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## **GREEN BANKING PRACTICES AND BANKS’ ENVIRONMENTAL PERFORMANCE OF LISTED DEPOSIT MONEY BANKS IN NIGERIA**

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### **Abstract**

*This study investigated the effect of green banking practices on banks’ environmental performance of listed deposit money banks in Nigeria. The study anchored on the theory of reasoned action and cross sectional survey research design was adopted with a population consisting of listed banks in Nigeria. The study used stratified random sampling of seven hundred and fifty (750) bank employees with questionnaire as the primary source of data collection from the respondents while only five hundred (500) were used for data analysis using univariate, bivariate and multivariate methods of data analysis. The results from the regression analysis disclosed that banks’ employee-related practices of green banking positively and significantly influence environmental performance of deposit money banks in Nigeria; banks’ daily operations-related practices of green banking positively and significantly affect environmental performance of deposit money banks in Nigeria; banks’ customers-related practices of green banking negatively but significantly influence environmental performance of*



*deposit money banks in Nigeria; banks' policy-related practices of green banking positively and significantly influence environmental performance of deposit money banks in Nigeria and banks' green investment related practices of green banking positively and insignificantly impact on environmental performance of deposit money banks in Nigeria. Consequently, on the basis of the findings the study concluded that green banking practices positively influences the level of environmental performance of banks in Nigeria. Therefore, the study recommends amongst others that banks' in Nigeria should adopt contemporary banking practices that are ecofriendly as a means of enhancing the environmental performance in Nigeria.*

*Keywords: Banking Practice, Environmental Performance, Banks Employee, Banks Daily Banks Green Investment, Nigeria*

## **INTRODUCTION**

The devastating effect of storms, floods, droughts and excessive heat that numerous individuals have experienced from place to place globally motivate us to reason completely about global warming and its influence and to do whatever we can to solve this problem. Hence, governments, organizations and individuals, all have major parts to play in fighting global warming and building a sustainable environment for human existence. Banks and financial institutions globally are now concerned about the complete effect of depletion of environment. While several banks recognize the importance of greenhouse emission reduction, only very few have systematically incorporated climate change-related characteristics into their banking practices. According to Hassan et al (2022), traditional banking practices have been questioned over the last few decades of the following reasons: Firstly, orthodox banking principles are not often seen in inventiveness anxious with environmental protection. As a result, the ruttid automation has impacted the ecological balance, resulting in natural and manufacturing calamities (Rehman et al., 2021) and rising social and ethical anxieties over ecological subjects(Chen et al, 2022). Secondly, the COVID-19 pandemic provided bank customers' interest in green banking, a form of banking that considers environmental concerns in its operations to ease the negative impacts of ecological disparity and activate environmental sustainability, which the customers might reflect as a way to reduce the fears of COVID-19 transmission (Chen et al, 2022). Thirdly, the traditional bankers' intellectual soundness are being questioned because of the developing setting up of environmentally welcoming products (Ding et al, 2023; Zang et al, 2022) and how to spread financial resources to save the environment, clean energy, green building, climate change, and social inclusion (Chen et al, 2022; Fang & Shao, 2022). Lastly, the top level management is becoming mindful of their

corporate sustainability and offers provision in the practice of managerial direction in scheduling, design, expansion, and execution events to tolerate banking practices that follow the sustainability legislations (Bukhari et al, 2022). Consequently, top level management strongly agree to take environmental obligation as a vital business responsibility in corporate world (Sun et al, 2020; Rehman et al, 2021; Hassan et al, 2022; Chen et al, 2022; Deng et al, 2023). Sun et al (2020) argued that the idea of green banking has encouraged banking institutions to introduce paperless, technology-based services, and to sustain their role as a responsible entity in sustainable development while minimizing the impact on the environment.

Green banking performs an essential role in the attainment of sustainable development of any given nation. According to Hassan et al (2022), green banking is the investment solutions that guard the environment, provide social justice, and establish economic attainment conveying preference in the banking industry to safeguard banks and society against unforeseen impending economic concerns (Guang et al, 2022; Ziolo et al 2019) such as international economic volatility, environmental alteration, public disturbance, and corporate failures. Chen et al (2022) noted that green banking is a fundamental antecedents to the creation of an effective green economy which supports the economic advancements of developing nations and a means to attain sustainability through low energy consumption and pollution (Liu et al, 2020; Zheng et al (2021). In addition, several empirical studies have been conducted in the field of green banking, internationally such as (Sarma & Roy, 2020; Ngwenya & Simatele, 2020; Bose et al, 2018; Malsha et al, 2020; Khairunnesa et al., 2021; Rehman et al., 2020; Sharmeen, et al., 2019). Nevertheless, these studies are essentially concentrated on green banking activities and its development in emerging economies (Khairunnesa et al., 2021; Hoque et al., 2019); green banking adoption (Rehman et al., 2020; Zhixia et al., 2018); green banking performance and environmental sustainability (Zhixia et al, 2021; Bose et al, 2021); and green finance (Zheng et al., 2021). In addition, a few of studies have been carried out to measure the influence of green banking practices on banks' environmental performance in Pakistan (Rehman et al., 2021), Nepal (Risal and Joshi, 2018), India (Vidyakala, 2020), SriLanka (Shaumya & Arulrajah 2017), Bangladesh (Khairunnesa et al 2021), France (Park and Kim, 2020). Shaumya and Arulrajah (2017) investigated the effect of green banking practices on banks' environmental performance in Sri Lanka. The study established that green banking practices positively and significantly impact on banks' environmental performance. Also Rehman et al (2021) indicated that green banking practices positively affects bank's green projects.

However, there exist few studies on green banking practices on banks' environmental performance and the sources of green financing on deposit money banks in Nigeria. As such, this study intends to fill the earlier recognized research gap by investigating the effects of green

banking practices on environmental performance and green financing of deposit money banks in Nigeria. The specific objectives are to:

1. investigate the relationship between banks' employee-related practices of green banking and environmental performance of deposit money banks in Nigeria;
2. determine the relationship between banks' daily operations-related practices of green banking and environmental performance of deposit money banks in Nigeria;
3. evaluate the relationship between banks' customers-related practices of green banking and environmental performance of deposit money banks in Nigeria;
4. investigate the relationship between banks' policy-related practices of green banking and environmental performance of deposit money banks in Nigeria;
5. determine the relationship between banks' green investments related practices of green banking and environmental performance of deposit money banks in Nigeria;

The study was guided with the following research questions:

1. What is the relationship between banks' employee-related practices of green banking and environmental performance of deposit money banks in Nigeria?
2. What is the relationship between banks' daily operations-related practices of green banking and environmental performance of deposit money banks in Nigeria?
3. What is the relationship between banks' customers-related practices of green banking and environmental performance of deposit money banks in Nigeria?
4. What is the relationship between banks' policy-related practices of green banking and environmental performance of deposit money banks in Nigeria?
5. What is the relationship between banks' green investments related practices of green banking and environmental performance of deposit money banks in Nigeria?

The following null hypotheses were tested in this study:

**H0<sub>1</sub>:** Banks' employee-related practices of green banking positively and significantly impact on environmental performance of deposit money banks in Nigeria;

**H0<sub>2</sub>:** Banks' daily operations-related practices of green banking positively and significantly impact on environmental performance of deposit money banks in Nigeria;

**H0<sub>3</sub>:** Banks' customers-related practices of green banking positively and significantly impact on environmental performance of deposit money banks in Nigeria;

**H0<sub>4</sub>:** Banks' policy-related practices of green banking positively and significantly impact on environmental performance of deposit money banks in Nigeria;

**H0<sub>5</sub>:** Banks' green investment related practices of green banking positively and significantly impact on environmental performance of deposit money banks in Nigeria;

## LITERATURE REVIEW

This study is centered on two key variables, including green banking practices as the independent variable and environmental financial performance dependent variables.

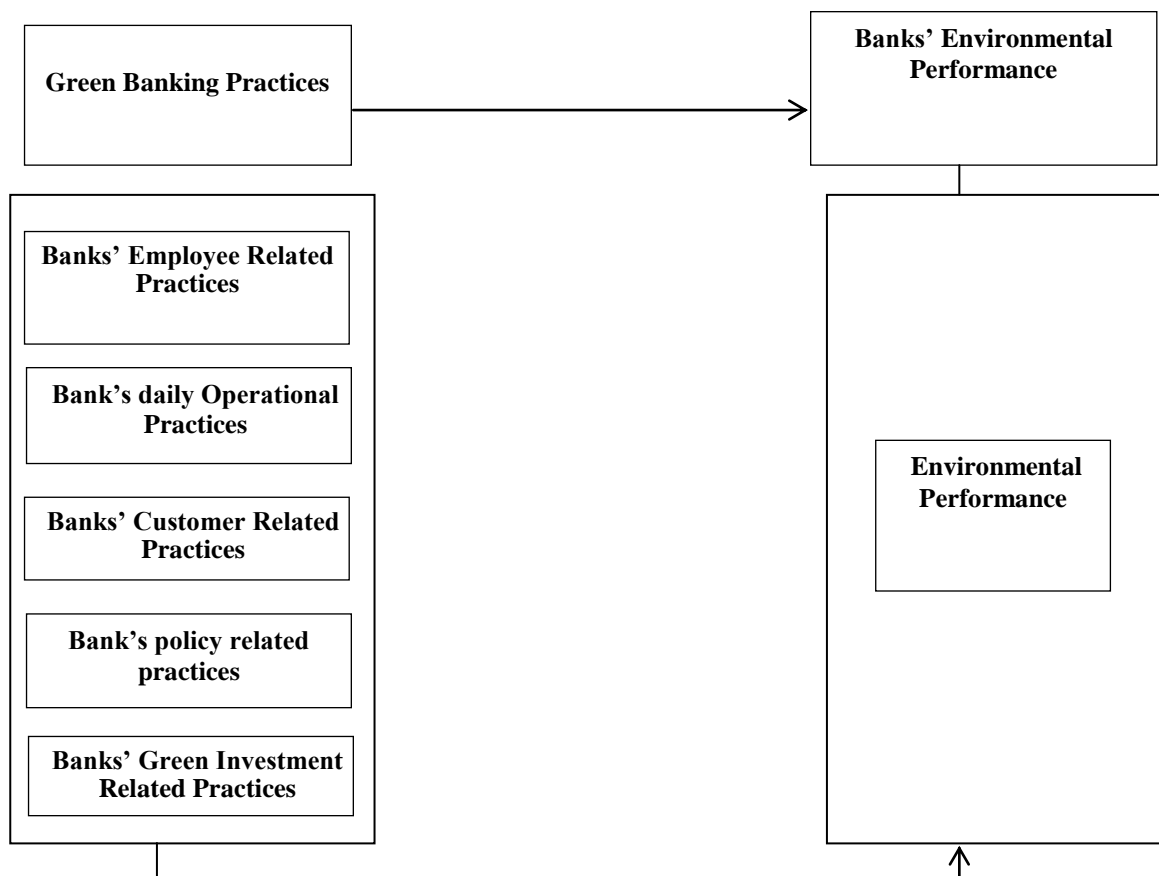


Fig. 1: Conceptual Framework

### Conceptual Review

#### ***Concept of Green Banking Practices***

The concept called green banking is also called ethical banking, social banking, responsible banking or sustainable banking. However, there is no universally accepted meaning of green banking. Green banking is defined as banking practices that promotes environmentally-friendly practices and decreasing the volume of carbon footprints from the activities of banks. According to Rahman and Perves (2016), green banking is the promotion of environmentally responsive exercises that support customers in decreasing their carbon footprint through their banking operations. The authors further noted that these banking practices comprise online banking, bill payments, and account opening. Guang-Wen and Siddik (2022), Ziolo et al (2019)

described green banking as banking practices that protects the environment, promise collective justice, and generate economic accomplishment conveying priority in banking business to safeguard banks and society against unforeseen future economic challenges. Similarly, Hasan et al (2022) stated that green banking consists of banking practices such as accepting deposit, credit payment, financing of businesses, leasing processes, among others that concentrates on preservation of the environment. Hence, green banking consists of banking activities that considers all the social and ecological factors with the purpose to protect the environment and safeguard natural resources. Bose et al (2017) maintained that green banks encourages and employs green technology in internal and external banking activities to reduce carbon emissions and protect the ecosystem. Shaumya and Arulrajah (2017) argued that the benefits of green banking consists of the reduction of paper work and online banking, provision of awareness on environmental and social responsibility business friendly practices and the use of environmental standards for bank lending. A study conducted by Chen et al (2022) identified four key variables as measures of green banking practices in Bangladesh. These variables include banks' employee – related practices, banks' daily operation - related practices, banks' customer - related practices and banks' policy – related practices. Shaumya and Arulrajah(2017) investigation of green banking practices in Sri Lanka also employed banks' employee – related practices, banks' daily operation - related practices, banks' customer - related practices and banks' policy – related practices as dimensions to measure green banking practices. Also several other studies have utilized several dimensions such as green investment, green risk management, green human resources, green investments and green business strategy as dimensions of green banking practices.

### ***Environmental Performance***

Corporate environmental performance is a practical, see-through and long-term management of ecological issues to meet definite well-articulated objectives in corporate planning to safeguard natural resources and effectiveness of organizations. According to Shaumya and Arulrajah (2017), corporate environmental performance is the sustainability objectives that define the aims affirms by attaining set targets to satisfy various stakeholders and to fulfill regulatory compliance and legal requirements in organizations. Rehman et al (2021) stated that the level to which organizations are devoted to guarding the ecosystem reveals corporate environmental performance. Vidyakala (2020) revealed that corporate environmental performance can be appraised by several dimensions such as low environmental releases, prevention of pollution, waste minimization, and recycling activities. These dimensions are explained by green banking by producing an effective and efficient market based solutions.

Therefore, green banking practices improves the environmental performance of the banks by decreasing negative environmental influence such as decreasing paper usage, decreasing energy conservation, decreasing fuel consumption and emission and advancing positive environmental influence such as enhancing environmental training and consciousness of employees, creating green building and usage of solar and wind energy of banks. Meanwhile the rapidly growing environmental issues in banks calls for the adoption of green banking practices, so as to enhance environmental performance of banks. Miah et al. (2018) study in Bangladesh disclosed that that credit-rating scores had a positive effect on banks' environmental performance. Additionally, Rehman et al. (2021) investigation in Pakistan showed a strong positive association among between policy related practices, daily operations practices and green investments of green banking Similarly, Shaumya and Arulrajah (2017) in Sri Lanka suggested that green banking practices positively and significantly impact on banks' environmental performance. Moreover, Vidyakala (2020) carried out a study of green banking practices on environmental performance in India. The study indicated that green banking practices such as environmental training of employees, energy-efficient practices, green policy and overall green projects positively and significantly impacts on banks' environmental performance in Coimbatore of India. Also, Risal and Joshi (2018) investigated green banking practices on banks' environmental performance in Nepal. The study established that environmental training, banks' green policy and energy-efficient equipment positively and significantly affects environmental performance of banks while customer-related practices' such as green financing and green projects indicated an insignificant effects on environmental performance of banks in Nepal.

### **Theoretical Review**

This study is anchored on the theory of reasoned action advanced by Fishbein (1967) and tested by Ajzen and Fishbein (1975). According to the theory of reasoned action (TRA), decision making commences with beliefs, attitudes toward the behaviour, and intention, ending with the behaviour itself. It is a broad theory of human behavior that looked at the connections between dogmas, attitudes, goals, and behaviors (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). The TRA theory maintained that an investigation using the theory of reasoned action may possibly assist to recognize the backgrounds of behaviour and forecast what an individual will or will not do so that interventions can be established that will eventually modify behaviour. Interventions are not intended just to alter behaviour, they are considered to modify dogmas which will in turn alter behaviour. The theory may be advantageous empirically in recognizing the reasons that are fundamental to green banking practices. The attitude towards behavior



(Ab) is an individual's positive or negative sentiment relating with acting a given behaviour. According to the theory of reasoned action (TRA), Ab is a function of a person's cognitive factor that executing a given behaviour will result in definite results, together with that person's affective factor of these results. Consequently, an individual will hold a positive approach towards a given behaviour if the individual believes that acting this behaviour will lead to commonly favourable results. Contrarily, if the person believes that the behaviour will lead to mostly unfavourable results, then the person will form an unfavorable attitude towards that behaviour. The TRA theory states that the subjective norms (SN) are a function of the person's beliefs that powerful individuals or groups think that an individual should or should not perform a given behaviour joined by the person's preparedness or enthusiasm to obey the referent others. According to the TRA theory both attitude towards behavior (Ab) and subjective norms (SN) influence the intention to execute a given behaviour. This theory involves several limitations. One of the limitations of this theory lies in the self-reporting technique employed to learn respondent's attitudes and subjective norms. Self-reported data tends to be highly subjective and less valid. Another limitation stems from the assumption that all behaviour is voluntary and intentionally examined beforehand. This theory fails to explain unreasonable or spontaneous behaviours. Some studies findings show that behavioral intention does not always lead to actual behaviour when a person's control over the behaviour is incomplete. To address this issue, Ajzen (1991) propose the Theory of Planned Behavior (TPB), which extends the TRA theory by adding the perceived behavioral control component to account for behaviours that happen without an individual's volitional control. The theory of reasoned action has received extensive support from recent literature. A lot of studies have used the theory of reasoned action (Effendi et al, 2020; Jonah et al, 2020; Lujja et al, 2016; Mishra et al, 2014) in the framework of the practice of Islamic banking, the spiritual heads' goal to apply Islamic bank services in Indonesia, the society's intent to implement Islamic bank services in Uganda, and the implementation of green information technology, respectively. For example, Effendi et al (2020) used the theory of reasoned action and established that sharia compliance, product information of sharia, promotion, services, attitudes, personal norms, intention, and customer choices to apply the Islamic banks' services, predominantly in Indonesia. Besides, Janah et al (2020) as well used the theory of reasoned action. The authors integrated the impact of attitude, community impact, spiritual obligation, and individual norms to forecast the intentions of spiritual heads in using Islamic bank services in Indonesia. Additionally, Lujja et al (2016) applied the theory of reasoned action as a theory to explore the incorporation of attitude, personal norm, and public intention in Uganda to implement an Islamic bank. The present study focuses on the use of the



theory of reasoned action in the field of green banking practices on banks' environmental performance and green financing of deposit money banks in Nigeria.

## **Empirical Review**

There are numerous previous empirical investigations on green banking practices on banks' environmental performance and green finance in developed and developing countries. Some of these investigations are reviewed below with a view to observe the trends of the findings and the gaps in literature.

Hossan et al (2020) investigated green banking practices and financial performance of banks in Bangladesh. The study employed ex post facto and correlational research designs. The population consisted of all 30 banks listed on the Dhaka Stock Exchange up to October 2020 and a sample of 14 banks was selected using purposive sampling technique. The study used secondary data obtained from financial statements of sampled banks and the dependent variable financial performance used return on assets (ROA), return on equity (ROE) and market value of shares (MV) as dimensions while independent variable green banking used green cost and volume of risk management committee with control variables of bank size and operating cost ratio. The data obtained were analysed using descriptive statistics, correlation matrix and panel regression analysis. The regression analysis indicated a positive and significant relationship between green cost, bank size and volume of risk management committee on return on assets (ROA) while operating cost ratio showed a negative association with return on assets (ROA); a positive and significant relationship between green cost, bank size and volume of risk management committee on return on equity (ROE) while operating cost ratio showed a negative association with return on equity (ROE) and a positive and significant relationship between green cost, bank size and volume of risk management committee on market value of shares (MV) while operating cost ratio showed a negative association with market value of shares (MV).

Linh and Anh (2017) analysed stakeholders and performance of green banking products and services in Vietnamese banks. The investigation employed cross sectional survey research design. The population of the study consisted of all banks in Vietnam and a sample of top five banks namely BIDV, Vietinbank, Vietcombank, Agribank, and ACB and data was collected from primary sources mostly questionnaire and interview methods from December 2016 to April, 2017. The data obtained from the questionnaire and interviews were analysed using descriptive statistics. The findings from the univariate analysis indicated that bank stakeholders positively and significantly affects the benefits, prospects and challenges to ecological improvement while implementing green banking practices in Vietnam.

Redwanuzzaman (2020) conducted a study of the determinants of green banking adoption in Bangladesh. The study used cross sectional survey and descriptive research design and the target population consisted of male and female customers of Agrani Bank Limited, Rupali Bank Limited, National Bank Limited, United Commercial Bank Limited, Pubali Bank Limited, Uttaara Bank Limited, Dutch Bank Limited and Islami Bank Bangladesh Limited while proportion sample size determination technique was utilized to determine the sample size of 232 banks customers using simple random probability sampling technique. The study collected data from questionnaires designed by the researcher and the responses obtained were analysed using univariate, bivariate and multivariate analysis. The findings from the regression analysis disclosed that customer pressure, competitor pressure and community pressure positively and significantly influences the level of green banking adoption in Bangladesh.

Pawar and Munuswamy (2020) investigated green banking practices and green loyalty in India. The study employed cross sectional survey research design and the target population consisted of customers of commercial banks in India and a sample of 358 respondents while only 304 was used analysis. The study used primary data from questionnaires administered to the various bank customers. The study used green banking practices as independent variable while green loyalty as dependent variable and green trust and green image as mediating variables. The responses from the administered responses were analysed using univariate and multivariate analysis. The results from the structural equation model indicated that green banking practices positively and significantly affects green image ( $0.001 < 0.05$ ) and green trust ( $0.025 < 0.05$ ) whereas green banking practices positively and insignificantly influences green loyalty ( $0.042 > 0.05$ ). The findings also disclosed that green image facilitates the relationship between green banking practices and green loyalty whereas green trust does not facilitate the relationship between green banking practices and green loyalty. The study concluded that the banking sector should recognize the significance of ecofriendly practices affecting banks' customer's decisions.

Pariag-Maraye et al (2017) conducted a study of green banking practices in Mauritius. The study used cross sectional survey research design and the target population consisted of bank customers of MCB, SBM, HSBC and Barclays Bank in Mauritius and a random sampling technique to determine a sample size of 200 respondents from the sampled banks. The study used primary data from a structured questionnaire administered to bank customers in Mauritius. The responses from the administered questionnaires were analysed using descriptive and chi square test. The mean results indicated that green banking practices such as advertising for e-statements, internet banking and mobile banking does not influence customers perception of banking while green projects positively and significantly affects customer's perception of

banking. Furthermore, the chi square analysis indicated that customers in Mauritius banks are aware of the green banking concepts.

Hasan et al (2022) investigated environmental sustainability, psychological and managerial supports on green banking behaviours in Bangladesh. The study employed theory of reasoned action (TRA) and survey research design with a target population consisted of bankers in six state owned commercial banks, three specialized development banks, twenty private commercial banks, ten financial institutions and purposive sampling was used to ascertain the sample size of 366 bankers. The study used primary source of data collection from a well-structured questionnaire administered to the bankers. The study used management support, environmental sustainability, perceived cognitive efforts and subjective norms as independent variables while the study used green bankers' usage behaviour as dependent variable. The responses obtained from the questionnaire were analysed using descriptive statistics and structural equation models. The findings from the structural equation modelling disclosed that management support, environmental sustainability, perceived cognitive efforts and subjective norms positively and significantly influence bankers green banking usage behaviour in Bangladesh.

Shaumya and Arulrajah (2017) conducted a study of green banking practices and environmental performance in Sri Lanka. The research used survey research design and a target population of employees of commercial banks in Batticaloa Region of Sri Lanka and stratified sampling of 155 employees of Commercial Bank of Ceylon Plc, HNB Plc, Seyland Bank Plc, Sampath Bank Plc, People Bank Plc, DFCC Bank Plc, NDB Plc, NTB Plc, Union Bank Plc and Pan Asia Banking Corporation Plc. The study used primary source of data collection from a well-structured questionnaire with employee related practice, daily operation related practice, customer related practice and bank policy related practice as independent variables while banks' environmental performance as dependent variable. The responses from the administered questionnaire were analysed using univariate, bivariate and multivariate analyses. The findings from the multivariate analysis suggested that employee related practice, daily operation related practice and bank's policy related practice positively and significantly influences bank's environmental performance where as customer related practice has positive but insignificant influence on bank's environmental performance in Sri Lanka. The study therefore concluded that green banking practices positively and significantly influence bank's environmental performance in Sri Lanka.

Risal and Joshi (2018) analysed green banking practices and environmental performance of in Nepal. The study employed causal relationship research design and a target population of bank employees from Agricultural Development Bank, NIC Asia Bank, Sanima

Bank, Laxmi Bank and Siddhartha Bank with a convenience sample of 189 commercial bank employees. The study used primary source of data collection from a well-structured questionnaire administered to the sampled bank employees. The independent variables consisted of employee related practices, daily operations practices, customer related practices and bank policy related practices while bank environmental performance was the dependent variable. The responses from the administered questionnaires to the bankers were analysed using correlation matrix with simple and step wise regressions. The regression analysis revealed that employee related practices (environmental training), banks policy related practices (bank's green policy), and daily operation practices (energy efficient equipment) positively and significant influences banks environmental performance in Nepal whereas customer related practices (green financing and green projects) positively and insignificantly influences banks environmental performance in Nepal.

Chen et al (2022) conducted a study of green banking practices on banks' environmental performance and green financing in Bangladesh. The study used a cross sectional survey research designs and a target population of fifty-seven (57) state-owned, private and foreign owned commercial banks in Bangladesh using non-probability sampling method. The study employed primary source of data collection from a well-structured questionnaire administered to three hundred and fifty four (354) and three hundred and twenty-two (322) were collected for analysis. The independent variables were banks 'employee related practices, banks daily operation related practices, banks customer related practices and banks' policy related practices while the dependent variables consisted of green financing and banks' environmental performance. The responses collected from the administered questionnaires were analysed using exploratory factor analysis, confirmatory factor analysis (CFA) and structural equation modeling. The empirical results showed that banks 'employee related practices, banks daily operation related practices, and banks' policy related practices positively and significantly influences banks green financing while banks customer related practices positively and insignificantly affects banks green financing. Furthermore, the findings disclosed that banks' green project financing revealed a positive and significant impact on banks' environmental performance. Additionally, banks' daily operation and policy-related practices of green banking positively and significantly influence banks' environmental performances, while banks' employee and customer-related practices indicated an insignificant effect on banks' environmental performances in Bangladesh.

Guang-Wen and Siddik (2022) examined the effects of corporate social responsibility practices and green finance on environmental performance in Bangladesh. The study used legitimacy theory and the population consisted of employees of private commercial banks while

non-probabilistic convenience sampling method was applied of 388 bankers. The study used environmental performance of bankers as dependent variable while the independent variables consisting of economic, social, environmental, corporate social responsibility activities. The primary data was collected from a well-structured questionnaire administered to the three hundred and eighty-eight (388) bankers while inferential statistics were used for data analysis. The results revealed that economic, social, environmental, corporate social responsibility activities positively and significantly affect environmental performance of private commercial banks in Bangladesh.

Rehman et al (2021) investigated green banking practices and environmental performance in Pakistan. The study used the socially responsible investment theory to explain the correlation between green banking practices and environmental performance of commercial banks. The study employed cross sectional survey and correlational research designs with a target population of bank employees and a purposive sample of 200 employees of retail banks of management level. The study collected primary data from a well-structured questionnaire administered to the sampled bank employees. The dependent variable comprised of environmental performance while the independent variables consisted of banks green operations, banks green investment and banks' green policy. The responses obtained from questionnaires administered were analysed using descriptive statistics and structural equation modeling. The findings from the analysis revealed a positive and significant impact of green banking policy on environmental performance of retail banks in Pakistan; a positive and significant impact of green banking operations on environmental performance of retail banks in Pakistan; and a positive and significant impact of green banking investments on environmental performance of retail banks in Pakistan.

Xu et al (2020) carried a research on green finance and green performance using meta-analysis. The study employed neo classical theory and a target population of 30 independent empirical studies was obtained, and the sample size was 62051 which 12 out of 30 samples focus on green credit, 7 samples focus on green investment, 5 samples focus on green bond, 4 samples focus on green subsidy, and 2 samples focus on green finance. The study used green credit, green bond, green subsidy and green investment as independent variables and environmental performance, green innovation performance and economic sustainability as dimensions to measure green performance while profitability, firm type and region were the control variables. The study obtained data from secondary sources of data collection and meta-analysis using Hunter and Schmidt model was employed for data analysis and the findings indicated a significant positive association between green finance and enterprise green performance and the results further revealed that firm type and region showed a moderating

effect in the association between green finance and enterprise green performance. Nonetheless, profitability does not significantly moderate the association between green finance and enterprise green performance.

## METHODOLOGY

This research investigated green banking practices on banks' environmental performance and green financing of deposit money banks in Nigeria. The study adopted cross sectional survey research design. This method of research design was adopted because it systematically collects, analyse and synthesize quantitative data on a large representative sample of a given population to describe and explain the relative incidence, distribution and interrelations of variables (Appah, 2020). The target population consisted of all listed deposit money banks branches in Nigeria while the accessible population consisted of the following banks branches (First Bank, Union Bank, Access Bank, Fidelity Bank, United Bank for Africa, Guaranty Trust Bank, Zenith Bank, Wema Bank, Ecobank, First City Monument Bank) in Port Harcourt, Yenagoa, Warri, Uyo, Calabar and Benin City of Nigeria. The study adopted stratified random sampling technique and a sample size of seventy hundred and fifty (750) while five hundred and twenty (520) questionnaires were used for the study.

The data for this study were collected from well structured questionnaire titled "Green Banking Practices on Banks' Environmental Performance and Green Financing Questionnaire, (GBPEPGFQ). The independent variable of green banking practices was measured using banks' employee related practices, banks' daily related practices, banks' customer related practices, banks' policy related practices and banks' green investment related practices while the dependent variable of measured using banks' environmental performance and banks' green financing (Chen et al, 2022; Desalegn et al, 2022; Ding et al, 2022; Fang et al, 2022; Rehman et al, 2021; Hossain et al, 2020; Hoque et al, 2019) The questionnaire was validated using content validity and Cronbach Alpha ( $\alpha$ ) was used to ascertain the statistical reliability of the research instrument with a good degree of reliability at 0.92. The questionnaire administered to the respective respondents were analysed with a three (3) distinct stages of data analysis using univariate analysis (descriptive statistics), bivariate analysis (correlation matrix) and multivariate analysis (multiple regression). The study was guided by the models below:

$$BPM = \beta_0 + \beta_1BEP + \beta_2BAP + \beta_3BCP + \beta_4BPP + \beta_5BGP + \epsilon \text{ ----- (1)}$$

Where:

BEP = Banks' Employee-Related Practices

BAP = Banks' Daily-Related Practices

BCP = Banks' Customer-Related Practices

BPP = Banks' Policy-Related Practices

BGP = Banks' Green Investment-Related Practices

BPM = Banks' Environmental Performance

$\beta_0 - \beta_5$  = Coefficients

$e$  = Standard error

## RESULTS AND DISCUSSIONS

Here, the researcher presented the primary data collected from the survey research work and the results obtained were analysed with the help of statistical package for social sciences (SPSS). In addition, the researcher also provided a conclusive discussion of the results and establishing necessary inferences and implications based on the relationship between green banking practices and banks' environmental performance on listed deposit money banks in Nigeria.

Table 1 Questionnaire Distribution Rate

	Frequency	Percent	Valid Percent	Cumulative Percent
Questionnaire Retrieved	500	96.2	96.2	96.2
Questionnaire Not Retrieved	12	2.3	2.3	98.5
Questionnaire Not Properly Fill	8	1.5	1.5	100.0
Total	520	100.0	100.0	

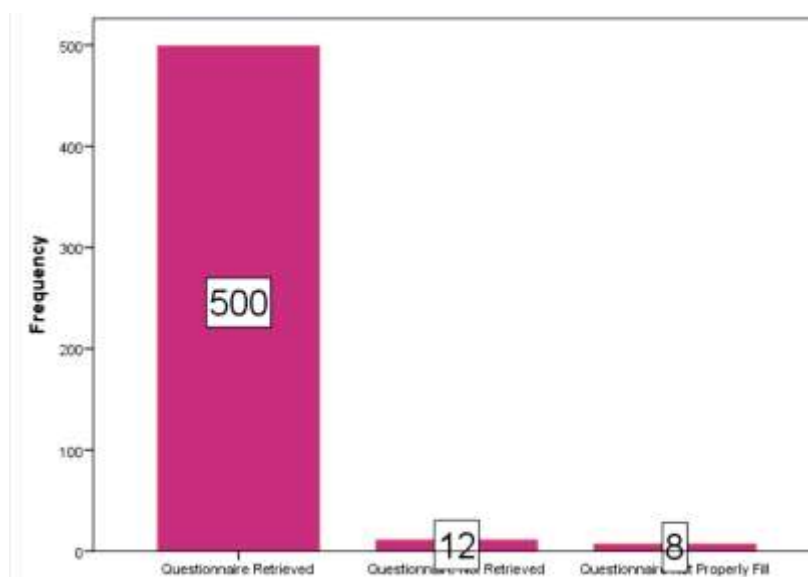


Figure 1 Questionnaires Distribution Rate



Table 1 and Figure 1 presented a total of five hundred and twenty (520) copies of the questionnaires distributed to selected respondents. The researchers were able to retrieve five hundred (500) copies, representing 96.2% of the total number of questionnaires distributed. Thus, twelve (12) copies representing, 2.3% were not retrieved due to time constraints and the researchers could not continue waiting for the respondents who were not available to return their questionnaires at the appointed date while eight (8) copies representing 1.5% were not properly filled hence the researchers rejected those questionnaires. Therefore, five hundred (500) were used as new respondents sample size for the study.

Table 2 Univariate Analysis of the Variables

	N	Minimum	Maximum	Mean	Std. Dev.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BPM	500	1.00	5.00	3.3208	.65908	-.469	.107	.571	.214
BEP	500	1.00	5.00	3.2453	.91032	-.615	.107	-.843	.214
BAP	500	1.00	5.00	3.3103	.65721	-.943	.107	1.559	.214
BCP	500	1.67	5.00	3.2151	.87940	-.459	.107	-.868	.214
BPP	500	2.00	5.00	3.2189	.59199	-.553	.107	-.648	.214
BGP	500	1.00	5.00	3.3904	.77066	-.322	.107	2.739	.214
Valid N (listwise)	500								

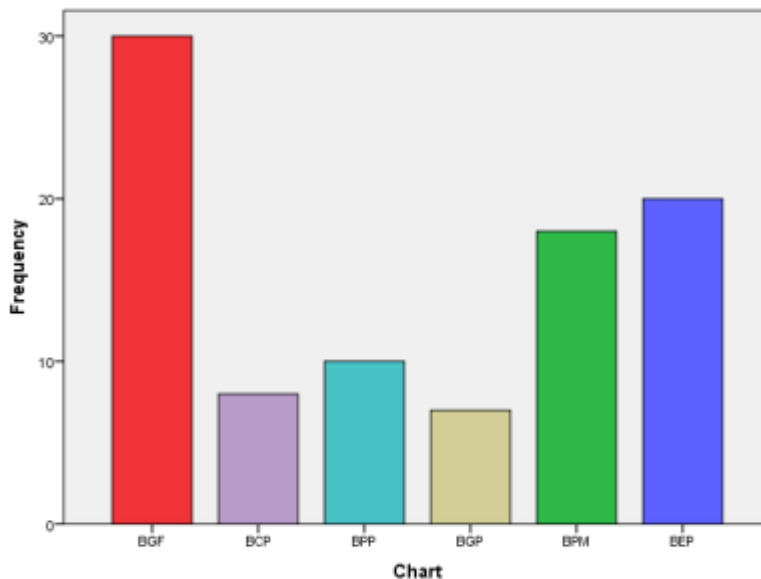


Figure 2 Univariate Analysis of the Variables

**Note:** BEP = Banks' Employee-Related Practices, BAP = Banks' Daily-Related Practices, BCP = Banks' Customer-Related Practices, BPP = Banks' Policy-Related Practices, BGI = Banks' Green Investment-Related Practices, and BPM = Banks' Environmental Performance.

In table 2, the descriptive statistics of the data are presented with the variables of banks' environmental performance (BPM), banks' green investment-related practices (BGI), banks' employee-related practices (BEP), banks' daily-related practices (BAP), banks' customer-related practices (BCP), and banks' policy-related practices (BPP). The results showed that all the independent variables have a positive growth rate as indicated between the minimum, maximum mean and standard derivation statistical values. BPM, BGI, BEP, BAP, BCP, and BPP grows from 1.00 to 5.00 with a Mean values of 3.3208, 3.1006, 3.3904, 3.3103, 3.2151, and 3.2189. The result also indicated the skewness and kurtosis show a high level of consistency. The various statistics indicate that the variables have different distribution. The skewness and kurtosis statistics provide useful information about the symmetry of the probability distribution of various data series as well as the thickness of the tails of these distributions respectively. All the variables had negative skewed means that, BPM, BGI, BEP, BAP, BCP, and BPP had a short right tail. Results also indicate that, all the variables had positive kurtosis implying that, the extent of flatness of the distribution is not normally among these variables.

Table 3 Correlations coefficient of the variables

		BPM	BGF	BEP	BAP	BCP	BPP	BGP
BPM	Pearson Correlation	1	-.523**	.510**	.550**	-.513**	.294**	-.246**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	500	500	500	500	500	500	500
BEP	Pearson Correlation	.510**	-.732**	1	.662**	-.684**	.391**	-.378**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	500	500	500	500	500	500	500
BAP	Pearson Correlation	.550**	-.684**	.662**	1	-.599**	.332**	-.392**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	500	500	500	500	500	500	500
BCP	Pearson Correlation	-.513**	.839**	-.684**	-.599**	1	-.255**	.478**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	500	500	500	500	500	500	500
BPP	Pearson Correlation	.294**	-.097*	.391**	.332**	-.255**	1	-.010
	Sig. (2-tailed)	.000	.026	.000	.000	.000		.817
	N	500	500	500	500	500	500	500
BGP	Pearson Correlation	-.246**	.489**	-.378**	-.392**	.478**	-.010	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.817	
	N	500	500	500	500	500	500	500

\*\* . Correlation is significant at 0.01 level (2-tailed). \* . Correlation is significant at 0.05 level (2-tailed).

Pearson correlation coefficient was used to compute the correlational relationship between the independent variables banks' employee-related practices (BEP), banks' daily operations-related practices (BAP), banks' customer-related practices (BCP), banks' policy-related practices (BPP), banks' green investment-related practices (BGI) and the independent variable banks' environmental performance (BPM). According to Sekaran (2008), this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship). The correlation coefficient was calculated to determine the strength of the relationship between independent and dependent variables (Kothari, 2013).

**Decision:** The results in table 3 revealed a Pearson Correlation Coefficient ( $\rho$ ) of R-value (0.510\*\*) which illustrated a moderate positive relationship between banks' employee-related practices of green banking and environmental performance of deposit money banks in Nigeria. R-value (0.550\*\*) illustrated a moderate positive relationship between banks' daily operations-related practices of green banking and environmental performance of deposit money banks in Nigeria. R-value (-0.513\*\*) illustrated a moderate negative relationship between banks' customers-related practices of green banking and environmental performance of deposit money banks in Nigeria. R-value (0.294\*\*) illustrated a weak positive relationship between banks' policy-related practices of green banking and environmental performance of deposit money banks in Nigeria. R-value (-0.246\*\*) illustrated a weak negative relationship between banks' green investments related practices of green banking and environmental performance of deposit money banks in Nigeria.

Furthermore, in term of model two, the results in table 3 revealed a Pearson Correlation Coefficient ( $\rho$ ) of R-value (-0.732\*\*) which illustrated a strong negative relationship between banks' employee-related practices of green banking and sources green financing of deposit money banks in Nigeria. R-value (-0.684\*\*) illustrated a strong negative relationship between banks' daily operations-related practices of green banking and sources green financing of deposit money banks in Nigeria. R-value (0.839\*\*) illustrated a strong positive relationship between banks' customers-related practices of green banking and sources green financing of deposit money banks in Nigeria. R-value (-0.07\*\*) illustrated a very weak negative relationship between banks' policy-related practices of green banking and sources green financing of deposit money banks in Nigeria. R-value (0.489\*\*) illustrated a moderate positive relationship between banks' green investments related practices of green banking and sources green financing of deposit money banks in Nigeria.

## Regression Analysis

Table 4a Model one Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.805 <sup>a</sup>	.648	.642	.79884	1.554

a. Predictors: (Constant), BGP, BPP, BAP, BCP, BEP  
b. Dependent Variable: BPM

Regression coefficient of  $R = 0.805$  or 80.5% indicated that relationship exist between independent variables and dependent variable. The coefficient of determination  $R^2 = 0.684$  which showed that 64.8% of variation in green banking and environmental performance (BPM) is explained by banks' employee-related practices (BEP), banks' daily operations-related practices (BAP), banks' customer-related practices (BCP), banks' policy-related practices (BPP), banks' green investment-related practices (BGI). This implying that there is a positive relationship between banks' employee-related practices (BEP), banks' daily operations-related practices (BAP), banks' customer-related practices (BCP), banks' policy-related practices (BPP), banks' green investment-related practices (BGI).and green banking and environmental performance (BPM). The Durbin-Watson  $d = 1.554$  indicate that there is no first order linear auto-correlation in the data and it shows that the model has goodness of fitness.

Table 4b Model one ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	83.619	5	16.724	60.593	.000 <sup>b</sup>
1	Residual	141.590	513	.276		
	Total	225.208	518			

a. Dependent Variable: BPM  
b. Predictors: (Constant), BGP, BPP, BAP, BCP, BEP

The table 4b had shown a regression significant P-value of  $0.000 < 0.05$  alpha level, F-value 60.593 which illustrated that the overall model is statistically significant at 0.05 alpha level between banks' employee-related practices (BEP), banks' daily operations-related practices (BAP), banks' customer-related practices (BCP), banks' policy-related practices (BPP), banks' green investment-related practices (BGI) and green banking and environmental performance (BPM) of deposit money banks in Nigeria.

Table 4c Model one Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
(Constant)	2.160	.281		7.687	.000	
1	BEP	.086	.040	.119	2.177	.030
	BAP	.316	.050	.315	6.385	.000
	BCP	-.179	.039	-.239	-4.594	.000
	BPP	.091	.043	.082	2.098	.036
	BGP	.032	.035	.038	.920	.358

a. Dependent Variable: BPM

**Decision Rule:** Reject  $H_{01}$  if Sig (P-value) is less than 0.05 significant level otherwise Accept.

**Decision 1:** The above table indicated that, the P value of 0.030 is < less than 0.05 significant level between banks' employee-related practices of green banking and environmental performance of deposit money banks in Nigeria. Therefore, we rejected the null hypothesis and accepted the alternative which stated that, banks' employee-related practices of green banking positively and significantly impact on environmental performance of deposit money banks in Nigeria.

**Decision 2:** The above table indicated that, the P value of 0.000 is < less than 0.05 significant level between banks' daily operations-related practices of green banking and environmental performance of deposit money banks in Nigeria. Therefore, we rejected the null hypothesis and accepted the alternative which stated that, banks' daily operations-related practices of green banking positively and significantly impact on environmental performance of deposit money banks in Nigeria.

**Decision 3:** The above table indicated that, the beta value of -0.239 and P value of 0.000 is < less than 0.05 significant level between banks' customers-related practices of green banking and environmental performance of deposit money banks in Nigeria. Therefore, we rejected the null hypothesis and accepted the alternative which stated that, banks' customers-related practices of green banking negatively but significantly impact on environmental performance of deposit money banks in Nigeria.

**Decision 4:** The above table indicated that, the P value of 0.036 is < less than 0.05 significant level between banks' policy-related practices of green banking and environmental performance

of deposit money banks in Nigeria. Therefore, we rejected the null hypothesis and accepted the alternative which stated that, banks' policy-related practices of green banking positively and significantly impact on environmental performance of deposit money banks in Nigeria.

**Decision 5:** The above table indicated that, the beta value of 0.038 and P value of 0.358 is > greater than 0.05 significant level between banks' green investment related practices of green banking and environmental performance of deposit money banks in Nigeria. Therefore, we accepted the null hypothesis and rejected the alternative which stated that, banks' green investment related practices of green banking positively and insignificantly impact on environmental performance of deposit money banks in Nigeria.

## DISCUSSION OF FINDINGS

### **Banks' Employee-related Practices and Environmental Performance**

The findings of the regression analysis revealed that banks' employee-related practices of green banking positively and significantly affect banks' environmental performance of deposit money banks in Nigeria. The result from this study is in agreement with the findings of Shaumya and Arulrajah (2017), Risal and Joshi (2018), Chen et al (2022) that banks' employee related practices influences the environmental performance of deposit money banks.

### **Banks' Daily Operations-related Practices and environmental Performance**

The result from the regression analysis disclosed a positive and significant association between banks' daily operations-related practices and banks' environmental performance of deposit money banks in Nigeria. These findings are consistent with the research conducted by Shaumya and Arulrajah (2017) in Sri Lanka that daily operations related practices of banks positively and significantly affects the environmental performance of banks. Similarly, the result is also in agreement with the study conducted by Risal and Joshi (2018) in Nepal that daily operations related practices of banks positively and significantly affects the environmental performance of banks. Some other studies like Chen et al (2022) in Bangladesh and Rehman et al (2021) in Pakistan showed that bank daily operations positively and significantly affects environmental performance of banks.

### **Banks' Customers-related Practices and Environmental Performance**

The regression analysis results disclosed a negative and significant association between banks' customers-related practices and banks' environmental performance of deposit money banks in Nigeria. The result from the study disagree with the findings of Shaumya and Arulrajah

(2017), Risal and Joshi (2018) that banks' customers-related practices positively and significantly affects environmental performance of deposit money banks.

### **Banks' Policy-related Practices and Environmental Performance**

The findings from the regression analysis indicated a positive and significant association between banks' policy-related practices and banks' environmental performance of deposit money banks in Nigeria. The outcome of this study concur with the studies of Shaumya and Arulrajah (2017), Rehman et al (2021), Chen et al (2022) that bank policy related practices positively and significantly affects environmental performance of banks. The study is also consistent with the study conducted by Rehman et al (2021) in Pakistan that green banking policy positively and significantly affects environmental performance of retail banks in Pakistan.

### **Banks' Green Investment related Practices and Environmental Performance**

The results from the regression analysis showed a positive and insignificant association between banks' green investment related practices and banks' environmental performance of deposit money banks in Nigeria. The findings from this study is in agreement with Rehman et al (2021) in Pakistan that green banking investments affects environmental performance of banks.

## **CONCLUSION, RECOMMENDATIONS AND CONTRIBUTION TO KNOWLEDGE**

This study investigated green banking practices and environmental performance of deposit money banks in Nigeria. The study examined employee related practices, daily related practices, customer related practices, bank policy related practices and green investment on environmental performance of deposit money banks in Nigeria. The study anchored on the theory of reasoned action and several empirical studies were reviewed to identify the gaps in literature. The study used questionnaire as the primary source of data collection and responses obtained from the administered questionnaires were analysed using descriptive statistics, correlation matrix and regression analysis.

The results from the regression analysis revealed that banks' employee-related practices of green banking positively and significantly influence environmental performance of deposit money banks in Nigeria; banks' daily operations-related practices of green banking positively and significantly affect environmental performance of deposit money banks in Nigeria; banks' customers-related practices of green banking negatively but significantly influence environmental performance of deposit money banks in Nigeria; banks' policy-related



practices of green banking positively and significantly influence environmental performance of deposit money banks in Nigeria and banks' green investment related practices of green banking positively and insignificantly impact on environmental performance of deposit money banks in Nigeria. Consequently, on the basis of the findings the study concluded that green banking practices positively influences the level of environmental performance of banks in Nigeria.

The results from this empirical study provide helpful implications for bankers, managers, banking institutions, academics and government administrators in Nigeria through the sponsorship and promotion of green banking practices and the provision of green finance to boost banks' environmental performance, and consequently, Nigeria's sustainable economic growth and development. Therefore, the study recommended that banks in Nigeria should incorporate green banking practices such as banks' employee-related practices, banks' daily operations-related practices, banks' customers-related practices, banks' policy-related practices and banks' green investment related practices in the banking system through the reduction of paper usage, provision of ecofriendly banking practices such as ATMs and online banking, establishment of green branches and implementation of green banking policies to improve banks' environmental performance in Nigeria; banks in Nigeria should ensure that green banking practices and environmental risk management guidelines are applied effectively and efficiently; The government and banks in Nigeria should apply necessary steps to access the international green financing funds, improve the quality of green credit and equity finance; banks in Nigeria should diversify the diverse green banking products in different environmentally friendly projects for sustainable projects for environmental performance and sustainable development; and government should provide incentives and encourage environmentally sustainable technologies that would enhance banks environmental performance in Nigeria.

However, several limitations need special considerations as they may influence the generalization of research findings. First, the analysis only used bank staff opinions on different green banking practices rather than considering the opinions of customers and owners of sample banks. Second, the sample respondents used in the study are listed deposit money banks in Nigeria. As a result, the research findings may affect representative findings to the adoption of green banking practices in Nigeria. Third, staff knowledge of green banking practices may differ between DMBs, MFBs and merchant banks etc could be examined by various banks. Finally, this study was specifically on the banking sector.

### Heuristic Model

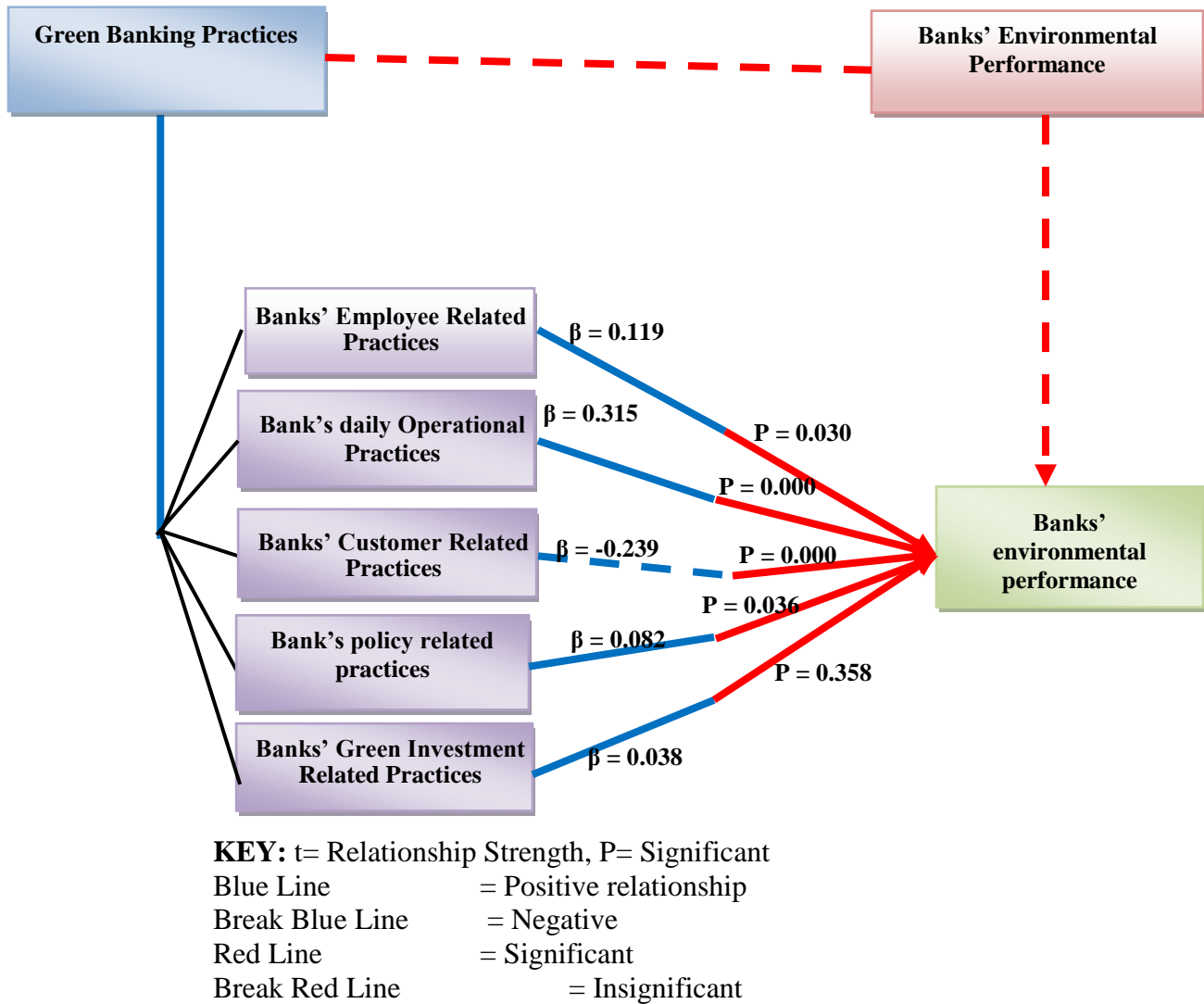


Figure 3 Heuristic Model showing the results of green banking practices on corporate

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