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Impact of Green Finance on Environmental Performance with the Mediation of Financial Innovation: Evidence from Nigerian Bank

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Abstract

Objective: This study examines the mediating effect of financial innovation on the relationship between green finance and environmental performance.
Design/Methods/Approach: A targeted sampling technique was used for access bank selection. Copies of the structured questionnaire were sent to 250 branch managers of Access Bank in southwestern Nigeria. A total of 200 questionnaires were completed and returned to researchers. Data were analyzed using the STATA 15 version using structural equation modeling.
Findings: The results show that green loans, green training, green investment, and green policy have a positive and significant impact on environmental performance. This means that green finance parameters are the driving force behind Nigeria's environmental initiatives and performance. Furthermore, the study showcases that financial innovation partially mediates green loans, green investments, green training, and environmental performance. The study also confirms that financial innovation does mediate green policy and environmental performance.
Originality/Value: Prior studies have confirmed the correlation between green finance and environmental outcomes. However, despite various research endeavors highlighting the influence of green finance on overall ecological performance and introducing financial innovation as a mediator, this aspect remains unexplored in the context of the banking sector.
Practical/Policy implication: Given that financial innovation partially mediates green loans, green investments, green training, and environmental performance, the results of this investigation are of importance to policymakers and financial institutions in the area of banks' environmental performance. This study provides insights on financial innovation and green finance in financial institutions to foster green banking activities to promote environmental sustainability and performance.

Keywords: Green Loans, Green Investments, Green Banking, Financial innovation, Environmental performance

JEL Classification: F64, F65, G21, Q54

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1. Introduction

The effect of environmental degradation on human health has been a major concern to Policymakers, researchers, and environmentalists across the world. Oyedele, Olowookere, Gbadebo, and Sajuyigbe (2022) asserted that environmental issues are the most significant global concern. They argue that most environmental problems arise when a company's production activities adversely affect the environment and cause long-term damage that also affects society. The report has revealed that over 5% of advanced nations and about 15% of developing nations have environment-related human health issues (Gao et al., 2021). To support this claim, the World Health Organization (WHO) reports more than 14 million deaths annually from preventable environmental causes. The report further indicates that environmental problems account for more than 24% of the global burden of disease and about 25% of all deaths and that the environmental burden of disease in developing countries varies with exposure differences (Ahmad et al., 2022). Recent studies show that climate change is responsible for about 5% of diarrhea and 10% of malaria worldwide (Bansal & Kumar, 2021; Wang et al., 2022; Hafeez et al., 2022; Su, Li et al., 2022). Nigeria is suffering from heavy water due to climate change. This increases the frequency and intensity of droughts. This nasty impact affects millions of Nigerians, undermines food security and livelihoods, and could cost up to 30% of the country's GDP by 2050 (Adesola, et al., 2021; UN, 2020).

As a result of this development, the United Nations, with the aim of keeping global warming below 2.0 °C, met in Paris with some 190 countries to encourage the investment of financial institutions to financially support climate protection initiatives that improve the environment (UN, 2020; Xi). According to Yu et al. (2021), to protect against the threat of climate change and the loss of natural resources, investments to protect and better manage the world's ecosystems will need to reach $384 billion annually by 2025. As a result of this scenario, the World Bank is working with global organizations striving to provide solutions, providing approximately US$31.7 million to help countries combat climate change, especially in developing countries (Ren et al., 2020). In line with the Green Finance Initiative, the Climate Policy Initiative claimed that more than US$360 billion is invested annually in green public and private projects (Zhan, 2023). Similarly, the Central Bank of Lebanon has joined the Green Lending Initiative to support green credits by reducing commercial bank reserve requirements for 100-150% of its green investment loans (Li et al., 2022).

Green finance is a relatively new phenomenon and has become a hot topic in academia as the current generation recognizes the importance of a sustainable environment (Park et al., 2018). Existing research suggests that the green finance and environmental performance relationship has been described in the literature (Zhan et al., 2023; Oyedele et al., 2022; Li et al.,2022; Zhang et al., 2021; Ullah et al., 2020). According to Ren et al. (2021), green finance is the provision of financial services to activate environmental sustainability. Green finance has proven to be a platform for integrating financial services into green policies and environmental sustainability (Oyedele et al., 2022; Gao et al., 2021). This is because formulating a green financial system will help solve environmental problems and improve human well-being. It means that it is a platform for promoting green investment.

Along with green finance, financial innovation is recognized by academics, environmentalists, and researchers as a tool for funding environmental initiatives (Li et al., 2022). Huo et al. (2022) prove that financial innovation enables green innovation against the backdrop of stringent environmental laws and relatively low banking competition. Chien et al. (2021) show that financial innovation is the solution to environmental problems in Asian economies. Ebrahim and Hussain (2010) also identify financial innovation as a powerful key to communication channels ranging from green finance to environmental initiatives. Nkem and Akujinma (2017) argue that financial innovation drives green finance and motivates organizations to make unexpected improvements in various operational processes that drive environmental performance.

Green finance and financial innovation are recognized by researchers as components that promote environmental initiative and performance. The link between green finance and environmental performance is well documented (Zhan et al., 2023; Oyedel et al., 2022; Li et al.,2022; Zhang et al., 2021; Ullah et al., 2020). However, no research is available that examines the extent to which green finance impacts overall ecological performance while introducing financial innovation as a mediator to the context of Nigerian Banks. This study, therefore, aims to fill a gap in the literature by examining how financial innovation affects the link between green finance and environmental performance in Nigeria by using it as a mediator. The study is expected to revitalize environmental sustainability and reduce its environmental impact by achieving the SDGs by 2030. This is based on the fact that intense competition in the banking industry can increase levels of financial innovation, promote green finance, and improve environmental sustainability (Oyedele et al., 2022). This study offers insights into the synergy of financial innovation and green finance within financial institutions, aiming to encourage green banking practices for the advancement of environmental sustainability and performance. The framework established in this research not only supports industrial sustainability but also contributes to mitigating environmental threats, fostering economic growth, and aligning with the objectives of the 2030 Agenda for Sustainable Development Goals.

The subsequent sections of this article follow a structured organization. The literature review will delve into the theory, prior research, and hypotheses pertinent to this study. Following that, the empirical analysis methodology will be introduced, succeeded by the presentation of research findings. Subsequently, implications for both theory and

practice will be discussed, and the study will conclude by addressing its limitations and proposing potential future directions.

2. Theoretical Framework and Hypotheses Development

The theory underlying this study is that of the theory of change in green banking, as the theory recognizes that banks contribute significantly to global climate change, both directly and indirectly (Oyedele et al., 2022). Green finance and financial innovation have evolved into strategies to mitigate greenhouse gases and gas emissions and adapt to climate change (Bahmani-Oskooee et al., 2020). Existing research supports that the theory of change in green banking is driving the banking industry's green movement to reduce environmental exposure caused by the intensification of global climate change caused by environmental degradation (Chien et al., 2021; Li et al.,2022; Zhang et al., 2021; Ullah et al., 2020). This theory argues that banks' green financial products and services are a platform for addressing a wide range of environmental issues, including Industrial pollution control, waste management, and hygiene (Nasim et al., 2022). The Theory of Change in Green Banking is a critical strategic framework and tool for assessing the state of green financial products and services and identifying actions that need to be taken to mitigate environmental concerns (Zhang et al., 2021). According to Zhan et al. (2023), green banking's theory of change empowers banks to make systemic changes and transformations across the banking sector that can drive environmental sustainability. Consistent with this claim, Shaumya and Arulrajah (2017) assert that green products and services such as green credits, green investments, green operations, and green policies predict environmental sustainability and performance. From the same perspective, Kala and Vidyakala (2020) confirm that green banking activities such as green training, green projects, green loans, and green consulting are platforms for environmental performance. This theory, therefore, provides a platform for green finance and financial innovation to promote industrial sustainability, reduce environmental threats, boost economies, and achieve the 2030 Agenda for Sustainable Development.

2.1 Hypotheses Development

Since its inception, green finance has been a hot topic in financial discussions among academics around the world (Nasim et al., 2022; Oyedel et al., 2022). Green finance has been conceptualized in different ways by different scholars. Oyedele et al. (2022) conceptualized green finance in terms of green investment, green credit, and green training. Another study by Risal and Joshi (2018) conceptualized green finance through green policies, green projects, and green training. Similarly, Shaumya and Arulrajah (2017) defined green finance in terms of green operations, green investment, and green policy. Green finance is considered a key driver of green development and performance, especially in relation to problematic CO2 emissions (Li et al., 2022; Ullah et al., 2020). Zhan et al. (2023) describe green finance as the provision of financial services to activate environmental sustainability. Todaro et al. (2021) arguing that environmental sustainability is a product of green finance. According to Peng and Zheng (2021), green finance has proven to be a platform for integrating financial services into green policies and environmental sustainability. Li et al. (2022) also reiterate that green finance leads to increased outcomes of environmental performance. Prior studies have established a connection between green credit and environmental sustainability and performance. For instance, Xu et al. (2022) discovered that green credit serves as a robust predictor of environmental initiatives and green instruments, supporting the Chinese government in mitigation and adaptation efforts. Similarly, Tran et al. (2020) identified green credit as a crucial determinant of environmental initiatives and performance. Shaumya and Arulrajah (2017) affirmed a positive correlation between green credit and environmental performance in their study. Additionally, Li et al. (2022) reiterated the positive association between green credit and environmental performance. The findings of Oyedel et al. (2022) also align with previous research, emphasizing the positive linkage between green credit and environmental performance. Consequently, the following hypothesis emerged:
H1: there is a significant association between green credit and environmental performance

Green investment stands out as a significant factor with a substantial impact on environmental performance. Research conducted by Oyedele et al. (2022) affirms that eco-hi innovation, renewable energy, and sustainable fuels, crucial components of environmental performance, are influenced by green investment. Likewise, a study in Sri Lankan banks by Shaumya and Arulrajah (2017) confirms that green investment serves as a key driver of environmental performance. In Nepal, Risal and Joshi (2018) assert that green investment exhibits a positive and noteworthy correlation with environmental sustainability and performance. The theory of change in green banking, as supported by Chien et al. (2021), further underscores that investment in projects serves as a foundational platform for promoting environmental sustainability and performance. Consequently, the following hypothesis is put forward:
H2: there is a significant association between green investments and environmental performance

Green training plays a crucial role in shaping the attitudes and behaviors of individuals within an organization, fostering a culture of environmental responsibility. This, in turn, positively influences environmental performance by

reducing ecological impact, ensuring compliance with regulations, promoting innovation, and contributing to overall sustainability goals. A study conducted by Nasim et al. (2022) indicates a significant impact of green training on environmental performance. Similarly, Li et al. (2022) affirms a positive correlation between green training and environmental performance. Ullah et al. (2020) argue that organizations fostering a well-trained workforce in environmental sustainability are more likely to cultivate a favorable reputation among customers, investors, and the community, thereby enhancing brand image and competitiveness. In alignment with this perspective, Zhan et al. (2023) illustrate that green training can equip employees with knowledge about cost-effective practices, potentially leading to organizational cost savings through measures such as energy conservation, waste reduction, and efficient material use. Building upon these findings, the following hypothesis is posited:
H3: there is a significant association between green training and environmental performance

Current research affirms the pivotal role of green policies in shaping an organization's commitment to environmental sustainability. These policies, serving as a framework for responsible practices, exert influence across various facets of environmental performance, encompassing legal compliance, resource conservation, innovation, stakeholder relations, and long-term planning. Notably, Todaro et al. (2021) conducted a study establishing a direct relationship between green policy and environmental performance. In a similar vein, Oyedele et al. (2022) conducted research emphasizing that green policy serves as a robust predictor of environmental performance. Correspondingly, Nasim et al. (2022) assessed green finance with a focus on green policy, revealing a positive association between green policy and environmental performance. Building on these insights, the following hypothesis is posited:
H4: there is a significant association between green policy and environmental performance

Recent research has firmly established the pivotal role of financial innovation in shaping environmental performance by introducing financial tools and mechanisms that align economic activities with sustainability goals. This involves fostering investments in environmentally friendly projects, effectively managing risks related to environmental issues, and promoting the adoption of eco-friendly technologies. Mwiti's study (2021) supports this perspective. Moreover, Zhan et al. (2023) assert in their research that financial innovation stands as a significant determinant of environmental performance. Qin et al. (2021) also provide evidence of a direct association between financial innovation and environmental performance. Chien et al. (2021) contribute to this understanding by confirming in their study that financial innovation strongly influences environmental performance. Additionally, Huo et al. (2022) reaffirm that financial innovation actively contributes to the creation of risk management tools designed to address environmental risks. Based on these collective findings, the following hypothesis is posited:
H5: there is a significant association between financial innovation and environmental performance

2.2Financial Innovation as a Mediator

Financial innovation plays a key role in environmental sustainability and performance (Zhan et al., 2023). Financial innovation refers to the process of creating new financial or investment products, services, or processes to reduce the negative environmental impact and contribute to environmental sustainability (Chien et al., 2021). Zhan et al. (2023) affirm that financial innovation is only a driver for financial institutions to drive environmental initiatives and performance. Similarly, Qin et al. (2022) argue that financial innovation in global competition is only an alternative channel for environmental performance. Huo et al. (2022) also prove that financial innovation enables green innovation against the backdrop of stringent environmental laws and relatively low banking competition. Chien et al., (2021) show that financial innovation was the solution to environmental problems in Asian economies. Ebrahim and Hussain (2010) also identify financial innovation as a powerful key to communication channels ranging from green finance to environmental initiatives. Nkem and Akujinma (2017) argue that financial innovation drives green finance and motivates organizations to make unexpected improvements in various operational processes that drive environmental performance. Mwiti (2021) also confirms that financial innovation is only the driving force for financial institutions to drive environmental initiatives and performance. In the same perspective, theory of change demonstrates that financial innovation empowers banks to make systemic changes and transformations across the banking sector that can drive environmental sustainability (Zhan et al., 2023). Financial innovation is a platform for supporting environmental initiatives using green credits, green investment, green education, and green politics (Qin et al., 2021). Hence, the following hypotheses are proposed:

H6: Financial innovation mediates between green loans and environmental performance

H7: Financial innovation mediates between green investments and environmental performance

H8: Financial innovation mediates between green training and environmental performance

H9: Financial innovation mediates between green policy and environmental performance

The following conceptual model is formulated to illustrate the mediating effect of financial innovation on the relationship between green finance and environmental performance (see Figure. 1)

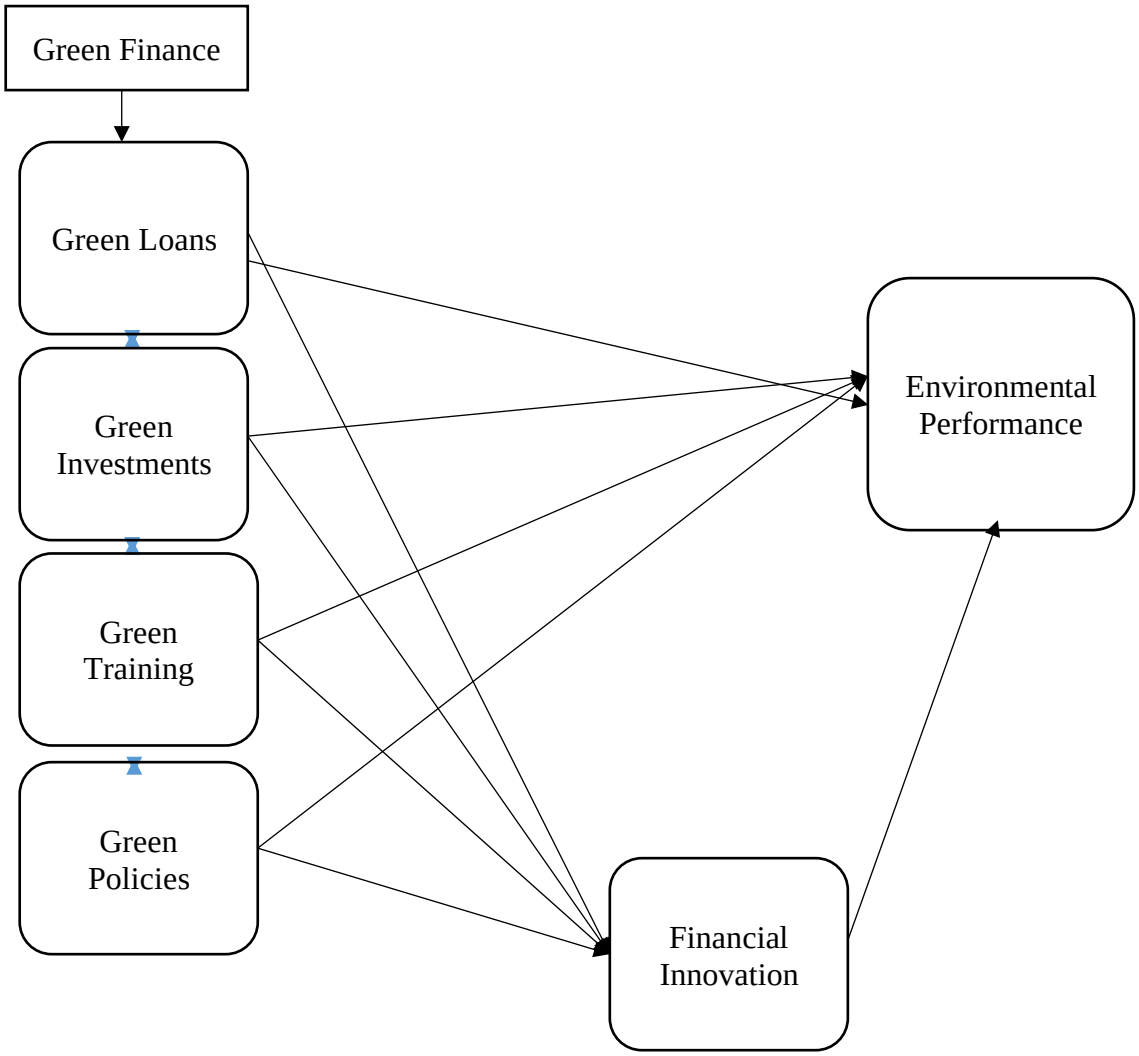

Figure 1: Conceptual Model

3. Methodology

3.1 Data and Sample

A cross-sectional survey design was employed for this study to examine respondents' views on the mediating effect of financial innovation on the relationship between green finance and environmental performance. A targeted sampling technique was used for access bank selection. The choice of this bank was based on the fact that Access Banks raised N15 billion (US$41 million) and was the first bank to announce the issuance of certified green corporate bonds in Africa in 2019). It was also the first bank to improve climate conditions in Nigeria, funding climate-friendly green projects in manufacturing, transportation, and agriculture (https://punchng.com/access-bank-to-issue-corporate-green-bond-in-africa/). This is believed to help pave the way for Nigeria's low-carbon economy. Copies of the structured questionnaire were sent to 250 branch managers of Access Bank in southwestern Nigeria. A total of 200 questionnaires

were completed and returned to researchers. Data were collected over a two-month period from January 9, 2023 to March 10, 2023 via offline with the aid of two research assistants.

3.2. Measures

The research builds on previous studies related to green loans, green investment, green training, green policy, financial innovation and environmental performance. Table 1 illustrates the measurement instruments associated with each variable utilized in this investigation. Participants express their responses using a 5-point Likert scale, with five indicating "strongly agree" and one indicating "strongly disagree," to validate the content of each assessment question.

Table 1. Research instrument

Variable	Code	Items		Source
Green Loans	**GLS**	1.	My bank finances environmental protection and emission reduction projects	Zhang et al., (2022)
		2.	My bank provides loans to strategic industries for energy saving and environmental protection	
		3.	We provide financing for environmental conservation and energy-saving projects	
Green Investment	**GIS**	1.	My bank is increasing the proportion of investment in energy-saving projects.	Kala and Vidyakala (2020)
		2.	My bank encourages investments in projects that do not harm the environment.	
		3.	My bank invests in environmental initiatives at the societal level."	
Green Training	**GTS**	1.	Every year, my bank conducts a green capacity building program for its employees.	Risal and Joshi (2018)
		2.	My bank requires employees to actively participate in green training programs.	
		3.	My bank constantly sends employees to environmental events such as workshops, seminars and conferences	
Green Policy	**GPS**	1.	My bank develops eco-friendly products combined with social considerations.	Akomea-Frimpong et al (2021
		2.	My bank sets a series of annual environmental goals each year.	
		3.	My bank provides low-interest loans to promote green banking.	
Financial innovation	**FIS**	1.	My bank uses e-banking and mobile banking for green banking.	Miah, Rahman, and Haque (2018)
		2.	My bank always uses video conferencing instead of physical movement to promote green banking.	
		3.	My bank's adoption of financial innovation has enhanced its green financial products and services.	
Environmental Performance	**EPS**	1.	My bank is always aware of the dangers of financing projects that are harmful to society.	Zhan et al. (2023)
		2.	My bank always follows environmental guidelines for its investment proposal,	
		3.	My bank always invests in energy-saving projects to prevent environmental damage to society	

4. Results

4.1. Respondent Demographics

The profiles of 200 respondents are analyzed to offer insights into the data distribution, as shown in Table 2**,** that 55 percent of the participants were male, while 45 percent were female, indicating a predominant male presence in the Nigerian banking industry. This distribution may be attributed to cultural factors, where males often have greater access to education than females in many Third World countries. Examining the age breakdown, 10 percent of respondents fall within the 20-year range, 25 percent are between 21 and 30 years, 60 percent are within the 31–40 age bracket, and only 5 percent are 41 years and above. The mean age of the respondents is 40 years, suggesting that a significant portion

of the banking industry's workforce is relatively young, energetic, and active. This demographic indicates their potential to contribute meaningfully to the development of the banking industry in Nigeria.

Table 2. Respondents' profiles

Demographic variables	Grouping	Frequency	Percentage
Sex	Male	110	55
	Female	90	45
Age	≤ 20	20	10
	21- 30	50	25
	31- 40	120	60
	≥ 41	10	5
Marital status	Single	85	42.5
	Married	115	57.5
	Divorce	0	0
	Widowed	0	0
Academic Qualification	NCE/ND	32	16
	HND/ B. Sc	140	70
	Masters	8	4
	Professional Cert.	20	10
Years of experience	1- 5 years	30	15
	6 -10 years	50	25
	> 10 years	120	60

Source: Field Survey

In terms of marital status, 57.5 percent of respondents are married, 42.5 percent are single, with no respondents being divorced or widowed. This result suggests that a majority of banking sector staff are married, implying a higher sense of responsibility among married individuals. Educational qualifications reveal that 4 percent of respondents hold Master's degrees, 70 percent have HND/B.Sc degrees, 16 percent possess NCE/ND qualifications, and 10 percent hold professional certificates as their highest educational attainment. Furthermore, the data indicates that 15 percent of respondents have been in the industry for 1–5 years, 25 percent for 6–10 years, and 60 percent for more than 10 years. This implies that a significant portion of the staff possesses valuable industry experience. Males account for 55%, while females represent 45%; the mean age of the sample was 40 years old. Master degree holders accounted for 20%, Bachelor degree / Higher National Diploma holders accounted for 50%, while professional certificate holders accounted for 30%; In terms of length of service, 25% of the respondents have 5-10 years, 55% have 11-20 years, while 20% have more than 20 years.

4.2. Instruments Validation

From Table 3, all indicators have factor loadings higher than 0.5, indicating that the question is highly explanatory of the variance of those variables. This means that the measurement model has high factor validity. Structural Equation Modelling was used to analyze the data with the aid of STATA 15 version.

Table 3 Summary of Results of the Measurement Instruments Validation

Scale	No of Items	Meaning Bartlett	KMO	Component	% of the Variance	α of Cronbach
Green Loans (GL)	6	p = .000 (significant)	0.823	3.021	81.26%	0.83
Green Investment (GI)	7	p = .000 (significant)	0.801	2.893	83.15%	0.78
Green Training (GT)	6	p = .000 (significant)	0.817	3.086	85.72%	0.81
Green Policy (GP)	6	p = .000 (significant)	0.821	3.145	81.92%	0.82
Financial Innovation (FI)	6	p = .000 (significant)	0.832	3.211	85.14%	0.85
Environmental Performance (EP)	5	p = .000 (significant)	0.827	3.016	84.23%	0.84

Table 4. Relationship between variables

Variables	r-value	p-value
cov(GL,GT)	.810	***
cov(GL,GI)	.467	***
cov(GL,GP)	.570	***
cov(GT,GI)	.339	***
cov(GT,GP)	.505	***
cov(GI,GP)	.757	***

Note: *** Significant at 5%

Table 4 depicts the relationship between green finance dimensions. The results of standardized covariance reveal that green loans are significantly related to green training, green investment and green policy with r-values of 0.810, 0.467, o.570 and p-value of 0.000 respectively. This implies that green training, green investment, and green policy are major determinants of green loans. This is in alignment with Oyedele et al (2022)'s assertion that exposure to greening environment, environmental initiative and energy saving projects are major factors influencing green loans. Evidence also reveals that green training is significantly associated with green investment ($r = 0.339$; $p<.005$), and green policy ($r = 0.505$; $p<.005$), and green investment is a predictor of green policy with r- value of 0.757. The implication of this finding is that green finance parameters are linearly and significantly associated, as well as have direct link to environmental sustainability and performance.

Table 5. Results of the Structural Equation Modelling Without Mediation (Direct Effect)

Path	β-value	Std. Err.	T-value	P-value	Hypotheses
Direct Model					
EP <- GL	.219912	.0458592	3.16	0.001**	H_1 Confirmed
EP <- GT	.1953753	.0829603	2.36	0.013*	H_2 Confirmed
EP <- GI	.1376940	.0452354	2.03	0.010**	H_3 Confirmed
EP <- GP	.4718098	.0774326	6.09	0.000**	H_4 Confirmed
EP <- FI	.0728051	.0799379	0.91	0.362**	H_5 Not confirmed

** = Significance at the level of 1%, * = Significance at the level of 5%.

Table 5 depicts the link between green finance parameters and environmental performance. The results reveal that green loans ($t = 3.16$; $p <.05$; $\beta= 0.219$), green training ($t = 2.36$; $p <.05$; $\beta = 0.195$), green investments ($t = 2.03$; $p <.05$; $\beta= 0.137$), green policy and ($t = 6.09$; $p <.05$; $\beta= 0.471$) have a positive and significant influence on environmental performance, while the financial innovation is positively associate with environmental performance but not significant ($t = 0.91$; $p >.05$; $\beta= 0.072$). This finding indicates that green finance parameters are more important than financial innovation for driving environmental initiatives and performance in Nigeria. This suggests that the Nigerian government and financial institutions should focus on developing and implementing green finance policies and initiatives in order to improve environmental performance in the country. The study, therefore, aligns with the previous studies that there is a significant linkage between green finance parameters, financial innovation, environmental initiative and performance (Sakharina et al., 2020; Pham et al., 2019; Ahakwa et al., 2021; Roscoe et al., 2019). This current study reveals that green policy has a strong direct impact on environmental performance with highest t-value of 6.09. The results of the study provide support for hypotheses H1, H3, and H4. However, hypothesis H5 is not confirmed.

The implication of this current study is that green policies are effective in improving environmental outcomes. This is an important finding that has significant implications for policymakers and businesses alike. For policymakers, the finding suggests that they should continue to pursue and implement green policies, as these policies will have a positive impact on the environment. Specifically, policymakers should focus on policies that promote renewable energy, energy efficiency, and sustainable land use practices. For businesses, the finding suggests that they should adopt green practices in order to reduce their environmental impact and improve their public image. This is becoming increasingly important as consumers become more environmentally conscious and demand products and services from businesses that are committed to sustainability.

Table 6. Results of the Structural Equation Modelling with Mediation (Indirect Effect)

Relationship between variables	Estimates	S. E	t-value	p-value	Hypothesis	Remark
Indirect Model						
EP <-FI<-GL	.0866505	.0347	2.49	0.013*	**H_6**	Partially supported
EP <-FI<-GT	.1020723	.0374	2.72	0.006**	**H_7**	Partially supported
EP <-FI<-GI	.0928165	.0345	2.74	0.006**	**H_8**	Partially supported
EP <-FI<-GP	.0164872	.0225	0.73	0.465	**H_9**	Not supported

** = Significance at the level of 1%, * = Significance at the level of 5%.

Table 6 reveals the mediating effect of financial innovation on the relationship between green finance parameters and Environmental performance. This result assumes that green loans have a significant impact on environmental performance, with a t-value of 3.16, but when financial innovations are introduced, the t-value changes from 3.16 to 2.49, with a p-value of 0.001 to 0.013. This suggests that green loans and financial innovation are predictors of environmental performance. This means that financial innovation partially mediates the relationship between green loans and environmental performance. The implication of this finding is that implementing electronic transactions for green banking has improved green financing for green projects.

Evidence also show that green investment has a large positive impact on environmental performance with a t-value of 2.03 and a p-value of 0.010. When financial innovation was introduced, the p-value increased to 2.74 and the p-value changed from 0.010 to 0.006. This means that green investment and financial innovation can independently predict environmental performance. Financial innovation therefore partly mediates between green investment and environmental performance. The implication of the findings is that the introduction of financial innovation has enhanced green investments toward environmental sustainability and performance.

The results also demonstrate that green training (t=2.36; p=0.013) is significantly positively associated with environmental performance. The indirect t-value of 2.72 and p-value of 0.006 indicate that green training and financial innovation are predictors of environmental performance. Financial innovation thus partly mediates between green training and environmental performance. The implication of this finding is that the adoption of financial innovation has strengthened green capacity-building programs for environmental sustainability and performance.

The results also demonstrate that green policy (t = 6.09; p = 0.000) is an important determinant of environmental performance. With the introduction of financial innovation, the t-value decreased from 6.09 to 0.73 and the p-value increased from 0.000 to 0.465. This shows that green policy is a predictor while financial innovation is not. Financial innovation is therefore not a mediator between green policy and environmental performance.

The study showcases that green investment has the highest path mediated by financial innovation, with the highest t-value of 2.74. The implication of this statement is that financial innovation plays a significant role in facilitating green investment. This finding suggests that policies that promote financial innovation could be effective in encouraging green investment.

This is consistent with Hair et al. (2010) that propose perfect mediation occurs when the mediator is the predictor but the independent variable is not. Partial mediation occurs when both the independent variable and the mediator are predictors, and no mediation occurs when both the independent variable and the mediator are not predictors. This development shows that green finance is a growing phenomenon in Nigeria and will continue to grow rapidly if other financial institutions can push it forward.

5. Conclusion

This study examines the mediating effect of financial innovation on the relationship between green finance and environmental performance. A targeted sampling technique was used for access bank selection. Copies of the structured questionnaire were sent to 250 branch managers of Access Bank in southwestern Nigeria. A total of 200 completed questionnaires were completed and returned to researchers. Data were analyzed using STATA 15 version using structural equation modeling. The results show that green loans, green training, green investment, and green policy have a positive and significant impact on environmental performance. This means that green finance parameters are the driving force behind Nigeria's environmental initiatives and performance. Furthermore, the study showcases that financial innovation partially mediates green loans, green investments, green training and environmental performance. The study also confirms that financial innovation does mediate green policy and environmental performance. This development

shows that green finance is a growing phenomenon in Nigeria and will continue to grow rapidly if other financial institutions can facilitate it.

5.1. Theoretical Implications

This study was able to establish in its results the relevance and suitability of the theory proposed in this study. The theory was tested in research and adoptively synchronized with research to provide a basis for the topics stated. It was found to be out of sync with the research and was the theory of change in green banking. This theory provided a basis for explaining possible interactions between green finance parameters, financial innovation and environmental performance. Theory of Change in Green Banking is a critical strategic framework and tool for assessing the state of green financial products and services and identifying actions that need to be taken to mitigate environmental concerns. This study supports the theory of change in green banking that financial innovation is the driving force behind the green banking movement to reduce the environmental impacts caused by increasing global climate change due to environmental degradation. This theory therefore provides a platform for green finance and financial innovation to promote industrial sustainability, reduce environmental threats, boost the economy and achieve the 2030 Agenda for Sustainable Development Goals.

5.2. Practical Implications

This recent study has practical implications for financial institutions, policy makers and investors. The model developed in this study is an eye opener for bankers, investors and policy makers to understand the mediating effects of financial innovation on the relationship between green finance parameters and environmental performance. This model will encourage financial institutions and policymakers to implement appropriate financial innovation and green banking strategies aimed at promoting environmental performance and industrial sustainability. This research provides insights on financial innovation and green finance in financial institutions to foster green banking activities to promote environmental sustainability and performance. Similarly, empirical evidence suggests that other financial institutions should use Access Bank to focus on financial innovation and green finance implementation. Furthermore, the study provides researchers, environmentalists and policy makers with evidence that green finance is a growing phenomenon in Nigeria and will continue to grow rapidly if other financial institutions are able to promote it.

5.3. Limitation and recommendation for further studies

Like any research, this study has certain limitations. Firstly, the study utilized a quantitative research methodology, and employing a qualitative approach might yield additional insights into elements crucial to environmental performance. Secondly, the study was grounded in the theory of change, and exploring other theoretical frameworks, such as the resource-based view theory, dynamic capacity theory, and innovation theory, is recommended for further exploration. Future studies could also explore additional factors as potential mediating variables. Thirdly, non-probability sampling strategies were employed, and the sample size of respondents was not extensive due to some individuals' reluctance to participate in the study. Consequently, cultural differences may necessitate testing the generalizability of the results through further investigations in other banks. Despite these limitations, the study's findings provide valuable insights into several important aspects related to financial innovation, green finance, and environmental performance.

Author Contribution

A.Z Adeyemi: conceptualization, writing original draft, data curation.
S.F Olasupo: review and editing, writing review and editing, supervision.
A.A Johnson: writing original draft, validation, visualization, supervision.
E.A Adegun: review and editing, writing review and editing, supervision.
A.S Sajuyigbe: formal analysis, investigation, methodology, validation, visualization.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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