



Research article

Green banking and profitability of banks in Nigeria: Opinions and attitudes

Henry Inegbedion

Department of Business Administration, College of Management and Social Sciences, Bowen University, Iwo, Osun State, Nigeria

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ABSTRACT

There is no doubt that global attention has shifted to environmental protection given the series of devastations that have occurred and the consequences of such devastations, now manifesting as global warming. People believe that the involvement of banks in this crusade will facilitate the realization of the goals of environmental protection. This study investigated respondents' perceptions of green banking and the profitability of banks in Nigeria to ascertain how full implementation of green banking will enhance the profitability of banks in Nigeria. The study employed a cross-sectional survey of respondents from First Bank and Access Bank employees in Nigeria. The study performed structural equation modelling to analyse the research data. The results show that green banking will have a significant positive influence on the profitability of banks in Nigeria and that goodwill will mediate the relationship between green banking and profitability by enhancing the image of banks committed to green banking and thus making them attractive. The study makes contributions to practice and to theory.

1. Introduction

In the last few decades, the world has witnessed rapid development in most parts, including the less developed parts like sub-Saharan Africa. A glaring shortcoming of this fast-growing development taking place in every part of the world is that it is putting enormous stress on the resources, which is thus precipitating environmental degradation by corporate entities, especially manufacturing firms [1,2]. The infringement of man in the global biodiversity stimulated the focus on the concept/of sustainable development to guarantee the conservation of the environment and protect the going concern of nature [2,3]. The series of activities performed by global economies to facilitate economic growth and wealth maximisation are detrimental to the environment and thus, inimical to sustainability. These activities are responsible for the world's challenges of climate change, such as floods and heat waves [1]. The world's climate change is causing rising atmospheric and ocean temperatures as well as fast changes in the patterns of precipitation, general increases in sea levels, rising ocean acidity, and persistent increases in the intensity and frequency of some extreme weather events [4]. Despite the popularisation and employment of corporate social responsibility (CSR) strategy by companies, especially manufacturing companies, to give back to the immediate environments anchoring their operations through the compensation of the host communities thereby attracting public support for their operations, the humongous consequences of environmental degradation seem to significantly outweigh the benefits of CSR.

This lop-sidedness in the aggregation of benefits of CSR and the consequences of environmental degradation often results in negative trade-offs, especially for the host communities. If stakeholders neglect stringent measures, there is every likelihood that the

E-mail address: henry.inegbedion@bowen.edu.ng.

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series of corporate activities which have already resulted in global warming through climate change [5] will threaten human existence and subsequently, vitiate the ongoing concern of humanity. This underscores the essence of green banking which seeks to fund firms' investment in a green environment. By providing financial support for the purchase and installation of climate-friendly projects, as well as offering sustainability development, green banking contributes to the building of a sustainable environment. Consequently, it is the objective of green banking (GB) to support the extensive mitigation of the negative trade-off between the benefits of CSR and the fallouts of the firms' environmentally degrading activities through the financing of green projects to create value for the firm in particular and the community in general. The earth's changing climate forms the basis for GB. This changing climate is the major environmental risk affecting the world today [6]. The increasing environmental consciousness globally calls for increased attention to sustainable development and associated corporate investments and initiatives for refinancing which deserves the attention of stakeholders. The banks are included, being a major part of the money market and the financial system of any economy, since moving the economy on a sustainable path cannot happen without the inclusion of GB [7]. In other words, this sustainable development cannot occur without the inclusion of banks and other stakeholders, owing to the critical role that they play in the acceleration of the transition to a low-carbon, sustainable economy. They will be useful in financing climate-friendly projects such as social investments in hospitals, schools, and power plants as well as in offering sustainability development; this is what GB entails [8].

Just as companies in the non-banking sectors are vulnerable to environmental risks, the banks are equally vulnerable to the same extent [9,10]. This is more so because, just as a healthy environment supports the well-being of companies outside the banking industry, the wellness of a bank also depends significantly on the wellness of the immediate environment which consists mainly of the host community and an unhealthy environment will incapacitate the banking system. Furthermore, the wellness of the environment in which the banks operate has significant implications for the progress and financial capacity of its customers. By the same token, the financial ability of the customers of the banks is critical to their investment capacity and hence, the profitability of the banks. Unfortunately, the banking industries take the blame for being responsible for the major factors that are directly and indirectly responsible for the stimulation of the global climate owing to their financing of these anti-environmental projects [11]. Consequently, the emergence of the GB phenomenon over the last decade was to stimulate a reversal of the adverse impact of the banks' financing and thus, permit the emergence of a healthy environment. Some of the studies on green banking include *The Effects of GB Practices on the financial performance of Listed Banking Companies in Bangladesh* [12], *Adoption of GB Practices and environmental performance in Pakistan* [11], *GB and Performance: the role of foreign and public ownership* [13] as well as *implementation of GB and financial performance of commercial banks in Indonesia* [14]. The others are the *linkage between GB practices and green loyalty* [2], *the implementation status of the GB policy guideline and the impact of GB practices on financial performance* [15], *the impact of GB practices on banks' environmental performance and sources of green financing of private commercial banks (PCBs) in Bangladesh.* [1] and *impact of GB activities on green financing and banks' environmental performance* [16]. Unfortunately, studies related to the implementation of green financing and GB in sub-Saharan African economies, especially in Nigeria, are scarce. To this end, the involvement of banks in the protection of their operating environment has become critical to their going concern as well as to the interest of their numerous customers in contemporary times. This accentuates the relevance of GB, which is becoming an emerging area for firms to create competitive advantages because of the goodwill associated with the perception that a firm committed to GB is contributing to the protection of the environment [17]. As a result of this viewpoint, GB provides private sector banks with new business opportunities and considerably expands the jurisdiction of regulatory authorities, especially the Central Banks and supervisors as regards the protection of the financial system and the management of the risks of the individual financial institutions within the financial system. Despite the empirical literature on green banking, studies on the phenomenon are very scanty in Nigeria. Besides, no previous studies appear to have done a mediation study on the relationship between green banking and bank profitability using banks' goodwill. Flowing from the theory of social responsibility investment (SRI) theory, this study seeks answers to the following research question: to what extent can the funding of firms that invest in social, environmental and sustainability projects enhance banks' profitability? To answer this question, this study, focused on respondents' perception of GB and profitability of banks in Nigeria to ascertain the extent to which GB can enhance the profitability of banks in Nigeria. The study employs respondents' opinion because it is not ex-post but ex-ante since GB is not yet fully operational in Nigeria although many bank employees are aware of the practice. The banking context in Nigeria is similar to what is obtainable in other sub-Saharan African countries. However, as regards green banking, the country and the entire region are lagging behind the industrially advanced countries because the concept of "green practice" has yet to gain ground. The study examines the rest of the article under the following subheadings' literature review, research methods, results, and conclusion.

2. Literature review

2.1. Green banking

GB concerns the provision of financial support for the purchase and installation of climate-friendly projects, as well as offering sustainable development [18]. GB practice is one of the ways that the firm can contribute to the enhancement of environmental and economic performance in the community through the provision of green finance and the initiation of green costs in its various sectors; it assumes a crucial role in raising the financial performance of organizations through dwindling costs [7]. The study considers the practices of GB as a unique strategy for the promotion of socially responsible behaviour in modern societies. Consequently, it is a yardstick for measuring and improving corporate performance [19]. Although GB has been a popular concept in recent times, the phenomenon is an evolving approach to tackling environmental challenges. GB aims to address the concerns of the environment through the functional activities of banks to advance sustainable development in the banking industry and thus, enhance their going

concern and ultimately, their competitiveness. “A green economy involves the restructuring of the business framework to earn better returns from ecological, human, and monetary investments. It encompasses activities that use fewer resources and leaves behind lesser waste aggregates, thus reducing greenhouse emissions” [2]. GB also refers to an environmentally friendly banking that “promotes eco-friendly practices, which decline the banking institution’s carbon footprint on the environment and avoids further environmental degradation” [20]. By facilitating the implementation of sustainable green policies and practices in the banking industry, GB initiatives and practices assist in the promotion of environmental sustainability in the economy [21]. GB initiatives are capable of strengthening the transition towards a greener economy. GB refers to banking techniques that can both reduce internal carbon footprint as well as reduce external carbon emission [7]. Conceptualized GB as efforts geared towards preventing banking activities from damaging the environment. GB encompasses the promotion of environmentally friendly practices thereby mitigating the carbon footprint caused by bank activities [22]. This, according to Ref. [23] is achievable through the intensification of online banking and the eventual replacement of traditional banking with online banking.

A significant number of researchers agree that GB confers numerous benefits on banks [24–26,26] indicating that among other benefits, the application of GB will increase bank efficiency [27]. are of the view that implementation of GB provides three advantages for banks; implementation of online banking to make the transactions paperless and thus ultimately reduce environmental degradation; stimulation of awareness on environmental-friendly business practices to businesses and the implementation of environmentally friendly lending policies by banks with the attendant positive impacts [26]. Also indicated that GB practice has a significant influence on bank trust, bank loyalty and green image.

Green banking can stimulate environmental sustainability and thus, attract foreign direct investment [28,29] found a statistically significant positive relationship between environmental sustainability and FDI, trade openness, international trade, and globalization [28]. Found significant relationships among factors like Greenwashing, the COVID-19 pandemic, and Blockchain technology [30], find a significant and positive relationship between agency-oriented governing behaviour and financial performance, whereas stewardship-oriented governing behaviour has a significant and positive relationship with social impact [31]. Found a positive and significant impact of attitude, subjective norms and perceived behavioural control on investors’ intention towards impact investing in India.

2.2. Theoretical framework

This study employs the social responsibility investment (SRI) theory and the Institutional theory as its framework. Driven by the desire to invest ethically, the SRI theory dates back to the prehistoric days of the world’s major religions (Christianity, Islam, and Judaism) [24,32]. Consistent with most complex concepts, there is no generally accepted definition of the SRI theory [33]. This explains why the terms “ethical, sustainability, social, environmental, green investment, at different instances, have been interused as a logic for SRI” [34,35]. Besides, people commonly swap impact investing and community investing for each other in the discourse of SRI theory. The major thrust of the SRI theory is on the integration of individual value and the well-being of society as important factors that need consideration when screening investment choices [24,36]. Some studies regard SRI as a social impact investment that could be direct or indirect and that both the direct and indirect have the propensity to enhance investors’ and the community’s social benefits significantly [36]. The SRI theory seeks to encourage the application of finance for actualizing life goals, financial goals inclusive [37]. Financial firms that are socially inclined, like microfinance institutions, have been involved in providing useful solutions to the trio of environmental constraints, employment generation, as well as urban and rural development [38]. Interestingly, there is empirical evidence that the SRI theory has social, environmental, and sustainability dimensions [34]. From the environmental dimension perspective, the SRI theory seeks to leverage financial benefits from the implementation of environmentally friendly investments [24, 38]. The focus of the social dimension is on the judicious disbursement of finance for the realization of financial and social values, as well as beliefs and goals at the same time. However, the focus of the sustainability dimension is on viable businesses that will yield financial, social, and environmental benefits [39,40].

By providing a plan to enable the enhancement of the relationship that exists between the practice of GB and green image, bank trust, and bank loyalty, and by also facilitating socially responsible investment to stimulate sustainability performance, the SRI theory provides benefits to both policymakers and strategic managers [41,42]. Being socially responsible is one of the fundamental requirements of a green bank through an ex-ante anticipation of how intended or existing projects influence environmental safety in the short and long term before approving loans [23,43] owing to the high demands from stakeholders in contemporary times, which are beyond profitability and risk factors [44]. As a result of its social and environmental benefits, SRI has now become attractive to investors [45]. This may prove useful to firms in getting a positive image and goodwill and thus, become instrumental for the retention of employees and eliciting enhanced commitment from them as well as strengthening the relationship between firms’ customers and policymakers [46]. Furthermore, there is a tendency for an inclination towards social and environmental benefits to significantly influence how stakeholders make investment decisions [47], and this can strengthen stakeholders’ commitment to trade-off a significant proportion of their investment benefits for social benefits [48].

The institutional theory examines how an organisation’s external environmental pressures compels it to change its policies, procedures or structure. The theory posits that an institution changes under external pressure to enable it gain specific resources or to enable it to attain economic and social legitimacy. Here, institutions refer to collective and regulatory complex political and social agencies which, through the enforcement of the law, rules and norms, dominate other organizations [49,50]. By financing firms that invest in sustainability, environmental and social projects banks and other financial institutions involved in such financing exclude themselves from enormous institutional pressures to minimize environmental degradation.

Empirical literature suggest that banks’ financing of sustainability projects ([51–53]), environmental projects [1,16,51,54] and

social projects [51,55]. Based on the foregoing, with particular reference to the institutional theory as well as the social, environmental and sustainability dimensions of the SRI model, the following null hypotheses were tested:

- H_0 1: Financing firms that invest in social projects will not help to enhance a bank's image
- H_0 2: Commitment to the financing of firms that invest in environmental projects will help to enhance a bank's goodwill
- H_0 3: Financing firms that invest in sustainability projects will not help a bank to elicit public trust
- H_0 4: Financing firms that invest in social projects will not help to enhance a bank's profitability
- H_0 5: Commitment to the financing of firms that invest in environmental projects will not help to enhance a bank's profitability
- H_0 6: Financing of firms that invest in sustainability projects will not help to enhance a bank's profitability
- H_0 7: A bank's image will not mediate the relationship between GB and the financial performance of banks in Nigeria

2.3. Empirical review

- (12) Investigated "the effects of GB practices on financial performance of listed banking companies in Bangladesh" They employed regression analysis and found that GB practices have a statistically significant positive influence on bank performance [11]. Investigated the "adoption of GB practices and environmental performance in Pakistan" They found that policy significantly influences the daily operations and the adoption of GB practices [13]. Investigated GB and bank performance using a longitudinal design of performance indicators from fourteen Indonesian banks. The results of the least square analysis showed that GB practices significantly influence bank profitability negatively but significantly influence bank value positively.
- (14) Examined the "implementation of GB and financial performance of commercial banks in Indonesia" using data for 2012–2016. The results showed that GB influences bank profitability positively [56]. Investigated "the impact of green credit on the financial performance of banks" using a longitudinal design of unbalanced panel data for 34 Chinese commercial banks from 2007 to 2018. The findings indicate that green credit has a significant positive influence on the financial performance of commercial banks [2]. Investigated the "linkage between GB practices and green loyalty" from a customer's point of view using a survey of 304 conveniently sampled respondents. GB practices were found to have a positive significant influence on green image and green trust but no significant influence on green loyalty while green image has a significant mediating influence on the relationship between GB practices and green loyalty,
- (15) Examined "the implementation status of the GB policy guideline and the impact of GB practices on the financial performance". They analysed the 2016–2018 annual reports of the listed deposit money. The results showed that a significant proportion of the banks have implemented a reasonable number of the policy guidelines of GB as given by the central bank [1]. Investigated "the impact of GB practices on banks' environmental performance and sources of green financing of private commercial banks (PCBs) in Bangladesh." They employed cross-sectional survey design of three hundred and twenty-two (322) bank employees in Bangladesh. Findings showed that the employees of the banks, the daily operations of the banks, and the GB practices arising from policy influence green financing positively. In addition the financing of green project by banks has a significant influence on banks' environmental performance [16]. Examined the "impact of GB activities on green financing and banks' environmental performance" using green financing a mediator and using cross-sectional survey design of 352 respondents. The results indicate that GB and green financing activities have a significant positive influence on the environmental performance of banks.

3. Research methodology

3.1. Research design and sampling technique

The study investigates GB and profitability of banks in Nigeria. To this end, the population of the study consists of employees in the Nigerian banking industry. Specifically, focus was on employees of Access bank, Nigeria and First bank, Nigeria. However, the results of the study are generalised to the entire banking sector in Nigeria. The choice of the two banks is due to their commitment to minimising negative environmental impacts while meeting the needs of their customers and making impact on their communities through regular investment in social projects. The research design is a cross-sectional survey of the sampled respondents from the two banks. The number of employees in Access banks is twenty-eight thousand, one hundred and twenty one (28, 121) while that of First Bank is about sixteen thousand (16, 000). To this end, the study used a sample size of 396 based on Taro Yamane formula and requested 144 employees of First bank as well as 253 from Access bank. Convenience sampling served to select 30 branches of Access bank and first bank in Lagos, Benin, Port Harcourt, Oshogbo, Ilorin and Abuja. Thereafter, the study employed simple random sampling to select the desired number of respondents.

3.2. Method of data collection

The study employed online data collection technique and contacted the sampled respondents through their social media (Facebook and WhatsApp) and the same media to receive their responses. The study used the sampling frames of the banks to select the employees using random sampling, specifically lottery method of randomisation and thereafter, collected the contacts (WhatsApp or Facebook IDs) of the sampled employees from the Human Resources Department.

3.2.1. Research instrument

The study employed a structured questionnaire to elicit respondents' opinion on how they think that GB will influence the

profitability of adopting banks in Nigeria. The author, in line with empirical studies on green banking designed the questionnaire. The questionnaire was categorised into two main parts; section one, which consisted of items on the respondents’ demographic characteristics and section two; which consisted of items on the research problem. The response format of the items in the second part was of the five point Likert scale type.

3.2.1.1. *Validity of instrument.* The study employed principal component analysis in validating the research instrument. The results of the principal component analysis show that the eigenvalues and the associated proportion of the total explained by the eigenvalues for social investment, environmental consciousness, sustainability, goodwill and profitability were significant, indicating that none of the variables should be done away with (See Table 1). The results of the component matrix indicate that there is only one component and that the loadings of each of the variables on this component for social investment, environmental consciousness, sustainability, goodwill and profitability are significant (See Table 2). A one sample *t*-test for significant differences between these loadings showed that the loadings were the same based on the calculated *t* and *p*-values. The implication is that the items are not collinear. In other words, the items are measuring what they purport to measure (See Table 2). Lastly, the results of the component score matrix shows that the component scores for social investment, environmental consciousness, sustainability, goodwill and profitability are evenly distributed. A one sample *t*-test for significant differences between these scores showed that the loadings were the same based on the calculated *t* and *p*-values thus indicating that the component scores are not significantly different from each other. This result supports the results of the loadings that the items are not collinear. In other words, the items are measuring what they purport to measure (See Table 3). In the light of the results of the principal component analysis, the research instrument is valid.

3.2.1.2. *Reliability of instrument.* As the second essential quality desired in a measuring instrument, the study used Cronbach alpha. To test for reliability of the instrument. A Cronbach alpha value of 0.7 is acceptable [46]. The computed alpha values for the entire instrument, social investment; environmental consciousness, sustainability, goodwill and profitability are all greater than 0.7 (see Table 4). The implication is that the questions included in the questionnaire are internally consistent and the instrument is thus reliable.

3.3. *Measurement of variables*

The study used four 5-point Likert scale items to measure the dependent variable, profitability, which seeks to ascertain respondents’ perception of the extent to which they perceive their banks to be profitable. Goodwill served as the mediating variable in the study and its measurement is by three 5-point Likert items of the respondents’ perception of the goodwill of their banks. The study employed three independent variables, social investment, environmental consciousness and sustainability. Three 5-point Likert items were used to measure the respondents/perception of their bank’s commitment to social investment, and four 5-point Likert items were used to measure respondents/perception of the extent to which their banks invest in environmental consciousness projects. Lastly, the study used six 5-point Likert items to measure the respondents’ perception of their bank’s commitment to sustainability projects. A 5-point Likert item is a declarative opinion/statement about a phenomenon with five response options indicating a respondent’s extent of agreement disagreement or neutrality.

3.4. *Method of data analysis*

Descriptive and inferential tests served to analyse the data. Descriptive statistics consisted of means and standard deviations while the test for the significance of data is with structural equation modelling. The choice of structural equation modelling is due to its suitability in mediation analysis since the direct and indirect components of the path analysis in structural equation modelling are very useful in mediation analysis.

3.5. *Model specification*

The model specifications of the study are:

$$.gwill = f (sinv, envc \text{ and } sus) \dots \tag{i}$$

$$.gwill = \beta_0 + \beta_1 sinv + \beta_2 envc + \beta_3 sus + e \dots \tag{ii}$$

Table 1
Principal component analysis (total variance explained).

Component	Total	Cumulative Percentage
1	3.004	60.024
2	0.927	78.606
3	0.521	89.033
4	0,341	95.856
5	0,207	100.00

Table 2
Component matrix.

Variable	Component	Test V	P Value
Social Investment	0.774	0.000	1.000
Environmental Consciousness	0.709		
Sustainability	0.775		
Goodwill	0.869		
Financial Performance	0.738		

Table 3
Component score matrix.

Variable	Component	Test V	P Value
Social Investment	0.258	-0.292	0.785
Environmental Consciousness	0.236		
Sustainability	0.258		
Goodwill	0.289		
Financial Performance	0.246		

Table 4
Reliability of instrument.

Variable	Cronbach Alpha Coefficient
Entire Instrument	0.88
Social Investment	0.69
Environmental consciousness	0.72
Sustainability	0.71
Goodwill	0.71
Financial performance	0.78

Source: Author’s computation.

The model of mediation is:

$$prf = f(gwil, sinv, envc \text{ and } sus) \dots \tag{iib}$$

$$prf = \varphi_0 + \varphi_1 gwill + \varphi_2 sinv + \varphi_3 envc + \varphi_4 sus + e \dots \tag{iv}$$

where:

- .gwill = respondents’ perception of goodwill.
- .sinv = respondents’ perception of their bank’s social investment.
- .envc = respondents’ perception of their bank’s commitment to environmental Consciousness.
- .sus = respondents’ perception of their bank’s commitment to Sustainability.
- .prf = respondents’ perception of their bank’s profitability.
- β_0 = The variation in goodwill that the independent variables (sinv, envc and sus) do not explain.
- β_i (i = 1–3) = slopes of sinv, envc and sus respectively.
- φ_0 = The variation in prf that the independent variables (gwill, sinv, envc and sus) do not explain.
- φ_i (i = 1–4) = slopes of gwill, sinv, envc and sus respectively.

3.6. Ethical declarations

3.6.1. Ethical approval

The author sought and got approval from the institution’s Research Ethical Board to conduct the study but did not receive any approval number.

3.6.2. Informed consent

The author also sought the consent of the participants after informing them of the study and the purpose of the study and assured them of their anonymity and that the study was solely for academic purposes. Based on the informed consent that 285 out of the 396 invited participants voluntarily participated in the study.

3.7. Computer implementation

The study used Statistical Package for Social Sciences (SPSS) 20 to code and test for the validity and reliability of the instrument while STATA 12 served to perform the path diagram analysis of the structural equation model.

4. Results

Out of the 396 requested participants, 112 declined while 17 of those that participated were not conversant with green banking. Thus, the study used the data of 267 returned questionnaires. The results of the descriptive statistics show that all the means were above 3, the mid-point and thus indicate that the majority of the respondents answered in the affirmative. The highest variability in perception occurred in profitability while the least was for social investment as indicated by the standard deviations of 0.702 and 0.466 respectively (see Table 5).

The results of the structural equations model (direct effects) of respondents' perception of green banking (social investment, environmental consciousness and sustainability) and goodwill show that the coefficients of all the explanatory variables are positive. The p values of all the calculated Z are less than 0.05, except that of the constant (see Table 6). The implication is that all the explanatory variables (social investment, environmental consciousness and sustainability) have positive relationships with the goodwill of banks in Nigeria. In addition, all the positive relationships between GB and the profitability of banks are statistically significant (see Table 6). The results of the structural equations model of GB (social investment, environmental consciousness and sustainability) and bank performance with perceived bank goodwill as a mediating variable show that the coefficients of goodwill and environmental consciousness are positive while those of social investment and sustainability are negative. The p values of the positive relationships of goodwill and environmental consciousness with bank performance are less than 0.05. However, only the p-value of the negative relationship between sustainability and bank performance is less than 0.05. That between social investment and bank performance is not (see Table 6). The implication is that the mediator (goodwill) and one of the explanatory variables (environmental consciousness) have a statistically significant positive relationship with the profitability of banks. The negative relationship between sustainability and bank profitability was significant, but that between social investment and bank profitability was not significant (see Table 6). The statistically significant negative relationship between sustainability and bank profitability is suggestive that respondents agreed that banks' commitment to sustainability will deplete their profits and thus, result in decreasing profitability. In the same vein, the negative relationship between social investment and banks' profitability suggests that the respondents agreed that social investments might drain the banks' earnings and thus reduce the profitability of the banks.

The results of the structural equation model (indirect effects) show that there was no indirect path from GB to banks' goodwill. The results of the structural equations model of GB (social investment, environmental consciousness and sustainability) and bank profitability (Indirect effects) with the bank's goodwill as a mediating variable show that all the coefficients of the explanatory variables are positive. The calculated p values associated with the calculated Z are all less than 0.05. Thus, all the positive relationships are statistically significant. The results of the indirect effect show that the respondents expect the goodwill of a bank to have a full mediation effect on the relationship between social investment and bank performance as well as on the relationship between sustainability and bank profitability. However, it has a partial mediation effect on the relationship between environmental consciousness and the profitability of banks (see Table 7). Table 11 presents a summary of the results of the hypotheses.

The study employed three goodness of fit tests (equation level, Wald's test for equations and the Fit test). The equation-level goodness-of-fit test indicates that the fitted bank goodwill is 0.4378 with a predicted value of 0.2879 and a residual value of 0.1499. In the same vein, the fitted profitability value is 0.4889 with a predicted value of 0.4144 and a residual value of 0.0745. These resulted in a comprehensive goodness of fit of 0.8839. Thus, variations in GB will account for 88.39 % of the variation in the profitability of banks in Nigeria (See Table 8).

The results of Wald's test indicate that the p values of the calculated Chi-square for bank goodwill and bank profitability are both less than 0.01, thus indicating that, on average, the coefficients of the explanatory variables are significantly different from zero (See Table 9). Lastly, the results of the fit statistics test gave a calculated chi-square value of 0.00 for model versus saturated, thus indicating a good fit since the model and saturated are the same. The results of the baseline versus saturated shows that the calculated p-value associated with the computed Chi-square is less than 0.01, thus indicating a good fit since the baseline is significantly different from the saturated. (See Table 10). The three goodness of fit tests indicate a good fit. In other words, the structural equation model is a good fit for the data on green banking and bank profitability.

Table 5
Descriptive statistics.

Variable	N	Mean	Standard Deviation
Social investment	267	3.205	0.466
Environmental consciousness	267	4.348	0.588
Sustainability	267	4.375	0.488
Goodwill	267	4.165	0.664
Financial performance	267	4.181	0.702

Table 6
Structural equation model (direct effects) number of obs = 267.

	Coefficient	Standard Error	z	p value
.gwill				
.sinv	3646838	0.0611681	5.96	0.000
envc	0.616422	0.0465414	13.24	0.000
sus	0.1713193	0.0572403	2.99	0.003
_cons	-0.3712643	0.2289397	-1.62	0.105
prf < -				
gwill	211362	0.0431426	4.90	0.000
sinv	-0.0887037	0.0459015	-1.93	0.053
envc	0.9594215	0.0422341	22.72	0.000
sus	-0.1971944	0.0410233	-4.81	0.000
_cons	0.3657121	0.1621853	2.25	0.024

Table 7
Structural equation model number of obs = 267.

	Coefficient	Standard Error	z	p value
Structural				
gwill < -				
sinv	0 (no path)			
envc	0 (no path)			
sus	0 (no path)			
prf <				
gwill	0 (no path)			
sinv	0.0770803	0.0203639	3.79	0.000
envc	0.1302882	0.0283551	4.59	0.000
sus	0.0362104	0.0141775	2.55	0.011

Table 8
Equation-level goodness of fit.

Variance						
depvars	fitted	predicted	residual	R-squared	mc	mc2
observed						
gwill	0.4377608	0.2878735	0.1498873	0.6576047	0.8109283	0.6576047
prf	0.4889131	0.4144246	0.0744885	0.8476447	0.9206762	0.8476447

Table 9
Wald tests for equations.

chi2	df	p
observed		
gwill	51.28	3 0.0000
fperf	148.55	4 0.0000

Table 10
Fit statistics.

Fit Statistic	Value Discription
Likelihood ratio	
chi2_ms(0)	0.000 model vs. saturated
p > chi2 .	
chi2_bs(7)	78.85 baseline vs. saturated
p > chi2	0.000

5. Discussion

The study tested the first three hypotheses to find out whether green banking (financing firms’ investments in social investment projects, environmental consciousness and sustainability) will help to enhance a bank’s goodwill. The results of the structural equation

Table 11
Summary of hypotheses and results.

S/N	Hypothesis	Decision
1.	Financing firms that invest in social projects will not help to enhance a bank's image	Reject
2.	Commitment to the financing of firms that invest in environmental projects will help to enhance a bank's goodwill	Reject
3.	Financing firms that invest in sustainability projects will not help a bank to elicit public trust	Reject
4.	Financing firms' that invest in social projects will not help to enhance a bank's profitability	Reject
5.	Commitment to the financing of firms that invest in environmental projects will not help to enhance a bank's profitability	Reject
6.	Financing of firms that invest in sustainability projects will not help to enhance a bank's profitability	Reject
7.	A bank's image will not mediate the relationship between GB and the financial performance of banks in Nigeria	Reject

model (direct effects) show that green banking will have a significant positive influence on a bank's goodwill at the one per cent level since all the p values of the tests were less than 0.01. The results are consistent with [2]. The study tested the fourth, fifth and sixth hypotheses to find out whether green banking (providing funds for firms that invest in social investment projects, environmental consciousness and sustainability) will help to enhance a bank's profitability. The results show that goodwill, environmental consciousness and sustainability have direct effects on bank profitability but social investment does not have any direct influence on profitability. The study tested the seventh hypothesis to find out whether a bank's goodwill can mediate the relationship between green banking and the profitability of banks. The results of the indirect effects of the relationship between green banking and the profitability of banks with goodwill as a mediator indicate that investment in social projects, environmental consciousness and sustainability all have positive relationships with banks' profitability and the positive relationships are statistically significant. Thus investment in green banking will help to enhance a bank's goodwill and with an enhanced goodwill, the banks will attract more patronage and thus get enhanced profits. The perceived statistically significant positive influences of investment in social projects and sustainability on banks' profitability indicate that goodwill has full mediation influences on the relationship between investment in social projects and banks' profitability as well as between sustainability and banks' profitability but a partial mediation effect on the relationship between environmental consciousness and banks' profitability. The results are consistent with [1,15,16,50–53].

5.1. Proposed model of green banking and profitability of banks in Nigeria

The results of the data analysis led to the proposed model of green banking and the profitability of banks in Nigeria. The model shows that green banking, measured by financing firms that invest in social projects, environmental consciousness and sustainability, will enhance a bank's goodwill and the enhanced goodwill will stimulate patronage and subsequent enhancement in profitability. Briefly, investment in green banking will ultimately result in the enhancement of a firm's profitability (See Fig. 1).

5.2. Policy implications

The results of the study show that green banking (financing firms' commitment to social investment projects, environmental consciousness and sustainability) will help to enhance a bank's goodwill. This implies that Nigerian banks should begin financing firms that fund social investment projects as well as environmental consciousness and sustainability projects. In addition, the results show that green banking contributes to bank profitability, thereby providing further justification for banks' financing of firms' investments in green banking. Thus financing of firms that are committed to social investment projects, environmental consciousness and sustainability will contribute to the enhancement of the goodwill of banks as well as enhance their profitability. As an ex-ante study, the implication is that the strategic managers of banks in the Nigerian banking industry can enhance their goodwill and profitability if they make it a matter of policy to prioritize the financing of firms that are committed to social investment, environmental consciousness and sustainability projects. The study is particularly applicable to the Nigerian banking industry since all the banks have identical operations because they are subject to the same regulations from the same regulatory authorities.

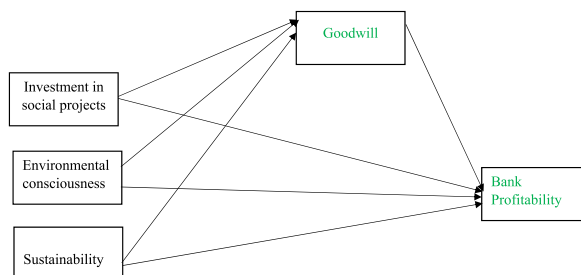


Fig. 1. A proposed model of green banking and the financial performance of banks in Nigeria.

5.3. Theoretical implications

The major thrust of the SRI theory is on the integration of individual value and the well-being of society as the important factors that people need to consider when screening investment choices. The significant relationship of green banking (financing firms' investments in social investment projects, environmental consciousness and sustainability) to the goodwill and the profitability of banks is supportive of the SRI theory and thus a theoretical contribution to the theory. This is because the profitability of the firm explains the individual value in this result while the funding of firms that invest in sustainable projects explains the societal wellbeing dimension of the theory. In addition, commitment to funding firms that invest in social investments, environmental consciousness and sustainability influences the profitability of banks because of the potential to mitigate institutional pressures to comply with environmental laws, which otherwise, will distract the banks from the pursuit of their profit objectives. The bank's goodwill, which results from the financing of environment friendly projects, is critical to the reduction of distractive institutional pressures.

6. Conclusion

The study investigated respondents' perceptions of green banking and the profitability of banks in Nigeria. Based on the research findings, the study concludes that green banking, concerning banks' commitment to funding firms that invest in social investments, environmental consciousness and sustainability, will influence the profitability of banks in Nigeria. Specifically, goodwill, which will result from banks' commitment to green banking, will mediate the relationship between green banking and profitability. Goodwill will have a full mediation effect on banks' commitment to funding firms' commitment to social investment and sustainability but will have a partial mediation effect on banks' funding of firms' investment in environmental consciousness. This study has made a significant contribution to knowledge in finance and management sciences. Apart from updating the studies on green banking and profitability globally, the study has drawn attention to the Nigerian banking sector, which is highly deficient of studies on green banking. The study has also validated the three dimensions of the SRI theory in the Nigerian banking industry, thus providing a theoretical justification. The major contribution of the study is to the SRI theory and the mediation of the relationship between green banking and profitability by banks' with goodwill as captured by the proposed model. The study has also provided support to the institutional theory, thus, indicating a double theoretical contribution. The results of this study will thus, provide insights to policymakers for policymaking.

The study is not without limitations, which necessitate the conduct of further studies in this area. First, the study is *ex-ante* owing to the fact that green banking is not yet fully operational in Nigeria. Consequently, the study relied fully on opinions and attitudes. The use of secondary data on the influence of green banking on banking profitability in the case of an *ex-post* study would have been more useful for causality. This will be possible when green banking becomes fully operational. Secondly, owing to the use of a cross-sectional survey design, it was not possible to establish a long-term relationship between the variables. The opinions indicate the respondents' opinions at a point in time. These opinions may change given the dynamism of the environment. Thirdly, it was a bit difficult to reach the employees of the chosen banks to volunteer information on the research problem. Lastly, the study elicited data from Access Bank and First Bank respondents alone, owing to the duo's perceived commitment to green activities. The inclusion of more bank employees in future studies may enhance the robustness of the results. To this end, future studies should try to include more bank employees in the study.

Suggestions for further studies

Given the relevance of green banking to environmental sustainability, the need to create awareness and implement enforcement becomes very important. To this end, this study suggests that regulatory authorities begin the enforcement of banks' compliance with green banking to minimize or eliminate the financing of projects that are harmful to the environment. This study investigated green banking and the profitability of banks, future studies should examine green banking and environmental performance and try to link it to bank performance to present a robust view of the effects of green banking on environmental sustainability.

Data availability

The study utilised primary data and attaches the dataset as electronic submission. To this end, the data are publicly available.

Ethics declarations

The Ethical Research Board of Bowen University, Nigeria reviewed and approved this study on June 28, 2022. There was no Ethical Approval Number.

Informed consent

All participants were informed that consent to participate in the study and publish their data would be assumed on completion and submission of the study questionnaire/survey. The Author used written informed consent in the introduction aspect of the research instrument that was sent the respondents through Google forms.

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CRedit authorship contribution statement

Henry Inegbedion: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of AI and AI-assisted technologies in the writing process

The author did not use any AI and AI-assisted technologies in the preparation of this work.

Declaration of competing interest

The authors declare no financial interests/personal relationships which may be considered as potential competing interests: There are no other disclosures to make. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2024.e34303>.

Appendix

Section A. Demographic characteristics

1. Gender: Male [] Female []
2. Highest Educational Qualification B Sc. Or equivalent [] Masters' Degree [] Higher Degree []

Section B. Categorical Question

3. Are you conversant with Green banking? Yes [] No []

Section C. Core Subject Matter

Instruction: Indicate the extent to which you agree with the following items.

S/N	Item	1	2	3	4	5
A	Social Investment					
1	My bank is committed to financing poverty reduction projects					
2	My bank is committed to financing social investments					
3	My bank is committed to financing the building safe communities					
	Environmental Consciousness					
4	Financing of projects that reduce pollution is my bank's priority					
5	Preservation of the ecosystem is a top priority of my bank					
6	My bank finances environmental awareness projects					
7	My bank finances biodiversity projects					
	Sustainability					
8	My bank finances the increased usage of technology to promote a safer environment					
9	My bank supports the reuse of waste materials					
10	My bank finances projects that support the reduction of waste					
11	My bank supports projects that will include the quality of life					
12	My bank is committed to the enhancement of the economic conditions of its stakeholders					
13	My bank supports the improvement of the economic systems at all levels					
	Goodwill					
14	My bank's customers are loyal to the bank					
15	Our customers trust us					
16	Our customers believe in our services					
	Financial Performance					

(continued on next page)

(continued)

S/N	Item	1	2	3	4	5
17	My bank is operating profitably					
18	My bank's non-performing loans is negligible					
19	My bank is highly liquid					
20	My bank is highly viable					

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