Is Sustainable Banking Initiative Good Business for the Banks? A Comparative Pre and Post Adoption Study

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Abstract

This paper contributes to the business case for sustainable development literature by examining whether sustainable banking (SB) initiatives translate to good business for the banks. To achieve this, we analyzed the link between SB and certain bank performance (BP) indicators, and examined if significant difference exists in BP between the pre and post-Nigeria sustainable banking principles (NSBP) adoption periods. The study was based on 12 deposit taking banks listed on the Nigerian Exchange Group (NGX) studied for 18 years (2005 to 2022), divided into two equal periods of pre and post-NSBP adoption. The empirical results support the assertion that a positive difference exists in BP between the pre and post NSBP adoption periods, with the difference in profitability indicators increasing in significance over time. The findings have managerial implication for the banks, such that to chart a sustainable growth path for the banks, looking beyond short-term impact of sustainable actions is key.

Keywords: *Sustainable Banking Initiatives, Bank Performance, Green Banking, Profitability, Sustainable Banking Principles.*

Introduction

As the globe witness various transitions occasioned by climate change, corporate practices are not spared. One such transition in business is the increasing integration of social and environmental criteria in business decisions (Adu, 2022; Busch et al., 2015). This transition aligns with the narratives of sustainable development (SD) and contradicts the view of classists who perceive profit making as the sole object of business (Friedman, 1970). As a development paradigm, SD calls for a state where business and the environment thrive (Garvare & Isaksson, 2001). To support SD, national and international policymakers are instituting various policies aimed at addressing sustainability risks (Adu 2022; Marrucci et al., 2022). For example, the United Nations encapsulated its SD agenda in 17 Sustainable Development Goals (SDGs) and 169 targets, aimed to be attained by 2030 (United Nations, 2015). The SDGs provide a roadmap that inspires global action to address climate change and the attendant environmental issues plaguing our world. The banking sector as a change agent and key financial services provider plays indispensable role in driving SD (Park & Kim, 2020; Aracil et al., 2021). Banks, by their role as intermediaries, can influence the pace and direction of SD, through its own business model and by its clients (da Siva & Delai, 2022). This pivotal role paves the way for new perspectives to financing ecological conservation (Amrie & Nafis, 2024). This makes it imperative for the banking sector to shift completely from traditional banking to embrace sustainable banking (SB) practices to effectively drive the SDGs (Nwagwu, 2020). By its unique intermediation role especially through mobilization of financial resources for green projects (Yip & Bocken, 2018) and sustainable investment distribution and management (Aracil et al., 2021), the industry can drive the achievement of SDGs. The sector, as a key player in contemporary society, must demonstrably show readiness in meeting changing needs of society (Adu, 2022; UNEP-FI, 2020). The industry can lend its support to the much-needed transition to a more sustainable society by adopting SB initiatives (UN Global compact, 2020). Given their role as financial intermediaries, the banking sector is strategically positioned to influence the environmental behavior of their clients (Oyegunle & Weber, 2015), by promoting socially responsible and environmentally friendly firms while penalizing non-conforming ones using environmental and social screens (Biswas, 2011).

To facilitate the needed shift towards SB, an enabling regulatory context that provides the right economic incentives, is required (IFC, 2015). If there are no regulatory policies, the banking industry may not show

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willingness in policing their clients against societal and environmental impacts (Oyegunle & Weber, 2015). With clear regulations, the banks would enlist support for high standards of sustainability through SB initiatives (Oyegunle & Weber, 2015). SB is the delivery of finance services and products packaged to meet the needs of society, generate profit, and protect the environment (Aracil et al., 2021; Yip & Bocken, 2018). SB involves consciously integrating ecological considerations in lending and other operations of the bank in order to mitigate ecological footprint of financing activities thereby promoting SD (Ziolo et al., 2019).

The SB approach recognizes the role of banks in driving the mitigation strategies for climate change. The climate change phenomenon may be global in extent, but its effect may be local (IPCC, 2014). Hence, different national governments are carrying out regulatory reforms imposing additional disclosure requirements regarding the financial intermediation activities of banks (Gutiérrez-Ponce & Wibowo, 2024; Marin et al., 2019), to mitigate climate change effects. In Nigeria, a new regulatory framework was birthed in 2012 prescribing a set of nine sustainability principles covering environmental and social (E&S) risk management, E&S governance, E&S footprint, human rights, capacity building, women's economic empowerment, financial inclusion, collaborative partnerships and reporting, for mandatory adoption by banks in the country (CBN, 2012). The expectation is that implementing these principles will foster SD and promote good business for the banks (CBN, 2012).

The adoption of SB practices has increased around the globe, in response to regulatory requirements in most jurisdictions (Wang, 2016). The growing trend in SB implementation, has stirred increasing scholarly research interest on the subject. However, documented research on the subject is still scant with available studies focusing on either delineating the extent of its adoption in some regions (Kumer & Prakash, 2020) or its implication on ecological equilibrium (Ghosh, 2021), or on the banks' stability (Salim et al., 2023), and environmental performance (Chen et al., 2022), or on green brand image and trust (Sharma & Choubey, 2022). Others focus on SB link with corporate governance (Babalola & Adebite, 2014), and ownership structure (Adu et al., 2023). Only a few research contributions, in global literature, relate to the business case for SB (Aslam & Jawaid, 2023; Adu, 2022; Singh et al., 2022).

Hence, the current research uses a sample of 12 listed banks in Nigeria to examine whether SB practices actually translate to good business. The study specifically aims to provide evidence on whether the adoption of Nigeria sustainable banking principles (NSBP) creates value for the banks.

The Nigeria context provides a unique setting for this study for three main reasons. First, the regulator of the banking sector in Nigeria (Central Bank of Nigeria, CBN) launched the NSBP as regulatory policy framework in July 2012, for mandatory implementation by banks in Nigeria (CBN, 2012). The NSBP requires banks to report information about their own environmental and social footprint, as well as influence environmental behaviour of their borrowers and service providers (CBN, 2012). Implementation and reporting of the policy by the banks in the country commenced in 2014. Conceptually, SB approach sets environmental, social and governance benefits as a prime objective (Care, 2018). In line with this, the NSBP framework covers 9 sustainability guiding principles consisting of environmental and social (E&S) footprint, E&S risk management, human rights, financial inclusion, women's economic empowerment, E&S governance, collaborative partnerships, capacity building, and reporting (CBN, 2012). The NSBP is a commitment on the banking sector in Nigeria to encourage green financing and to improve the E&S performance of the sector by prioritizing financing to clients with demonstrable evidence of quality E&S ranking (CBN, 2012). Second, aside from the new policy dispensation and regulatory framework on SB in the country, Nigeria is the most populous nation in the continent of Africa (Omolola et al., 2023), with a total population of 229 million people (United Nations Population Fund, 2024) and the projection that, in the mid-century, about 40% of the working population will be coming from this region (You et al., 2014), with Nigeria considered the most significant contributor. This factor uniquely positions Nigeria for the advocacy for climate change resilient strategies such as SB initiatives. Third, the country's economy depends significantly on fossil fuels (Somoye et al., 2024), despite its huge potentials for clean energy (Ibrahim et al., 2021). Nigeria remains the largest gas producer and consumer in west Africa (International Energy Agency [IEA], 2021). Fossil fuels, a significant contributor to climate change (Johnson et al., 2019), accounts for 25.08% of total final energy consumption in the country as at 2021 (IEA, 2021). These factors relate to

environmental dimension of sustainability which banks, through SB practices, can help mitigate. The foregoing situates Nigeria as an excellent context for assessing whether SB initiatives impact BP.

This research makes unique contribution to extant sustainability literature as it explores the impact of a new regulatory framework (NSBPs) on value and profit indicators of banks in an emerging economy. At present, there is no empirical support for the business case for sustainable banking under the new regulatory regime in Nigeria. The remnant of the paper takes the following structure: section 2 presents extant literature. Section 3 explains the data and methods. Section 4 presents results and discussion, while section 5 concludes the study.

Literature Review

This section is divided into two parts. The theoretical foundation is presented in part one, while part two presents prior literature and develops the study hypotheses.

Theoretical Perspectives

Integrating sustainability criteria into banking activities can be explained from contending theoretical viewpoints. For example, shareholder theory posits that to be in business is to maximize profit for shareowners (Friedman, 1970). This standpoint regards managers' attention to sustainability as a breach of fiduciary trust which can potentially undermine welfare of shareowners (Friedman, 1970). Sustainable corporate practices are, therefore, viewed as expensive sacrifice (Chen & Lee, 2017) against owners' interest. Suggesting that investing in green initiatives undermine value creation for stockowners (Kim & Lyon, 2015; Yu & Zhao, 2015). In sharp contrast, stakeholder theory suggests that, to do business, is to create value, not only for those who have proprietary interest in the business, but for varied stakeholder groups (Freeman, 1984), which includes all who can impact or can be impacted by the activities of the business (Freeman, 1984). Each stakeholder has right to information about how actions of the business impact them (Deegan, 2002). It suggests that sustainability practices make economic sense (Oyegunle & Weber, 2015), reduces risk (Alshehhi et al., 2018) and adds long term value (Miralles-Quiros et al., 2017) and endears the firm to its relevant publics. SB culture attracts superior investments that preserve an entity's market share (Yu & Zhao, 2015) and improves stakeholder relations (Patten & Zhao, 2014). On the contrary, irresponsible corporate actions may adversely impact entity's value (Aifuwa, 2020).

Signaling theory assumes, in a state of prevailing information asymmetry, one party may convey deliberate signal relating to oneself to the other party to bridge the disparity (Spence, 1973). From this theoretical stance, sustainable corporate actions may be perceived as a deliberate positive signal (Thorne et al., 2014), and a differentiating corporate attribute (Loh et al., 2017) to attract investors (Benlemlih & Bitar, 2018). Entities that engage in green investment show commitment to their responsibility to society (Flammer, 2021), while ameliorating constraints in capital flow (Cheng et al., 2014). However, non-compliance to environmental regulations conveys 'bad news' to stakeholders, resulting in erosion of investor confidence (Cui et al., 2024).

Extant Literature and Hypotheses Development

Sustainable banking incorporates the principles of sustainability into financing decisions (Oyegunle & Weber, 2015). The concept proposes a balance between profit maximization and environmental/social concerns (Nwagwu, 2020). It advocates a philosophy that a bank's activities should not only benefit its owners, but also the wider economy and at the same time prevent or, at least, minimize any unfair impact on society and the ecological system (Babalola & Adebite, 2014). In this context, bank lending is made while keeping an eye on environmentally responsible business practices (Oboro & Onuorah, 2022). SB is a key approach that drives transformative change (Plantinga & Scholtens, 2021). Traditionally, investment decisions were assumed, under economic theory, to be based on the analysis of the interplay of risk, return and liquidity (Eichhorn & Towers, 2018). However, in the context of growing sustainability concerns, such theories face limitations reflected in increasing stakeholder demands for sustainability (Lingnau et al., 2022). Hence, the extension of the analysis to the sustainability dimension (Von Wallis & Klein, 2015), or impact

dimension where potential impacts of investments on the environment and society are analyzed as well (Edmans, 2011; Safi et al., 2023). The fact remains that some business activities of clients funded by banks may have potential adverse impact on society and the environment where these banks' clients operate. It is not enough for the banking industry to merely go green, rather, the industry should also play proactive role in taking environmental considerations as part of their lending decisions (Sahoo & Nayak, 2017). Hence, Kern (2014) made a case for the integration of sustainability and environmental criteria into banking and lending policies and regulations. Although, investments which take into account ecological impacts may have lower rates of return in the short run (Biswas, 2011). Nevertheless, Sahoo and Nayak (2017) argue that environmental impacts might affect quality of assets and rates of return to banks in the long run. Bismas (2011) added that credit risks may be associated with lending on a security whose value has diminished owing to environmental problems (Biswas, 2011). When banks fund projects with poor environmental and social performance, they inadvertently impose those negative impacts on society and environment.

Babalola and Adebite (2014) sought to know if commitment to SB is linked to corporate governance. The study reported poor commitment to sustainable banking practices in Nigeria. Igbudu et al. (2018) investigated the role of SB practices in customer loyalty in a survey of 511 bank customers. The result shows that SB practices affect bank loyalty and corporate image positively. Kumer and Prakash (2020) sought to determine the extent of SB adoption in India. The result reveals that banks in India were slowly responding to SB practices. It further highlights that publicly owned banks were more committed to addressing the social aspects of sustainability, while private sector banks were engaged in a more comprehensive approach in addressing the ecological dimension of sustainability. A similar study by Ghosh (2021) assessed SB practices adopted in India and their implication on sustainable ecological balance. The study reported that banking sector in India is taking continuous innovative efforts towards maintaining ecological balance. The paper highlights that banks in India are running slow in the implementation of SB relative to trend around the globe. Sharma and Choubey (2022) examined the impact of green financing initiatives on green brand image and trust using Indian banking industry. The study highlights that SB initiatives restore customer trust through improved green brand image. Chen et al. (2022) assessed the impact of SB practices on environmental performance and green lending in Bangladesh banks. They studied a cross section of 322 bank staff in Bangladesh. The study documents that GB related practices impact environmental performance of the banks positively. A recent study by Suprapto et al. (2024) set out to test a model that explains how firm reputation may relate to SB with improving performance. The sourced data from annual and sustainability reports of 45 Indonesian banks. Results of the study show that SB improves bank performance and reputation.

Regarding the link between sustainable banking initiatives and firm profitability and value, only a few empirical studies are available which limits our understanding of this phenomenon, especially from the emerging economies' perspective. Bose et al. (2021) studied Bangladesh banks to assess whether green banking practices pay off. The study findings based on 172 firm year observations from 30 banks indicate that green banking initiatives were positively linked to financial performance of the bank. It further highlights that cost efficiency is key to this relationship. Olma et al. (2021) assessed how SB initiatives may affect bank's profitability using 1236 banking institutions across 48 countries over 2015-2019 period. Result of the two-stage system GMM estimation indicates that SB practices lead to superior profitability. Singh et al. (2022) investigated whether GB initiatives by banks in India enhance their performance and competitiveness. The study made use of primary data from a survey of bank staff and secondary data from Indian Banking Association, Reserve Bank of India and annual accounts of banks over 2005 to 2016. Result of the research indicate that green banking initiatives show no significant influence on returns on assets of the banks, however it increases banks' competitiveness through product improvement and cost savings. Adu (2022) had examined the impact of corporate governance reporting on SB initiatives and to establish if corporate governance moderates the SB and BP link. The study sample comprised of 220 banks across 16 sub- Saharan African nations. The study reported that SB initiatives enhance performance of the banks, and that the performance improves if the banks have quality corporate governance mechanisms. Aslam and Jawaid (2023), in a recent study, examined the impact of green banking practices on operational BP in Pakistan. The study involved bank personnel in Pakistan. This research revealed a positive link between

GB practices and bank's financial performance. Therefore, based on extant literature discussed above, we hypothesize that:

H1a: There is no significant difference in profitability of the banks measured by profit after tax (PAT) between the pre- and post-NSBPs implementation periods.

H1b: There is no significant difference in profitability of the banks measured by earnings per share (EPS) between the pre- and post-NSBPs implementation periods.

H2: There is no significant difference in value of the banks measured by market capitalization (MCAP) between the pre- and post-NSBPs implementation periods.

Data and Methods

Sample and Data

The study sample comprises 12 out of the 13 deposit taking banks listed on the Nigerian Exchange Group (NGX). We chose listed deposit taking banks because of availability of data and consistency of disclosures across the study period. One of the banks was excluded from the sample because it had not been listed on NGX as at the earliest year of the study period. The study covers a period of 18 years from 2005 to 2022. The data was divided into two equal pairs of pre and post NSBP adoption periods. The pre NSBP period covers nine years from 2005 to 2013, which we chose as a matching pair to the nine years post-adoption period of 2014 to 2022. Implementation of the NSBPs commenced in 2014. The study period ended in 2022 which represents the most recent year for which data was available at the time of data collection. The data on MCAP were obtained from NGX, while data on EPS and PAT as well as those of the control variables of SIZE and RISK were collected from annual reports of the banks sourced from the banks' websites. Data on sustainable banking disclosures (SBD) were collected from the banks' published annual and sustainability reports sourced from the websites of the banks studied.

Statistical Estimation Tools

The research focused on analyzing differences in the evolution of BP of the banks in the pre and post NSBPs adoption periods. It might be difficult to justify the assertion that adoption of NSBPs influence BP if there are no differences in performance metrics of these banks. To achieve the aim of the paper, two statistical tools were deployed. First, the research applied regression analysis to examine the link between SBD and BP measured by accounting and market performance metrics. Second, the study applied a paired t-test to assess whether differences exist in the evolution of the BP metrics between the pre and post NSBPs adoption periods, and to ascertain whether the variations persist over time.

Model Specification and Variable Definition

To assess whether a direct link exists between bank performance (BP) and SB practices, we adopted a panel regression model. BP is the dependent variable measured by profit after tax (PAT), earnings per share (EPS) and market capitalization (MCAP). The independent variable is an unweighted sustainable banking disclosure index (SBD) constructed to proxy SB performance of the banks. The regression model tested is specified as:

$$BP_{it} = \beta_0 + \beta_1 lnSBD_{it} + \beta_2 lnSIZE_{it} + \beta_3 lnRISK_{it} + e_{it}$$

To measure SBD, annual and sustainability reports of the banks were content analyzed using NSBPs framework as a guide to develop an unweighted disclosure index. This unweighted disclosure index resulted in 9 principles that were analyzed for the 12 banks over 9 years. This produced 972 measured data points. Following the approach used in Nwaigwe et al. (2022), disclosures on the 9 principles in the NSBPs

framework were categorized reflecting the nature (relative or absolute disclosure), type (quantitative or descriptive disclosure), and temporal dimensions of disclosure (leading or historical disclosure). Categorizing disclosure by temporal dimension, a leading disclosure communicates expected SB performance (GISR, 2015). It compares with historical disclosure which describes previous years' performance showing trend in the past. Classifying a disclosure by nature, disclosure is relative if it presents current performance relative to prior year's performance, or relative to a benchmark showing performance deterioration or improvement, while absolute disclosures describe performance disclosures with no reference to benchmarks, prior or expected performance (GISR, 2015; Nwaigwe, 2024). Relative disclosures weigh more relative to absolute disclosures. By type, a disclosure is quantitative when it is expressed in figures and numeric forms or in charts, while descriptive disclosures describe entity's performance presented without quantifying them in numbers, figures or percentiles. A quantitative disclosure ranks superior to a descriptive disclosure. Drawing on the study by Nwaigwe (2024), this study derived an unweighted SBD index by assigning scores to categorized SB disclosures as follows: if a disclosure on any SB principle (indicator) is leading, quantitative and relative, 4 is assigned. 3.5 is assigned if disclosure is leading, quantitative and absolute. 3 is assigned if it is a leading, descriptive and relative disclosure. 2.5 is assigned if it were leading, descriptive and absolute. 2 is assigned when disclosure is historical, quantitative and relative. When disclosure is historical, quantitative and absolute 1.5 is assigned. Where it is historical, descriptive and relative, a score of 1 is assigned. Lastly if disclosure were historical, descriptive and absolute, 0.5 is assigned. However, 0 is assigned for no disclosure. From the disclosure scores assigned to the categorized disclosures as described above, we derived SBD index as the ratio of total score (d) earned by bank (i) in period (t) across the 9 SB principles, to the maximum score obtainable (m) if all disclosures for each of the 9 SB principles were leading, quantitative and relative.

This gives the index structure thus: $SBD\ index = \sum d_{it}/m_{it}$

The dependent variable, BP is measured in terms of profitability (profit after tax [PAT], earnings per share [EPS]) and value, market capitalization [MCAP]). Following prior studies (Abdi et al., 2021; Shaikh, 2022; Adu, 2022), bank specific variables such as firm size and risk exposure of the banks were added as control variables in the model. A large bank describes a bank with great resource base. Large banks show more resource capacity to support green projects (Cui et al., 2024). The larger the assets of a bank the greater the bank's capacity to fund sustainable initiatives (Tyas & Khafid, 2020).

Risk exposure from debts creates financial strain, which may result in firms reducing environmental investment (Cui et al., 2024). Firms with high risk's exposure may disclose more environmental information to show compliance to regulations (Akhter et al., 2023). The research variables are defined in table 1.

Table 1. Definition Of Research Variables

Variable	Symbol	Measurement			
Dependent					
Profit after tax	*PAT*	net profit after deducting income tax for the year			
Earnings per share	*EPS*	net profit after tax / number of shares outstanding at year end			

Market capitalization	*MCAP*	share price of the bank ×no of shares outstanding at year end

Independent

Sustainable banking

disclosure	*SBD*	unweighted disclosure index on the 9 principles of NSBP

Control variables

Risk exposure	*RISK*	total liabilities of the bank at year end/total assets at year end
Size	*SIZE*	natural logarithm of total assets of the banks

Results

Descriptive Statistics

Table 2 shows the summary statistics and correlation matrix of the variables in our study. The table shows that SBD has a mean of 1.207 and ranges from 1.126 to 1.307 with a standard deviation of 0.035. PAT ranges from 20.36 to 26.222, with an average of 24.019 and a standard deviation of 1.458. The average EPS for the banks is 1.633 with a minimum of 1.18, a maximum of 2.806 and standard deviation of 0.406, while MCAP with an average of 25.548 ranges from 22.547 to 27.813 with a standard deviation of 1.342. The table reveals that size ranges between 25.776 and 30.337, with a mean figure of 28.380 and a standard deviation of 0.982, while values of RISK range from 0.473 to 1.266, with a mean of 0.657 and standard deviation of 0.116. It is observable, from table 2, that the coefficients of the standard deviation for the variables are much smaller than their respective means. This implies no significant deviation from the mean and that the data cluster around the mean, hence it confirms that the mean fitly represents the data series.

Table 2. Descriptive Statistics and Correlations

PANEL A: Descriptive						
	SBD	PAT	EPS	MCAP	SIZE	RISK
Mean	1.207	24.019	1.633	25.548	28.380	0.657
Maximum	1.307	26.222	2.806	27.813	30.337	1.266
Minimum	1.126	20.360	1.118	22.547	25.776	0.473
Std Dev	0.035	1.458	0.409	1.342	0.982	0.116
Skewness	0.589	-0.408	0.596	-0.427	-0.268	3.508
Kurtosis	2.96	2.317	2.315	2.348	2.54	15.8
Panel B: Correlation						
SBD	1.000					
PAT	0.391*	1.000				
EPS	0.394*	0.746*	1.000			
MCAP	0.426*	0.869*	0.795*	1.000		
SIZE	0.531*	0.834*	0.606*	0.801*	1.000	
RISK	-0.093	-0.402*	-0.172	-0.316*	-0.348*	1.000

Source: Authors' computation

Given the standard range of ±2 and ±3, respectively, for skewness and kurtosis statistics for normally distributed data, the skewness and kurtosis values of our study variables conform, acceptably, to the assumptions of a normally distributed dataset. From table 2, the correlation matrices of the variables for the regression analysis show a weak correlation among the independent variables given their relatively low correlation coefficients. This is desirable as it suggests no problem of multicollinearity.

Analysis of the Link Between SBD And BP

In establishing whether a direct link exists between banks' performance and SB performance, we examined if the banks' SB disclosures influence the measures of BP studied. From the panel regression results in

Table 3, the relationship between SBD and the three metrics of BP (PAT, EPS, MCAP) is positive, although not significant. Though the coefficient for SBD is positive, the result may suggest that SB practices may require more time for these measures to be strongly reflected on bank performance. It is believed that such disclosures provide investors and other stakeholders with information about the banks' commitment to sustainable development, which can exert influence on investor perception and trust (Amire & Nafis, 2024). Results of similar studies are diverse in literature (Olma et al., 2021; Bose et al., 2021). As to whether the two control variables, size and risk, have explanatory value in the model, we established that size has a significant positive relation with PAT, EPS and MCAP. However, risk has a negative significant relation with PAT, and a non- significant relation with EPS and MCAP.

Table 3. Regression Results

Independent & control variables	Dependent variables		
	lnpat	Lneps	lnmcap
Lnsbd	0.15(0.931)	0.41(0.585)	0.25(0.867)
Lnsize	1.01(0.000)*	0.28(0.000)*	0.50(0.000)*
Lnrisk	-1.04(0.053)**	0.14(0.552)-.	0.39(0.378)
R-squared	0.79	0.39	0.67
F-staistic	130	51.7	12.7
P-value	0.000	0.000	0.000
Obs.	108	108	108
** $p \leq 0.10$			
* $p \leq 0.05$			

Analysis of Differences in BP Metrics When Nsbps Are Adopted

In order to obtain empirical evidence on whether there exist significant differences in market value and profitability of the banks before and after implementation of NSBPs, a detailed investigation was undertaken to ascertain whether significant differences exist in the evolution of the three selected performance metrics.

Temporal sequence was followed in studying the hypotheses. We analyzed performance of the banks at equal (matched) time intervals before and after the adoption of NSBPs. The study time scope was divided into seven (7) individual time increments which enable us to analyze the continuous evolution of BP resulting from NSBPs adoption and to determine the time when the differences in BP began. Starting the analysis from the last 3 pre-NSBP implementation years (2011-2013), matched against the first 3 post-NSBP implementation years (2014-2016). This was repeated for the periods 2014-2017, 2014-2018, 2014-2019, 2014-2020, 2014-2021 and 2014-2022 against their matched pair of years in the pre-NSBP adoption years. This followed a progressive increase in the number of paired years to the first 9 years after implementation of NSBPs (2014-2022) matched against last 9 years before adoption of NSBPs (2005-2013). The summary of which is presented in table 4.

Table 4 reveals that there was no statistically significant difference in PAT of the banks (at $p \leq 0.05$) between the last 3 pre (2011-2013) and first 3 post-NSBP adoption (2014-2016) periods, given the t-statistic of 0.86 and p-value of (0.39). Accepting the null hypothesis, it implies that adoption of NSBPs did not produce significant differences in PAT of the banks within the first three years of its implementation. The result is similar for the period 2014-2017 implying that NSBP implementation did not translate to a significant difference in PAT during the first four years of its adoption ending in 2017. However, for the period 2014-2018, the table shows a t-statistic value of 2.14 with a p-value ($0.036 \leq 0.05$). Rejecting the null hypothesis,

it can be concluded that implementation of NSBP resulted in statistically significant difference in PAT during the first five years of its implementation. It follows that the difference in PAT began to appear in 2018. We can see that the paired t-test result in table 4 shows statistically significant difference in PAT during the period 2014-2019 and became increasingly significant for the periods 2014-2020, 2014-2021 and 2014-2022. It is apparent to note that, for the banks analyzed, implementation of NSBP did not produce significant difference in profitability in terms of PAT until 2018 (the fifth year after implementation) when the variation became significant and subsequently more significant in the later periods. This may be as a result of better reputation gained from SB behaviour which promotes confidence building and attracts greater customer loyalty (Olmo et al., 2021).

Table 4: Paired t-test results showing differences in performance produced in the period considered (Statistic and probability)

Table 4. Paired T-Test Results Showing Differences in Performance Produced in the Period Considered (Statistic And Probability)

Variables 2014-2021	2014-2016 2014-2022	2014-2017	2014-2018	2014-2019	2014-2020
PAT					
Pre NSBP Mean	23.51	23.45 23.12	23.32 22.93	23.38	23.23
Post NSBP Mean	23.67	23.67 23.95	23.72 24.02	23.81	23.89
Mean (Diff.)	0.163	0.214 0.83	0.403 1.09	0.427	0.630
t-statistic	0.86	1.21 5.73	2.14 7.44	2.74	4.16
Probability	(0.39)	(0.230) (0.000)*	(0.036)* (0.000)*	(0.007)*	(0.000)*
Deg. of freedom	35	47 95	59 107	71	83
95% conf. int.	-0.22- 0.55	-0.14-0.57 0.54-1.12	0.02- 0.08 0.80 -1.38	0.12 -0.74	0.33 - 0.93
Obs.	36	48 96	60 108	72	84
		EPS			
Pre NSBP Mean	1.39	1.40 1.40	1.39 1.40	1.39	1.40
Post NSBP Mean	1.49	1.51 1.61	1.54 1.63	1.57	1.59
Mean (Diff.)	0.106	0.107 0.21	0.159 0.238	0.176	0.185
t-statistic	3.35	2.31 4.85	3.18 5.55	3.85	4.09
Probability	(0.002)*	(0.025)* (0.000)*	(0.002)* (0.000)*	(0.000)*	(0.000)*
Deg. of freedom	35	47 95	59 107	71	83
95% conf. int.	0.04-0.17 0.27	0.01- 0.20 0.12-0.30	0.06-0.26 0.15-0.32	0.08 -0.27	0.09 -

Obs.	36	48	60	72	84
		96	108		
			MCAP		
Pre NSBP Mean	25.30	25.33	25.21	25.29	25.44
		25.42	25.35		
Post NSBP Mean	25.31	25.38	25.42	25.45	25.48
		25.50	25.55		
Mean (Diff.)	-0.005	0.048	0.213	0.160	0.041
		0.88	0.20		
t-statistic	-0.036	0.47	1.60	1.28	0.36
		0.77	1.69		
Probability	(0.971)	(0.640)	(0.115)	(0.203)	(0.718)
		(0.441)	(0.093)**		
Deg. of fre	35	47	59	71	83
		95	107		
95% conf. int.	-0.29 -0.28	-0.16 -0.25	-0.05- 0.48	-0.88-0.41	-0.18-0.26
		-0.14-0.32	-0.03- 0.43		
Obs	36	48	60	72	84
		96	108		

Thus, if banks have good governance and invest their resources in SB activities, it shows their concern for the environment, then, its profitability takes an upward swing due to improved reputation.

Table 4 shows statistically significant mean differences in EPS of the sampled banks (at p ≤ 0.05) between the paired pre and post-NSBP adoption periods for the different temporal intervals studied. As we reject the null hypothesis of no significant difference, we conclude that adoption of NSBPs produces significant positive differences in EPS of these banks. SB practices evoke changes in management practices that encompass major changes in operations of the banks including lending processes. Expectedly, changes in organizational processes should reflect in profitability probably through more efficient resource allocation or increased business volume (Lopez et al., 2007). These findings align with (Bose et al., 2021; Olma et al., 2021) and contrasts with prior research by (Gutiérrez-Ponce & Wibowo, 2024).

From table 4, it is observed that no statistically significant difference occurred between the paired pre and post NSBPs adoption periods for MCAP until 2022. However, during the period 2014-2016 representing three years after NSBP adoption, the t-statistic was negative and not significant. The difference in market value only became statistically significant (at p ≤ 0.10) nine years after implementation of NSBP as shown in result for the period 2014-2022. SB initiatives demand that banks get more involved in solving social problems and showing greater care for the environment. Bank's ethical stance should reflect their products (Aracil et al., 2021) which may entail radical changes in values which may warrant infusion of differentiating features into operations and product packaging. However, transmission of such values to the market and society may materialize gradually. SB requires that firms develop and publish information which reflects the sustainability principles adopted which shape the banks' investment decision. The investing public may be skeptical about SB practices hence they needed time to incorporate ethical criteria into investment decisions. By 2022, the difference in profitability indices had become more significant. Results of prior studies are diverse. Our results compare with results by (Okumu, 2014; Hossain et al., 2020) who reported positive relation between GB and profitability in banks.

Interestingly, however, when SB practices were first applied, the effect on performance measured in terms market value (MCAP) was negative and non-significant. Differences in market value only became significant

in 2022. This suggests that value creation through SB strategies crystallizes in the long term when such practices begin to translate to good business for the banks. It is believed that strategies that incorporate sustainability criteria have the potential to create value in the long term (Lopez et al., 2007).

Conclusion

Aside from regulatory compliance, banks across different climes are increasing adopting sustainable banking practices with the expectation that such strategies will further promote good business for them in addition to creating long term value for the banks. The present study analyzed data from 12 banks in Nigeria for 2005 to 2022. The data was divided into 9 years (2005-2013) of pre and 9 years (2014-2022) of post NSBPs adoption periods. In line with stakeholder theory, findings of the study support the assertion that SB strategy is good business for banks. First, the study analyzed the link between BP indicators and SBD, and found a positive link, although not significant. Second, the study analyzed whether significant variations exist in BP between the pre and post NSBPs implementation periods. The study confirms a positive difference in profitability and market value indices of these banks between the periods. The differences were more profound in the profitability measures with increasing significance over time. The market related performance was affected lately after nine years of NSBPs implementation. This has practical managerial implication. To lead their banks on the path of sustainable growth, management of these banks needs to look beyond short-term impact of sustainable actions. A longer-term view is necessary given that such practices entail the creation of new banking and financing culture which may require time to reflect and influence investment decisions by the capital market. For further studies, it will be necessary to study a longer time period to ascertain whether the positive difference assumes continuity.

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