

# The Effect of Green Finance on Firms' Sustainability: The Moderating Role of Management Commitment

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## Abstract

The purpose was to examine the effect of green financing on firms' sustainability: the moderating role of management commitment among Rural Banks. A cross-sectional quantitative research approach was employed on a sample of ninety-nine (99) respondents who were randomly selected. Questionnaire was employed using structured closed-ended 7-point Likert Scale. Descriptive statistics, such as mean score, standard deviation, correlation and regression method were employed for interpretation. The study's findings revealed there is direct significant effect between green finance practices and firms' sustainability. Banks management commitment has direct significant effect on firms' sustainability. Management commitment has strengthened the relationship between green finance and firms' sustainability. This shows that the rural banks tend to achieve greater and superior sustainability at point when the banks blend management commitment to green finances.

## Keywords

Ghana, Green Finance, Management Commitment, Rural Banks, Sustainability

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## 1. Introduction

Business organisations in today's competitive environment are trying to increase their environmental balance with various activities with the purpose of increasing value for their organisation (Mijs, 2017). Therefore, rural banks are now capitalizing on their diverse resources to compete through green financing which tends to allow them to achieve sustainable growth and performance (Pacheco et al., 2022). Hence, the plan for banks to adopt and apply green finance concepts

in their policy level and business activities tends to expect sustainable growth and performance (Zhang et al., 2022). However, banks have not realised how far their green finance has value for their firms' sustainability (Zhang et al., 2022). Therefore, green finance is the new mantra which has been introduced at the banking policy level and business activities. Green finance can not only be considered to improve firm's sustainability but also help solve the financing problems of eco-friendly companies (Zhang et al., 2022).

Research has shown that green finance ensures improvement in the allocation efficiency of financial resources as well as ensures effective guide to the flow of funds from high energy consumption to ever-green and eco-friendly industries (Mngumi et al., 2022). This implies that the application of green finance in the business operations and activities of firms tends to improve firm's sustainability (He et al., 2019). Liu et al. (2019) point out that green finance should be consistently committed to alleviating environmental problems. Thus, financial regulators should pay enough attention to the allocation of scarce social resources and actively ensure and guide manufacturing firms to develop their businesses in such a way that it is energy conservation and environmental protection (Chen et al., 2021). Li and Chen (2020) argue that the optimization of resource allocation as well as guiding consumption and investment behaviour, thus, green finance does not only promote the adjustment of the organisation structure but also plays an important role in improving firms' sustainability (Sadiq et al., 2021).

Despite the recent proliferation of green finance and firms sustainability among rural banks, there is growing concern that net-zero management commitment does have a role to play in the relationship between green finance and firms' sustainability (Zhang et al., 2022). Management commitment is considered to form and play an integral role in establishing the link between green financing and firms' sustainability (Haldorai et al., 2022). Thus, the ability for management to show consistent efforts and commitment in ensuring that green finance is been adopted and applied in the business activities and operations of firms with purpose of improving firms' sustainability (Kumari et al., 2022). The commitment of management comes with diverse support which makes it vital in the green finance concept (Haldorai et al., 2022). Thus, the management of rural banks has been committed in terms of assisting and gaining the support from board of directors of the banks. This has given the top management the commitment to providing support in the forms of green finance products in the forms of retail finance, assets management, investment finance and insurance for green projects. Hence, firms cannot achieve sustainability alone (Zhang et al., 2022). Therefore, the responsibility of enforcing green finance activities also rests with the firm's management commitment, signifying the importance of management commitment in strengthening or weakening the relationship between green finance and firms' sustainability (Zhang et al., 2022).

Though sustainability firm's performance and green finance are not new subjects addressed by the literature and researchers (Maroufkhani et al., 2019; Tan,

Yan, & Dong, 2022); there is literature gap based on the mixed conclusion. The paper, actually attempts to fill this gap and contribute to the existing body of knowledge by using powerful instruments, like correlation and Ordinary Least Square (OLS) multiple regression, to explore how rural banks can achieve sustainability. The study explores the effect of green finance, and management commitment on sustainability in sample of rural banks in Ghana. The conclusion of the study may direct management of the banks through developing and financing sustainable products that are environmentally friendly which shall attract more consumers and hence improve firms' sustainability in the short and long term. Based on this, the purpose of this study is therefore to investigate the effect of green finance on firms' sustainability: moderating role of management commitment.

#### **Objectives of the Study**

- 1) To examine the effect of green financing on firms' sustainability among selected rural banks in Ghana.
- 2) To examine the moderating role of management commitment on relationship between green financing and firms' sustainability among selected rural banks in Ghana.

## **2. Literature Review, Conceptual Framework and Research Hypothesis**

### **2.1. Relevant Theory**

The relevant theory associated with the paper concerning green finance and firms' sustainability involves contingency theory.

#### **Contingency Theory**

Contingency theory is based on ideology which states that it is important for firms to adapt the changes that occur in the environment based on the level of conditions that surrounds the environment in which the business operates (Donaldson, 2001). The assumption underlying the theory makes room for management commitment as a contingent factor that is needed to ensure that the practices of green finance are well executed (Bates, 2016). In the context of the study, the means of achieving sustainability largely depends on how management of firms is hugely committed to mobilizing resources to ensure effective practices of green finance. This shows that key leadership and top management support is needed to help ensure that the firm's green finance practices help achieve its intended objective of improving sustainability. Hence, it is important for firms to have contingency plan that this well coordinated, supported and implemented through the help of management commitment which tends to make firms green finance achieve its purpose. The importance of the theory to the study is that it is important for rural banks to have contingency plans that will be used to deal with key initiatives such as green finance. Based on this, the top management of the firms tends to ensure that the needed support is aligned to the activities and practices of green finance which tend to help improve sustain-

nability of the firms.

## 2.2. Green Finance and Firms' Sustainability

The review of the literature in relation to most theories has conducted studies in line with the link between green finance and sustainability of firms (Chen et al., 2021). Literature argued that there is highly direct correlation that exists between green finance and firms' sustainability (Ruiz, Arboleda, & Botero, 2016; Chen et al., 2021). On the other hand, other studies shared a different view which indicates that there is adverse impact that exists between green finance and sustainability of firms (Ning & She, 2019). Li and Chen (2020) shared their view by indicating that green credit tends to impact significantly on the green productivity. This shows that firm's adoption of green finance by way of financing green projects which tend to impact on firms in producing eco-friendly product. The study further points out that the ability of governments to grant green subsidy as well as implementation of green financial policies tend to enhance the practices of green financing which tend to improve sustainability (Li & Chen, 2020).

Also, studies have shown interest in the link between green finance and sustainability of firms (Lee & Lee, 2022). Madelano, Dogan and Taskin (2022) argued that green finance practices tend to have direct impact on level of demand that is associated with clean energy. Based on this, the ability for firms to engage and practice clean energy as result of the financing green projects tends to enhance environmental performance. In addition, Zheng and Siddik (2021) indicate banks' green finance that take in the form of green bonds and credit tends to have strong correlation with social, economic and environmental performance in the context of sustainability. In the view of Cui, Wang and Wang (2020), they argued that the integrity that is beneath the practices of green financing tends to have direct impact on sustainability as well as cleaner production. Literature believes that the practices of green finance are considered as an inevitable trend for financial development in the future. Thus, this form of innovation that takes the form of green finance is considered a powerful driving force for achieving sustainable performance (Qin & Cao, 2022). The review of the literature has noticed that green finance allows investors to access green credit from number of pool of credit that are at disposal of investors who are interested in sustainable investment projects and opportunities (Zheng & Siddik, 2021). Studies believe that the involvement of firms in green financing practices and activities helps in reduction of greenhouse gas emission as well as promoting sustainable practices (Zheng & Siddik, 2021).

## 2.3. Moderating Role of Management Commitment on Relationship between Green Finance and Firms' Sustainability

Management commitment is considered key in thin line that exists between green finance and sustainability of firms (Gull et al., 2023). Thus, the importance that top management possesses in terms of focusing to the development of firms

green capabilities cannot be underestimated. In a nutshell, it is believed that the successful achievement of the goals of firms is largely dependent upon the commitment of its management (Williams et al., 2014). Hence, the ascertainment of firms' sustainability, which can lead to a competitive edge within a given market or industry, lies within management commitment towards green finance practices and sustainable practices (Henry, Buyl, & Jansen, 2019). Yusliza et al. (2019) argued that green finance has a direct link with management commitment and sustainability. Thus, the commitment of management is key for the successful implementation of green finance policies and initiatives that are being practiced by firms (Goyal & Kumar, 2017). Studies have argued that lack of management commitment is considered to pose a serious challenge to the successful implementation and practices of green finance. This implies that the ideologies of top management tend to influence in terms of strengthening or weakening the relationship that exists between banks' green finance and sustainability. Digalwar et al. (2013) point out that management commitment serves as basis for achieving effective environmental improvement. Thus, the top management of firms is largely accountable for creating green finance policies to implement as well as ensuring that all the necessary resources are geared towards the practices of green finance which tend to attract green investors and lead to improve sustainability (Yusliza et al., 2019). Commitment from top management is critical to ensure that firm's objective is realized to the point of increasing sustainability performance (Yusliza et al., 2019). Therefore, studies argued that the commitment of the management of firms may strengthen or weaken the relationship that exist between green finance and firms' sustainability.

#### **2.4. Empirical Review**

Meng, Wei and Zhang (2019), investigated the effect of green finance on firms' sustainability. Based on the nature of the objective, the study adopts quantitative research. Cross-sectional method was used for the study. The result revealed that green finance had direct link with sustainability of firms. This implies that the adoption of green finance helped improve environmental and economic performance. Holland (2019), determined the effect of green finance on firms' sustainability. Based on the nature of the objective, the study adopts quantitative research. The result revealed that green finance had direct link with sustainability of firms. This implies that the adoption of green finance helped improve environmental and economic performance. Soubra and Ng (2017), determined the link between green finance and sustainability. The result indicated that there is direct link between green finance and sustainability performance. Cheng, Tan and Huang (2021) investigated the relationship the exit between green finance and firms' sustainable performance; and the moderating role of management innovation commitment. The result revealed that green finance had direct link with sustainability of firms. Also, management innovation commitment helped strengthened the relationship between green finance and firms' sustainability

through improved performance. Al-Zadjali and Al-Hinai (2020), determined the impact of banks green finance on sustainability in Oman. The study revealed that there is indirect link between green finance and firms' sustainability. This was attributed to numerous challenges such as capacity building and lack of collaboration among stakeholder as key in disrupting green finance initiatives. Khan and Gouda (2019), investigated green finance and sustainability of firms in Oman. The result indicated that there is indirect link between green finance and sustainability performance. Elbousty and Boubakri (2021), examined green finance and firms' sustainability. The result indicated that green financing enhanced firms' environmental and social performance which led to improved economic performance.

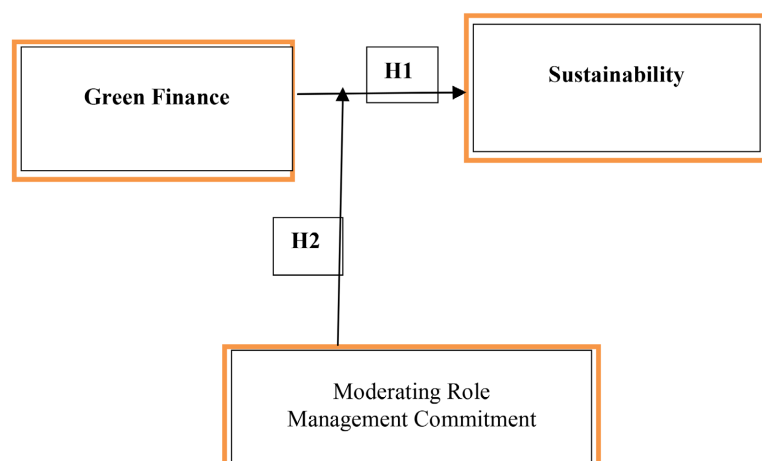
## 2.5. Conceptual Framework and Hypothesis Formulation

See **Figure 1**.

### 2.5.1. Effect of Green Financing on Firms' Sustainability

The effect that exists between green finance and sustainability of firms has been discussed in the literature. Based on this, Ding (2019) conducted a study and indicated that green credit challenges tend to increase the heavy pollution which adversely affects factor productivity. In support of the argument, Meng et al. (2019) and Holland (2019) agreed in their studies which indicated that green finance had a direct relationship with firms' sustainability. The studies found that green finance had a direct relationship with the sustainability of firms. Also, Scholtens and Veld (2020) and Cheng et al. (2021) indicated that effective implementation of green finance practices tends to attract more green investors which tend to reduce environmental pollution as well as improve economic sustainability. This implies that green finance has a direct significant impact on firms' sustainability. In sum, based on the above discussion and literature reviewed, it is hypothesized that:

*H1: Green finance has a significant direct effect on firms' sustainability*



**Figure 1.** Conceptual frameworks. Source: Researcher own construct, 2023.

### **2.5.2. Moderating Role of Management Commitment**

Management commitment is considered key driver that exists between green finance and sustainability of firms (Gull et al., 2023). Thus, the importance that top management possesses in terms of focusing on the development of firm's green capabilities cannot be underestimated (Williams et al., 2014). Thus, the commitment of management is key for the successful implementation of green finance policies and initiatives that are being practiced by firms (Goyal & Kumar, 2017). Studies have argued that lack of management commitment is considered to pose serious challenge to the successful implementation and practices of green finance. This implies that top management commitment tends to strengthen or weaken the relationship that exists between banks' green finance and sustainability (Yusliza et al., 2019). Thus, the study proposed the following hypothesis:

*H2: Management commitment strengthens the effect of green finance on firms' sustainability.*

## **3. Methodology**

### **3.1. Research Approach**

The study adopted a quantitative research approach in line with the objectives of the study. The justification of the said approach is that it helps produce results that are clearly expressed in numbers and statistics. Also, it provides an avenue through which numerical data are been expressed using analysis of hypothesis. Again, it helps to ensure that large data set is been obtained from study participants using questionnaire. Lastly, it provides an avenue that ensures effective generalization of the results which ensures flexible means of collecting and analysing data information.

### **3.2. Research Design**

Cross-section research design was employed based on the nature of the objectives of the study. The rationale is that it helps to collect data at a given point in time. Also, it allows for collection of data using large pool of study participants. However, the study employed descriptive and explanatory research. The study explained descriptive research as the vivid description of the study variables or phenomenon. The justification of the use of said method is that it helps ensure effective and accurate description of the variables involved in the study. Also, the rationale for choice of explanatory study is that allows for the study to measure the cause and effect of the variables under discussion. Lastly, it provides means to analyse the results using patterns in the linkages among the variables.

### **3.3. Population**

The population of interest comprises of all the rural banks in Ghana. Thus, the population of interest consists of one hundred and thirty-two (132) registered rural banks in Ghana (Apex Bank, 2023). The rationale for selecting the said



population of interest is that the rural banks in Ghana are strategically placed financial institutions whose proximity to clients that are into eco-green projects. Hence, this category of banks tends to have potential to serve a wider community area in the country with head up in improving local economic development and sustainability through green financing.

### 3.4. Sampling Procedure

Ninety-nine (99) selected rural banks were obtained to represent the total sample size of the study. The study obtained the sample size through the use of Yamane formulae. Thus, the determination was achieved through the use of the population which is largely represented by  $N = 132$  as well as using margin of error of “ $e$ ” = 0.05.

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

$$n = \frac{132}{1 + 132 \times 0.05^2}$$

$$n = 99$$

Simple random sampling was used to select the sample rural banks for the study. The study ensured that random sampling selection was used to select the study participants in the context of the rural banks in the country. The total sample that was obtained meets the inclusion criteria which allows all the study participants to have an equal chance of representation. The study ensured that the sampled rural banks were effectively divided into certain equal interval. This helped the study achieve a total sample size of 99 rural banks. In line with this, the study ensured that each of the rural banks was assigned random numbers in the selection process. Based on this, the study ensured that the available rural banks that consented to take part in the sampling process were ascertained until the sample size was obtained. The justification for the sample selection was achieved with the fact that at least the rural banks were involved in financing green projects across the country. The motivation for the use of simple random sampling is based on the fact that it ensures equal chance of representation among the elements in the population. Finally, it ensures that there is no biases in the selection processes; this is attributed to the fact that the elements in the population have equal chance of representation.

### 3.5. Data Collection Instruments

Questionnaire was used as the study data instrument. The rationale for the section of the said data instrument is that it permits the use of large number of participants at given point in time. Thus, the design of the questions was performed in line with the specific objectives of the study. The questions were set in the form of closed-ended in the form of Likert scale. The scale used for the questions ranges from 1 to 7. Thus, the scale ranges represents strongly disagree to strongly agree. Section A was designed in line with the green financing activities of the



rural banks. This was designed using 7-point scale. Thus, the constructs involved nine (9) items. The study ensured that the respondents indicated their agreement or disagreement to the subject using seven (7)-point scale ranging from (1 = strongly disagree to 7 = strongly agree). Section B presents the questions in line with the sustainability measures of the rural banks. The design of the construct was done using seven-point scale. Thus, sustainability construct, the measurement consists of nine (9) items. Concerning Section C, the questions in line with the management commitment constructs. The design of the construct was done using seven-point scale. Thus, sustainability construct, the measurement consists of five (5) items.

### 3.6. Questionnaire Design Principle

The questionnaire was designed to ensure that the respondents fully understood the questions with no ambiguity. The questions were short and simple with no double barrel questions.

### 3.7. Model Specification

The model that was used to establish the effect of green financing on firms' sustainability was based on prior studies conducted by (Paille et al., 2018; Renwick et al., 2019; Wagner, 2021). The study estimates the following model:

$$FS = \beta_0 + \beta_1 GF + \beta_2 MC + \varepsilon_t \quad (1)$$

where:

FS = Firm Sustainability.

GF = Green Financing.

MC = Management Commitment.

$\beta_0$  = constant of the model.

$\beta_1 + \beta_2$  = coefficient of the model.

$\varepsilon_t$  = stochastic error term.

### 3.8. Variables Description and Measurement

See [Table 1](#).

## 4. Results and Discussions

### 4.1. Reliability and Validity Test

Concerning the reliability and validity results are shown in [Table 2](#) below. Based on this, the standard factor loadings are expected to be above 0.50 which is considered as the threshold recommendation as indicated by [Hair et al. \(2019\)](#). Based on this, the result in [Table 2](#) below revealed that the loadings were all above 0.50 which lied within the threshold recommendation. Further, the result indicated the internal consistency of the study constructs using Cronbach's alpha and composite reliability. Thus, the threshold as suggested by [Hair et al. \(2019\)](#) shows 0.7 for both Cronbach's alpha and composite reliability. Based on this, the

**Table 1.** Variables description and measurement.

	Variable	Measurement	Expected sign
FS	Firm Sustainability (Dependent Variable)	This is measured by using environmental, economic and social sustainability measures.	
GF	Female Attitudes Towards Alcohol Consumption (Independent Variable)	This is measured using retail finance, asset finance, corporate finance.	+/-
MC	Management Commitment (Independent Variable)	This is measured using management budget support, training management, cooperation and green finance policy initiative.	+/-

Source: Author's own construct, 2023.

**Table 2.** Reliability and validity test.

Construct	Items	Loading	AVE	CR	CA
	GF1	0.781	0.651	0.916	0.924
	GF2	0.835			
	GF3	0.792			
	GF4	0.851			
	GF5	0.780			
	GF6	0.856			
	GF7	0.795			
	GF8	0.821			
	GF9	0.746			
	ES1	0.773	0.657	0.919	0.876
	ES2	0.756			
	ES3	0.801			
	ES1	0.795			
	ES2	0.848			
	ES3	0.784			
	SS1	0.765	0.650	0.856	0.904
	SS2	0.872			
	SS3	0.749			
	MC1	0.786	0.650	0.856	0.904
	MC2	0.792			
	MC3	0.785			
	MC4	0.762			
	MC5	0.892			

Source: Field data, 2023.

results indicated that all the study constructs had alpha rate above 0.7. The study measurement of the coefficient using the average variance extracted (AVE) which was secured since all the standardized coefficients equal to or greater than 0.6.

## 4.2. Correlation Matrix

Concerning the result as shown in **Table 3** which depicts the correlation analysis, the result revealed that there is direct significant correlation between banks' green finance and sustainability ( $r = 0.415$ ,  $p$ -value  $< 0.05$ ). This implies that the rural banks' practices and financing of green projects helped ensure that there was mitigation of climate change due to improved waste management, recycling of waste, reduction in carbon emission as well as protection of the natural resources. Hence, this led to improved environmental sustainability which boost the economic sustainability of the banks. The result conforms to works by **Meng et al. (2019)** and **Holland (2019)**, which indicated that green finance has direct link with sustainability.

Also, the result indicated that there is direct significant correlation between banks management commitment and sustainability ( $r = 0.342$ ,  $p$ -value  $< 0.05$ ). This implies that the banks management commitment that took the form of green budgetary support, green finance policies and implementation and green training and monitoring and compliance of green activities helped enhanced and improved sustainability. The result is in line with the works by **Sharma and Mishra (2021)** and **Li and Gan (2021)**, indicated that top management commitment towards green finance activities directly impact on firm's sustainability.

## 4.3. Regression Analysis

The study analysed the effect of green finance on firms' sustainability as shown in **Table 4**. Based on this as shown from the regression analysis, green finance has a significant direct effect on sustainability ( $\beta = 0.387$ ,  $t = 3.897$ ,  $p < 0.05$ ). This implies that the rural banks' green finance is directly associated with sustainability. Therefore, if the index of green finance increases, firm sustainability will most likely increase as well. Further, green finance has a 38.7% relative change in firm sustainability. Therefore, *the hypothesis 1, that there's a significant*

**Table 3.** Correlation analysis.

Items	Mean	Green Finance (GF)	Management Commitment (MC)	Sustainability (S)
Green Finance (GF)	4.62	1		
Management Commitment (MC)	4.73	0.342	1	
Sustainability (S)	4.65	0.415	0.406	1

Source: Field data, 2023. \*\*Significant at the 0.05 (two-tailed).

**Table 4.** Effect of green finance and management commitment on sustainability.

Construct	Sustainability	Sustainability	Sustainability
Main Effect	<b>Model1</b> Beta (t-value)	<b>Model 2</b> Beta (t-value)	<b>Model 3</b> Beta (t-value)
Green Finance	0.387 (3.897)	0.192 (2.509)	0.182 (2.624)
Management Commitment (MC)			0.134 (2.378)
Interactive Effect			
Green finance * Management Commitment			0.095 (2.175)
Model Indices			
R	0.501	0.478	0.456
R-Square	0.437	0.412	0.389
Adjusted R Square	0.416	0.403	0.411
$\Delta F$	64.538	47.538	51.680
Sig	0.000	0.000	0.000

Significant at 95% confidence interval.

*positive effect between green finance and sustainability is accepted.* The result is consisted with [Elbousty and Boubakri \(2021\)](#) and [Muganyi et al. \(2021\)](#), which argued the ability for firms to effectively implement green finance tends to directly impact on sustainability

The study investigated the interactive effect of green finance and management commitment on sustainability. The result revealed that the interactive effect of green finance and management commitment has a significant direct effect on sustainability (GF  $\times$  MC,  $\beta = 0.095$ ,  $t = 2.175$ ,  $p < 0.05$ ). Thus hypothesis 2 *that the interaction of green finance and management commitment results to superior firm sustainability is supported.* In conclusion, management commitment moderates the effect of green finance on sustainability performance. This suggest that management commitment green strengthened the positive link between green finance and sustainability. The implication is that the banks achieved superior sustainability performance when they blended green finance with management commitment.

## 5. Conclusion and Recommendation

The study concluded that rural banks' green finance practices have direct significant effect on firms' sustainability. The result is consistent with the works by [Meng et al. \(2019\)](#) and [Hsu et al. \(2018\)](#), indicating that green finance impacts directly on sustainability. This implies that the rural banks ensured that effective green finances were provided in the form of investments for firms and individuals that provided environmental benefits in the broader sense of environmental sustainable development. This shows that the banks' finances that were assigned

and provided to prospective green firms and individuals helped ensure that projects that are eco-friendly were massively supported with green investment. The banks ensured that firms that are not eco-friendly to the environment and are involved in high destruction and degradation of the environment and waters “galamsey” were not provided with finances in the form of green investment. The implication is that the green credit investments that were provided to the green clients helped reduce the high level of carbon emissions that are been emitted which led to a reduction in air pollution. Thus, the resultant effect is that the rural banks’ effective financing of green activities and projects helped protect the environment as well as save humanity’s lives through reduction of hazardous gasses and waste in the environment. This improved sustainability performance and hence, a lot of clients were attracted to the business operations of the rural banks based on their green finance practices. This improved the market share as well as improved revenue growth of the banks. The result is consistent with the work by [Scholtens and Veld \(2020\)](#), which indicated that green finance had a direct link with sustainability performance.

The result revealed that the banks provided green finances in the form of green mortgage, green commercial building as well as green insurance. This implies that the banks’ green financing of green commercial buildings allowed them to use bricks that were eco-friendly to the environment and were largely sustainable. Hence, this helped reduce the consumption of natural resources which improved sustainability. On the other hand, banks’ green mortgage that was provided to their clients helped save costs as well as provided improved efficiency in energy products. Thus, the green mortgage was provided at a reduced interest rate which helped allow client to repay their loans and reduced the level of loan default. The implication is that rural banks’ returns on investment in green finance were improved since the loan default which was major problem for the banks was reduced. This was attributed to the low interest rates that were assigned to green finance projects which motivated the clients to pay back their green loans which helped improve return on investment and profitability as compared to their competitors. The result is consistent with the work by [Cheng et al. \(2021\)](#) and [Dhiman et al. \(2019\)](#), which indicated that green finance enhanced economic sustainability.

The banks provided green finances directly towards climate-smart agriculture in the country. This shows that the banks provided green finances towards climate-smart agriculture which was environmentally friendly to the environment. The implication is that it helped improve sustainable productivity as well as reduced the level of green gas emission on the environment. The result is in line with the works by [Gao et al. \(2019\)](#), which indicated that green finance had direct link with environmental performance.

The result revealed that the interactive effect of green finance and management commitment has a direct significant effect on sustainability. The result is consistent in line with the work by [Cheng et al. \(2021\)](#), which indicated that top

management commitment helped strengthened the relationship between green finance and sustainability. In conclusion, the result indicated that banks' management commitment strengthened the relationship between banks' green finance and sustainability. This suggests that banks' management commitment directly moderates the link between green finance and sustainability. The implication is that rural banks tend to achieve greater and superior sustainability at point when the banks blend management commitment to green finance. Thus, literature has shown that the primary focus of firms' sustainability goes beyond the compliance of meeting and exceeding the environmental rules and regulations (Zheng & Siddik, 2021; Zhou et al., 2022). Hence, sustainability focuses of the economic, environmental and social impacts of firms' green finance practices as well as eco-friendly resources that are in line with the environmental laws (Akter et al., 2018). Based on this, prior studies conducted by Cheng et al. (2021) and Zhang et al. (2022), indicated that sustainability performance is achieved as result of attaining the economic and environmental objectives through the delivery of the core business activities of firms that includes the practices of green finance. This shows that the banks' commitment that providing green finance to green projects tends to produce environmentally friendly goods, production of green products, and integration of green practices as well as reduction of carbon gasses into the environment (Li & Gan, 2021, Elbousty & Boubakri, 2021). Therefore, management commitment is linked with green finance, which improves sustainability (Zhang et al., 2022). This shows that management commitment that took the form of green finance budgetary allocation, green practices implementation, and green finance compliance and monitoring through the practices of green finance; hence, mitigated the adverse environmental effect and improved its economic and social performance via waste management and improved revenue growth (Zhang et al., 2022; Al-Zadjali & Al-Hinai, 2020). Therefore, based on this, the study recommends that the board of directors and management of the rural banks should improve the practices of green finance by way of holistically developing green finance framework in consultation with Bank of Ghana, Securities and Exchange Commission, Ghana, Apex body and Environmental Protection Agency to help improve the green finance practices which tend to improve the sustainability performance.

## 6. Limitation and Suggestion for Further Research

The study suggests that generalization of the study result is difficult due to the small sample size which makes it difficult to use the small sample to represent the entire population. Therefore, it is prudent for future research to increase the size of the sample which will include the other commercial banks in the country. This tends to allow the study to make precise conclusion on the subject under discussion. The study also indicated the use of the single source of information. Therefore, it is important for future research to adopt mixed method of approach. This will help ensure complement of each research approach. Lastly, fu-

ture research should consider comparative study which will involve banks in the country and other banks in Ghanaian neighbouring countries. This tends to help improve the scope of the study.

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## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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## Appendix

### THE EFFECT OF GREEN FINANCING ON FIRMS' SUSTAINABILITY: THE MODERATING ROLE OF MANAGEMENT COMMITMENT

#### SECTION A:

Please tick the appropriate box to indicate the extent of your agreement or disagreement with the following statements regarding **GREEN FINANCE** on a scale of 1 - 7 where, 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Somewhat Disagree (SWD), 4 = Uncertain (U), 5 = Somewhat Agree (SWA), 6 = Agree (A) and 7 = Strongly Agree (SA).

STATEMENTS		Agreement Scale						
		SA	A	SWA	U	SWD	D	SD
1	Our rural bank provides green credit to energy-intensive firms	7	6	5	4	3	2	1
2	Our rural bank finances investment in recycling and recyclable products	7	6	5	4	3	2	1
3	Our rural bank provides green bonds to eco-friendly firms.	7	6	5	4	3	2	1
4	Our rural bank has allocated a specific budget for green projects and initiatives.	7	6	5	4	3	2	1
5	Our bank has established policies to ensure that financing is directed towards environmentally sustainable projects.	7	6	5	4	3	2	1
6	Our rural bank provides green finance to individuals and firms that ensure waste management and green brick manufacturing	7	6	5	4	3	2	1
7	Our rural bank finance retailers investing more in energy efficiency projects	7	6	5	4	3	2	1
8	Our rural bank finance retailers investing more in green industry development	7	6	5	4	3	2	1
9	Our rural bank provides green insurance to green clients.	7	6	5	4	3	2	1

#### SECTION B:

Please tick the appropriate box to indicate the extent of your agreement or disagreement with the following statements regarding **SUSTAINABILITY PERFORMANCE** on a scale of 1 - 7 where, 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Somewhat Disagree (SWD), 4 = Uncertain (U), 5 = Somewhat Agree (SWA), 6 = Agree (A) and 7 = Strongly Agree (SA).

STATEMENTS		Agreement Scale						
		SA	A	SWA	U	SWD	D	SD
1	Our rural bank reduced carbon emissions from banking activities	7	6	5	4	3	2	1

**Continued**

2	Our bank ensued energy requirements of products and services	7	6	5	4	3	2	1
3	Our bank produces few wastes and concerned about waste recycling and waste management	7	6	5	4	3	2	1
<b>ECONOMIC SUSTAINABILITY</b>								
1	Our rural bank green finance practices significantly improved revenue growth and market share than competitors for the last three years’.	7	6	5	4	3	2	1
2	Our bank has achieved a better return on investment than competitors for the last three years	7	6	5	4	3	2	1
3	Our rural bank achieves better net profit growth than competitors’.	7	6	5	4	3	2	1
<b>SOCIAL SUSTAINABILITY</b>								
1	Our bank ensues provision of better customers’ satisfaction	7	6	5	4	3	2	1
2	Our rural bank ensued establishment of trust	7	6	5	4	3	2	1
3	It enhances banks’ image	7	6	5	4	3	2	1

**SECTION C:**

Please tick the appropriate box to indicate the extent of your agreement or disagreement with the following statements regarding MANAGEMENT COMMITTEMENT on a scale of 1 - 7 where, 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Somewhat Disagree (SWD), 4 = Uncertain (U), 5 = Somewhat Agree (SWA), 6 = Agree (A) and 7 = Strongly Agree (SA).

	STATEMENTS	Agreement Scale						
		SA	A	SWA	U	SWD	D	SD
1	Our top management ensures creative green finance policies initiation and implementation	7	6	5	4	3	2	1
2	Our top management ensures budgetary support for green finance practices	7	6	5	4	3	2	1
3	Our top management ensures regular green finance training	7	6	5	4	3	2	1
4	Our bank top management provides effective green finance implementation	7	6	5	4	3	2	1
5	Our top management ensures regular monitoring and compliance of bank green finance practices	7	6	5	4	3	2	1