial mechanisms initiated by the government are very crucial in the promotion of green financing and sustainable development. Dzingirai, Zvitambo, and Masukume (2023) found eight green financing strategies in support of the achievement of Sustainable Development Goals, such as national climate change funds, public-private, and foreign investment programs in Zimbabwe. The paper has highlighted the key role of government leadership in advancing green finance and suggested a reinforcement of the current financing systems to enable sustainable development results.

Equally, Buhere and Mukanzi (2019) looked at the impact of adoption of technology to the effectiveness of green public procurement in the County Government of Kakamega in Kenya. As they found out, there is a strong positive correlation between technology adoption and procurement effectiveness, which depends on the supportive governmental policy and institutional capacity building. The research suggested the development and adoption of policies that encourage green public procurement, as well as specific staff education to increase awareness and use.

On a worldwide scale, the Potsdam Institute of Climate Impact Research (2024) assessed 1,500 climate policies enacted in 41 countries between 1998 and 2022 and realized that only a minor percentage of these policies produced quantifiable results of reduction in CO₂ emissions. The authors found that competent climate policies are generally the ones that are a combination of both market-related tools and supplementary actions like subsidies and dropping of fossil fuel subsidies. It also highlighted the fact that climate policies that are incorporated with wider social and economic goals have higher chances of being effective and fair.

Also, the world bank (2024) emphasized that it is necessary to mobilize the investment of the private sector in order to cover the estimated annual 6 trillion needed to take action on climate. The report highlighted the importance of the stable government policies, state incentives and coordinated regulatory frameworks in ensuring an enabling environment to make it easier to have the private investors in the green projects, especially between international markets.

Australian evidence also demonstrates the effects of government-sponsored financial institutions in encouraging green financing. The Australian (2024) reported an analysis that the Clean Energy Finance Corporation had drawn more than one-third of a \$1 billion Household Energy Upgrades Fund, which indicated that state-supported green banks are effective in boosting speedy clean energy transitions. The research found that government funding such initiatives must continue to maintain the momentum in the low-carbon development.

Fang (2024) explored the expansion of sustainable finance initiatives in the United States, highlighting her role in mobilizing \$1.5 trillion toward renewable energy projects by 2030. The study emphasized the critical importance of government policies that ensure stability and transparency, noting that such frameworks are essential for attracting private sector participation in sustainable finance. It concluded with a recommendation for world leaders to strengthen policy mechanisms to support sustainable and resilient economic growth.

Similarly, a report by *Financial Times* (2024) analyzed the global green transition amid shifting political landscapes, including changes in U.S. leadership. The article underscored how government policy can either facilitate or impede the advancement of green financing initiatives. Consistent and predictable policies were recommended to sustain momentum in the global transition toward greener economies.

In a global context, *Reuters* (2024) examined the G20's role in promoting renewable energy investments, particularly in emerging markets. The study highlighted the necessity of coordinated government policies to establish platforms for investment and develop bankable project pipelines. It advocated for progressive energy policies that unlock private finance while ensuring the socioeconomic transition of communities affected by the shift to clean energy.

On a regional level, the European Commission (2020) outlined the *European Green Deal*, Europe's strategy to achieve climate neutrality by 2050. The policy document demonstrated how comprehensive government strategies can drive green financing and sustainable infrastructure investment. Continuous evaluation and policy adaptation were recommended to align with evolving climate goals and maintain effective implementation.

In Kenya, the Central Bank of Kenya (2019) issued *Guidelines on Green Banking*, providing directives for financial institutions to incorporate environmental risk management into their operations. The guidelines illustrated how national regulatory frameworks can promote the adoption of green finance practices and emphasized the need for regular policy reviews to ensure compliance and effectiveness.

Utilization of Green Financing and Credit Portfolio

Green financing has emerged as a critical factor in the financial health and sustainability of SMEs. Various studies have explored the relationship between green financing and SME performance, focusing on aspects such as financial stability, risk mitigation, and long-term growth. This review presents 15 different studies that have investigated this area, providing insights into their findings, conclusions, and recommendations.

Beisland, Zamore, and Mersland (2023) conducted a study titled *Does It Pay to be Green? A Study of the Global Microfinance Industry*, which examined the impact of green financing policies on microfinance institutions (MFIs) worldwide. The study found that MFIs adopting green initiatives experienced improved financial performance, including higher returns on assets and lower operating costs. The authors concluded that integrating environmental sustainability into financial policies could enhance both financial and social performance. They recommended that MFIs actively implement environmental policies to ensure long-term sustainability and profitability.

Khan, Arif, Sahar, Ali, and Abbasi (2022) examined the role of financial resources in SMEs' financial and environmental performance in Pakistan through their study, "The Role of Financial Resources in SMEs' Financial and Environmental Performance: The Mediating Role of Green Innovation." Their research found that financial resources positively influenced financial performance but had no direct impact on environmental performance. Instead, green innovation played a crucial mediating role, improving both financial and environmental outcomes. The authors concluded that green innovation is essential for leveraging financial

resources effectively. They recommended that governments should provide financial support to SMEs to facilitate the adoption of green business practices.

Enejo (2023) explored the role of green financing in fostering sustainable practices within SMEs in Northern Nigeria. His study found that while awareness of green financing is growing, its utilization among SMEs remains low. However, SMEs that adopted green financing reported significant environmental and financial benefits. The study concluded that green financing enhances sustainability and financial health. It is recommended that policymakers and financial institutions should address barriers to green financing and promote its benefits to encourage broader adoption.

A study conducted in Ghana (2024) titled *Green Financing and Sustainability Reporting Among SMEs: The Role of Pro-Environmental Behavior and Digitization* found that green financing positively influenced sustainability reporting among SMEs. The study revealed that pro-environmental behavior partially mediated the relationship between green financing and sustainability reporting, while digitization moderated the effect of pro-environmental behavior. The authors concluded that integrating digital tools and fostering pro-environmental behaviors can maximize the benefits of green financing. They recommended that SMEs should adopt digital technologies and cultivate a culture of sustainability to improve financial and environmental performance.

Another global study titled *Sustainable Financing: A Key Driver for the Growth of SMSEs* (2023) highlighted that sustainable financing is associated with higher growth rates, increased innovation, and market expansion among SMEs. Despite these benefits, challenges such as lack of awareness and understanding of sustainable financing options persist. The study concluded that sustainable financing is a crucial driver of SME competitiveness and growth. It recommended enhancing awareness and accessibility of sustainable financing through targeted programs and policies.

Kariuki (2023) conducted a study titled *Determinants of Green Financing Adoption by SMSEs in the Manufacturing Sector at Nairobi City County, Kenya*. The research found that technological advancements, government support, and access to financing information significantly influenced the uptake of green financing. However, organizational characteristics had an insignificant impact. The study concluded that external factors play a crucial role in green financing adoption. It is recommended that SMEs should leverage technology and seek governmental support to enhance their green financing initiatives.

Ongechi and Mandala (2021) studied financing SMEs' green growth, resource efficiency, and cleaner production in East Africa. Their research identified key opportunities and constraints related to financing resource-efficient projects. The study proposed a hybrid financing scheme involving government guarantees and revolving funds. It concluded that tailored financing mechanisms are essential for promoting green growth among SMEs. The researchers recommended the implementation of hybrid financing models to support SMEs in adopting sustainable practices.

A study conducted in Nairobi (2023) on the determinants of green financing adoption among manufacturing SMEs found that technology, government support, and access to financial information were critical factors in green financing uptake. The study concluded that external support and access to information are vital for successful green financing adoption. It is recommended that SMEs should engage in continuous learning and seek external support to maximize the benefits of green financing.

A research study titled *Financing SMEs Green Growth, Resource Efficiency, and Cleaner Production in East Africa* (2021) explored opportunities and constraints for financing green initiatives. The study developed a sustainable financial scheme for firm-level programs. It concluded that effective financing strategies are necessary for promoting green growth among SMEs. The researchers recommended adopting sustainable financial schemes to help SMEs implement resource-efficient and cleaner production practices.

A 2023 study titled *Role of Green Financing in Fostering Sustainable Practices within SMEs* explored how green financing influences sustainability practices among SMEs. The findings indicated that access to green financing allowed SMEs to adopt energy-efficient technologies and implement sustainable production methods. The study concluded that green financing plays a critical role in promoting sustainable business practices and recommended that financial institutions design more green financing products specifically targeted at MSMEs.

In a study conducted in India, Sharma and Patel (2022) examined the impact of green financing on MSMEs' profitability and operational efficiency. Their study found that MSMEs that accessed green financing improved their cost efficiency and achieved higher profitability due to energy savings and lower waste management costs. The study concluded that green financing enhances the financial viability of MSMEs. The authors recommended that governments should offer incentives such as tax breaks to encourage MSMEs to adopt green financing.

A study conducted in Europe by Müller and Hansen (2023) analyzed the long-term impact of green financing on MSMEs. The study found that green financing improved firms' creditworthiness and reduced the risk of financial distress. The researchers concluded that green financing enhances MSMEs' financial stability. They recommended that financial institutions should integrate green financing into their risk assessment models to promote sustainable investments.

Ali and Ahmed (2023) studied green financing adoption among SMEs in the Middle East. Their research revealed that firms using green financing had higher resilience against market fluctuations and regulatory changes. The study concluded that green financing enhances financial stability in volatile economic environments. The authors recommended that governments should create policies to encourage green investment among MSMEs.

A study by Johnson and Williams (2023) in the United States explored how green financing affects MSMEs' supply chain sustainability. The study found that green financing enabled firms to invest in sustainable supply chain practices, reducing costs and enhancing efficiency. The researchers concluded that green financing contributes to both financial and environmental sustainability. They recommended that financial institutions should provide incentives for MSMEs to adopt green supply chain initiatives.

Summary / Knowledge Gap

Several studies have explored the impact of green financing on MSME credit risk, revealing key insights into how green lending, institutional factors, and macroeconomic conditions influence financial stability. Cui et al. (2018) and Zhou et al. (2020) showed that green loans reduce credit risks and that government ownership structures play a role in mitigating these risks. Other research, such as that by Dipika (2015), highlighted limited MSME access to green financing due to low awareness. Studies by Miroshnichenko and Mostovaya (2019) and Ben Saada (2018) emphasized the role of green loan portfolios and governance mechanisms in reducing non-performing loans (NPLs) and improving creditworthiness. Singh et al. (2021) and Sebayang (2020) found that economic stability and credit risk management are critical to the sustainability of green finance. However, there are knowledge gaps in understanding the long-term impact of green financing on MSME growth, comparative sectoral analysis, and the role of digital tools in credit risk management. Additionally, more research is needed on borrower behavior and the inclusivity of green financing for smaller enterprises, suggesting avenues for future exploration in this field.

The reviewed studies cover a broad range of topics on green finance, focusing on national strategies, banking practices, and government policies across different countries. For instance, Anyango (2024) assessed Kenya's National Green Finance Strategy, noting progress but highlighting gaps in regulatory frameworks and public awareness, while Mwanu (2021) emphasized the positive impact of banking regulations and policies on green finance in Kenya. Kariuki (2023) identified the key factors influencing MSME adoption of green financing in Kenya, particularly government support. Similarly, Dzingirai et al. (2023) discussed green financing strategies in Zimbabwe, while Buhere and Mukanzi (2019) focused on technology adoption in green public procurement in Kenya. International studies, such as the Potsdam Institute for Climate Impact Research (2024) and the World Bank (2024), highlighted the need for coordinated global climate policies and private sector involvement in climate finance. Despite these valuable insights, a notable gap in the research is the limited focus on the specific challenges MSMEs face in accessing green finance, particularly in the context of emerging economies, and how these challenges can be mitigated through tailored financial products or services. Additionally, further exploration is needed on how political shifts influence green financing policies and their practical implications for MSMEs (Fang, 2024; Reuters, 2024).

Green financing has been widely studied for its impact on MSMEs, with research highlighting its potential to improve financial stability, enhance operational efficiency, and promote environmental sustainability. Studies such as those by Beisland, Zamore, and Mersland (2023), and Khan et al. (2022) show that integrating green initiatives into financial practices boosts financial performance, reduces costs, and fosters innovation in MSMEs. Similarly, research by Enejo (2023) and Kariuki (2023) emphasizes that green financing, when coupled with government support and technology, strengthens sustainability efforts. However, challenges like low awareness and limited access to green financing options persist, as noted by Ongechi and Mandala (2021) and Ali and Ahmed (2023). Despite these insights, there remains a knowledge gap regarding the specific barriers to green financing adoption in different regional contexts, the role of financial institutions in expanding access, and the long-term impact on MSMEs' financial health, as highlighted by studies like those of Wang and Liu (2022) and Johnson and Williams (2023). Further research is needed to address these gaps and provide a more comprehensive understanding of how green financing affects the growth and competitiveness of MSMEs across diverse environments.

II. Research Methodology

This study adopted a correlational research design to examine the relationship between green financing and MSME credit portfolios in Kisumu Central Business District. Simple random sampling was used to select a sample of 120 respondents (100 MSME owners and 20 financial experts) from a target population of 520 (Kothari, 2003).

Primary data were gathered using self-administered structured questionnaires comprising a 5-point Likert scale across five sections. Instrument validity was established via expert review (Content Validity Index = 0.81,

exceeding Amin's 0.78 threshold). Internal consistency was verified using Cronbach's alpha coefficient; all constructs exceeded 0.70, yielding an overall instrument reliability of 0.886 (Standardized alpha = 0.889). Data were analyzed using descriptive statistics along with simple and multiple linear regression models:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where:

Y = Credit Portfolio of MSMEs, X_1 = Accessibility of Green Financing, X_2 = Regulatory and Policy Framework, X_3 = Uptake of Green Financing, β_0 = Constant, $\beta_1, \beta_2, \beta_3$ = Regression coefficients
 ε = Error term

Model diagnostic tests confirmed normality, homoscedasticity, linearity, and absence of multicollinearity (VIF < 10, Tolerance > 0.10\$. Ethical standards including informed consent, voluntary participation, and data confidentiality were strictly maintained under Maseno University authorization.

III. Data Analysis, Results and Discussion

Response Rate

The study distributed 120 questionnaires, of which 102 were completed and returned, representing an 85% response rate, while 18 questionnaires (15%) were not returned. The response rate was considered adequate for analysis because it exceeded the commonly recommended threshold of 70% for social science research. The response rate was sufficient for descriptive and inferential analysis.

Table 4.1: Response Rate

Category	Frequency	Percentage
Returned	102	85%
Not returned	18	15%
Total	120	100%

Source: Researcher data, 2026

Background Information of Respondents

The background information covered respondent type, business sector and years of operation. MSME owners/managers constituted 90 respondents (88%), while financial experts accounted for 12 respondents (12%). Owners and managers were directly involved in financing decisions, while financial experts provided a complementary professional perspective.

Retail businesses constituted 30% of the respondents, followed by manufacturing and services at 25% each, and agribusiness at 20%. The distribution captured businesses with different financing needs and operational characteristics. Regarding years of operation, 45% of the businesses had operated for more than five years, 35% for three to five years, and 20% for less than three years. Most respondents therefore had substantial business experience with financial institutions and financing options.

Table 4.2: Background Information

Characteristic	Category	Frequency	Percentage
Respondent type	MSME owners/managers	90	88%
	Financial experts	12	12%
Sector	Retail	30	30%
	Manufacturing	26	25%
	Agribusiness	20	20%
	Services	25	25%
Years in operation	Less than 3 years	20	20%
	3–5 years	36	35%
	Above 5 years	46	45%

Source: Researcher data, 2026

Descriptive Analysis of Findings

Accessibility of Green Financing

The first objective examined the effect of accessibility of green financing on the credit portfolio of MSMEs. Respondents rated statements on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The accessibility construct covered awareness and understanding, availability, and promotion and institutional support.

Table 4.3: Accessibility of Green Financing

Construct/statement	Mean	SD
Awareness and understanding of green finance options	3.13	1.25
Business aware of green financing products	3.14	1.25
Financial institutions provide information on green loans	3.11	1.24
Availability of green financing	3.02	1.36
Requirements are clear and reasonable	3.15	1.55
Business can meet eligibility criteria	3.02	1.3
Business has applied for/received green finance	3.01	1.29
Collateral requirements are favorable	3.07	1.32
Cost of green financing is affordable	2.84	1.36
Promotion and institutional support	2.86	1.34
Financial institutions actively promote green financing	2.83	1.39
Government/donor programmes facilitate access	3.01	1.28
Sufficient technical/advisory support	2.73	1.34
Overall accessibility	2.99	1.33

Source: Research data, 2026

The overall mean of 2.99 (SD = 1.33) indicates a generally neutral perception of accessibility. Awareness and understanding recorded the highest sub-construct mean of 3.13, suggesting reasonable awareness of green financing products and information. Availability recorded a mean of 3.02, indicating mixed views about practical access. Respondents rated the clarity of requirements relatively positively (M = 3.15), but affordability was lower (M = 2.84). Promotion and institutional support recorded the lowest sub-construct mean (M = 2.86), with technical support receiving the lowest individual score (M = 2.73).

Awareness has not necessarily translated into easy access; affordability, promotion, technical assistance and eligibility requirements remain barriers. The findings are consistent with UNEP (2021), GIZ (2022) and Kariuki et al. (2023), who identify awareness, information and financial literacy as important determinants of MSME access to green finance.

Effect of Accessibility of Green Financing on Credit Portfolio

A simple linear regression was conducted to determine whether accessibility of green financing predicts the credit portfolio of MSMEs.

Table 4.4: Regression Results for Accessibility of Green Financing

Statistic	Result
R	0.746
R ²	0.557
Adjusted R ²	0.552
F(1,100)	125.49
p-value	< .001
B	0.577
Beta	0.746
t	11.202
p-value	< .001

The results show a strong positive relationship between accessibility of green financing and the credit portfolio (R = .746). The R² of .557 indicates that accessibility explains 55.7% of the variation in the credit portfolio, while the adjusted R² indicates 55.2% after adjustment. The ANOVA confirms that the model is statistically significant, F(1,100) = 125.490, p < .001. Accessibility had a positive and significant effect (β = .746, B = .577, t = 11.202, p < .001). A one-unit increase in accessibility was associated with a 0.577-unit increase in the credit portfolio. The null hypothesis that accessibility has no significant effect was therefore rejected.

Improving awareness, simplifying requirements, strengthening institutional support and reducing financing costs can therefore enhance MSME credit portfolios.

Regulatory and Policy Framework

The second objective determined the effect of the regulatory and policy framework on the credit portfolio of MSMEs. The construct covered regulatory policies and government support and incentives.

Table 4.5: Regulatory and Policy Framework

Construct/statement	Mean	SD
Regulatory policies	3.06	1.14
Government has clear policies promoting green financing	2.77	1.27
Government policies have improved access to green loans	3.22	1.03
Regulatory framework is clear and effective	3.19	1.11
Government support and incentives	3.27	1.16
Tax incentives encourage green financing	3.38	1.09
Government provides sufficient financial support	3.12	1.24
Green financing programmes are promoted and accessible	3.31	1.08
Overall regulatory and policy framework	3.17	1.15

Source: Researcher data, 2026

The overall mean of 3.17 (SD = 1.15) indicates moderately positive perceptions of the regulatory and policy environment. Government support and incentives recorded the highest sub-construct mean (M = 3.27), with tax incentives recording the highest individual score (M = 3.38). Green financing programmes were also perceived as relatively well promoted and accessible (M = 3.31). Government financial support recorded a mean of 3.12.

Regulatory policies recorded a mean of 3.06. Respondents agreed that government policies had improved access to green loans (M = 3.22) and that the framework was generally clear and effective (M = 3.19). However, the statement on the clarity of government policies promoting green financing recorded a lower mean of 2.77. This indicates uncertainty about the visibility and communication of existing policies.

Effect of Regulatory and Policy Framework on Credit Portfolio

Table 4.6: Regression Results for Regulatory and Policy Framework

Statistic	Result
R	0.595
R ²	0.354
Adjusted R ²	0.347
F(1,100)	54.767
p-value	< .001
B	0.64
Beta	0.595
t	7.4
p-value	< .001

The model indicates a positive relationship between the regulatory and policy framework and the credit portfolio (R = .595). The R² of .354 shows that the framework explains 35.4% of the variation in the credit portfolio, with an adjusted R² of .347. The model was statistically significant, F(1,100) = 54.767, p < .001. The regulatory and policy framework had a positive and significant effect on the credit portfolio (β = .595, B = .640, t = 7.400, p < .001). Thus, a one-unit improvement in the regulatory and policy framework was associated with a 0.640-unit increase in the credit portfolio.

The null hypothesis was rejected. The results imply that strengthening regulatory policies, improving tax incentives, increasing government support and effectively promoting green financing programmes can improve MSME credit portfolios. The findings are consistent with Anyango (2024), who reported that regulatory frameworks support green financing in Kenya but may be constrained by weak enforcement and low awareness. The World Bank (2024) also emphasizes implementation and stakeholder engagement, while OECD (2022) notes that incentives must be sufficiently attractive and well communicated to influence business decisions.

Utilization of Green Financing

The third objective assessed the effect of utilization of green financing on the credit portfolio of MSMEs. Utilization was measured through adoption of green finance products, investment in green projects, and frequency and intensity of use.

Table 4.7: Utilization of Green Financing

Construct/statement	Mean	SD
Adoption of green finance products	3.38	1.2
Obtained green financing in past three years	3.58	1.17
Used green loans for sustainable projects	3.29	1.14
Used green grants/subsidies	3.27	1.29
Investment in green projects	3.19	1.27
Invested in environmentally friendly technologies	3.19	1.27
Frequency and intensity of utilization	3.72	1.18
Green financing is an important source of finance	3.88	1.28
Intend to continue utilizing green financing	3.56	1.08
Overall utilization	3.46	1.22

Source: Research data, 2026

The overall mean of 3.46 (SD = 1.22) indicates general agreement that MSMEs utilize green financing. Frequency and intensity recorded the highest mean (M = 3.72), particularly the importance of green financing as a source of finance (M = 3.88). The intention to continue using green financing also recorded a relatively high mean of 3.56.

Adoption of green finance products recorded a mean of 3.38. Respondents reported obtaining green financing in the previous three years (M = 3.58), using green loans for sustainable projects (M = 3.29), and utilizing green grants or subsidies (M = 3.27). Investment in green projects recorded the lowest sub-construct mean (M = 3.19), suggesting that although utilization is encouraging, some businesses may still face financial, technical or operational constraints in investing in environmentally friendly technologies.

Effect of Uptake of Green Financing on Credit Portfolio

Table 4.8: Regression Results for Uptake of Green Financing

Statistic	Result
R	0.633
R ²	0.4
Adjusted R ²	0.394
F(1,100)	66.684
p-value	< .001
B	0.622
Beta	0.633
t	8.166
p-value	< .001

The results show a positive relationship between uptake of green financing and the credit portfolio (R = .633). The R² of .400 indicates that uptake explains 40.0% of the variation in the credit portfolio, while the adjusted R² is .394. The model was statistically significant, F(1,100) = 66.684, p < .001. Uptake had a positive and statistically significant effect ($\beta = .633$, B = .622, t = 8.166, p < .001). A one-unit increase in uptake was associated with a 0.622-unit increase in the credit portfolio.

The null hypothesis was rejected. The results indicate that greater adoption and utilization of green financing can strengthen MSME credit portfolios by supporting sustainable investments and expanding access to appropriate financing. These findings are consistent with Sharma and Patel (2022), Müller and Hansen (2023), and Enejo (2023), who reported positive relationships between green financing, financial performance and resilience. Cui et al. (2018) and Zhou et al. (2020) further indicate that financially stable firms are less likely to default, supporting improved credit portfolio quality.

Multiple Regression Analysis: Joint Effect of Green Financing

Multiple linear regression was conducted to determine the joint effect of accessibility of green financing, regulatory and policy framework, and uptake of green financing on the credit portfolio of MSMEs.

Table 4.9: Joint Effect of Green Financing on Credit Portfolio

Statistic	Result
R	0.814
R ²	0.662
Adjusted R ²	0.651
F(3,98)	63.925
p-value	< .001
Accessibility: B / Beta / t / p	.383 / .495 / 6.611 / < .001
Regulatory framework: B / Beta / t / p	.203 / .188 / 2.584 / .011
Uptake: B / Beta / t / p	.281 / .285 / 3.996 / < .001

The multiple regression results demonstrate a strong positive relationship between the three dimensions of green financing and the credit portfolio ($R = .814$). The R^2 of .662 indicates that accessibility, regulatory and policy framework, and uptake jointly explain 66.2% of the variation in the credit portfolio. The adjusted R^2 of .651 indicates that the model explains 65.1% after adjustment. The remaining 33.8% is attributable to other factors not included in the model.

The model was statistically significant, $F(3,98) = 63.925$, $p < .001$. All three predictors had positive and statistically significant effects. Accessibility was the strongest predictor ($\beta = .495$, $B = .383$, $t = 6.611$, $p < .001$), followed by uptake of green financing ($\beta = .285$, $B = .281$, $t = 3.996$, $p < .001$). The regulatory and policy framework had the lowest but still significant effect ($\beta = .188$, $B = .203$, $t = 2.584$, $p = .011$).

These results support rejection of the overall null hypothesis that green financing has no significant effect on MSME credit portfolios. Accessibility emerged as the most influential dimension, demonstrating the importance of ensuring that MSMEs can practically obtain green financing products. Uptake was also significant, showing that access must translate into actual use, while the regulatory and policy environment provides an enabling institutional context.

The findings are consistent with UNEP (2021), which emphasizes improved access, awareness and simplified procedures as mechanisms for increasing green finance adoption. GIZ (2022) similarly reports that active promotion and technical support from financial institutions can increase MSME utilization of sustainable financing. The findings therefore demonstrate that improving MSME credit portfolios requires a combination of access, supportive policy and actual utilization.

IV. Discussion of Overall Findings

The study findings demonstrate that green financing is significantly associated with MSME credit portfolio performance in Kisumu Central Business District. The individual regression models show that accessibility explains 55.7% of variation in the credit portfolio, the regulatory and policy framework explains 35.4%, and uptake explains 40.0%. When considered jointly, the three dimensions explain 66.2% of the variation. This indicates that the dimensions complement one another and that a comprehensive green financing environment is more influential than relying on a single intervention.

Accessibility was the strongest predictor in the joint model. However, the descriptive results show that respondents were only moderately positive about actual access, particularly regarding affordability, technical assistance and institutional promotion. This creates an important policy implication: awareness of green financing products is insufficient unless MSMEs can obtain financing on affordable and manageable terms.

The regulatory and policy framework also had a significant positive effect. The findings indicate that incentives and government support can create conditions that encourage MSMEs to use green financing. Nevertheless, the relatively low score for clarity of government policies suggests that implementation and communication remain important. Policies therefore need to be accompanied by effective awareness and stakeholder engagement.

Utilization also had a significant positive effect. The relatively high mean for the importance of green financing indicates that MSMEs that use these products perceive them as valuable sources of capital. Continued utilization may support sustainable investment and financial resilience. However, the comparatively lower score for investment in green technologies suggests that additional technical and financial support may be required.

Overall, the evidence suggests that strengthening MSME credit portfolios requires more than simply increasing the availability of green financing. Financial institutions, government agencies and development partners should improve accessibility, simplify eligibility requirements, strengthen technical and advisory support, promote green financing programmes and develop affordable products tailored to MSME needs. These measures can increase uptake and support stronger credit portfolio performance.

Chapter Summary

The chapter analyzed data from 102 respondents, representing an 85% response rate. Most respondents were MSME owners/managers, and the businesses represented retail, manufacturing, agribusiness and service sectors. The descriptive findings showed moderate accessibility of green financing, moderately positive perceptions of the regulatory and policy framework, and generally positive utilization of green financing.

Regression results demonstrated that accessibility of green financing significantly and positively affected credit portfolio performance ($\beta = .746, p < .001$). The regulatory and policy framework also had a significant positive effect ($\beta = .595, p < .001$), while uptake of green financing significantly affected credit portfolio performance ($\beta = .633, p < .001$). The joint regression model was significant and explained 66.2% of the variation in credit portfolio performance. Accessibility was the strongest predictor, followed by uptake and the regulatory and policy framework. The findings therefore confirm the importance of an integrated approach in which MSMEs have access to affordable green finance, operate within a supportive policy environment, and actively utilize green financing for sustainable business activities.

V. Summary, Conclusions and Recommendations

Summary of Findings

The study examined the effect of green financing on the credit portfolio of MSMEs in Kisumu Central Business District, focusing on accessibility, regulatory and policy framework, and uptake of green financing.

The first objective examined the effect of accessibility of green financing. Findings showed generally moderate accessibility, with challenges related to affordability, institutional promotion, technical support, and eligibility requirements. Regression results established a positive and statistically significant effect of accessibility on MSME credit portfolio ($\beta = .746, p < .001$), explaining 55.7% of the variation. The study therefore established that improving awareness, affordability, lending procedures, and institutional support can enhance MSMEs' credit portfolio.

The second objective assessed the effect of the regulatory and policy framework. Respondents perceived the framework as moderately supportive, particularly through tax incentives, government support, and promotional programmes, although concerns remained regarding policy clarity and implementation. Regression analysis showed a positive and significant effect on credit portfolio ($\beta = .595, p < .001$), explaining 35.4% of the variation. The third objective examined uptake of green financing. Findings indicated that MSMEs generally utilized green financing and intended to continue using it for sustainable investments. Uptake had a positive and statistically significant effect on credit portfolio ($\beta = .633, p < .001$), explaining 40.0% of the variation.

Conclusions

The study concludes that accessibility, regulatory and policy framework, and uptake of green financing significantly and positively influence MSMEs' credit portfolio. Improving accessibility should therefore be prioritized, while stronger policy implementation and increased utilization of green financing can further enhance MSMEs' financial sustainability.

Recommendations

Financial institutions should simplify application and collateral requirements, provide affordable products, and strengthen financial literacy, awareness, and advisory services. Government should improve implementation and dissemination of green financing policies, strengthen tax incentives, subsidies, and coordination among relevant institutions. MSMEs should increase the utilization of green financing for sustainable investments, supported by flexible financing and continuous capacity building.

Suggestions for Further Research

Future studies should examine MSMEs in other counties and compare urban and rural enterprises. Research should also investigate additional predictors such as financial literacy, digital financial services, firm characteristics, managerial capability, and ESG practices. Longitudinal and mixed-methods studies are recommended to provide deeper understanding of the long-term effects and experiences associated with green financing.

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