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GREEN BANKING PRACTICES AND BANK ECOLOGICAL PERFORMANCE: EXPLORING CAPACITY DEVELOPMENT AS A MODERATOR

Beenish Mushtaq[*1], Saleh Nawaz Khan[2], Iram Naz[3], Wajid Alim[4]

*[*1]M.Phil. Scholar, Lahore School of Accountancy and Finance, University of Lahore, Lahore.*
[2]Assistant Professor, Cholistan Institute of Business Administration, Cholistan University of Veterinary & Animal Sciences, Bahawalpur,
[3]M.Phil. Scholar, Lahore School of Accountancy and Finance, University of Lahore, Lahore
[4]Assistant Professor, Lahore School of Accountancy and Finance, University of Lahore, Lahore.

[*1]beenishmushtaq83@gmail.com, [2]salehnawaz@cuvas.edu.pk, [3]iram.naaz19133@gmail.com, [4]wajid@uolcc.edu.pk

[2]https://orcid.org/0000-0003-4793-9747, [3]https://orcid.org/0000-0001-8364-5901

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Corresponding Author: *
Beenish Mushtaq

Abstract

Purpose- *This study examines the association between green banking practices and the Bank's ecological performance, emphasizing the moderating role of Green Capacity development.*

Design/Methodology/Approach- *The research employs a quantitative method containing quantitative data. A survey of banking institutions was conducted to assess the extent of their ecological practices and its effect on the Bank's environmental performance. The data was collected through a structured questionnaire. The Smart PLS was employed for Statistical analysis to establish the relationship between bank ecological practices and its ecological outcomes.*

Findings- *The study finds a positive relationship between green banking practices and their environmental outcome. Banks' operation-related practices, such as paperless transactions and energy-efficient infrastructure, significantly reduce their carbon footprint and contribute to ecological sustainability. The interaction of Bank operation-related practices with green capacity development significantly impacts Bank environmental performance. However, Bank policy related practices alone do not affect environmental sustainability, but their interaction with green capacity development significantly impacts the Bank's ecological performance.*

Practical Implications- *The findings suggest that Green capacity development is crucial in enhancing the Bank's ecological performance. Alone, Bank policy-related practices are insufficient to improve their ecological performance.*

Originality/Value- *This paper contribute to the expanding corpus of research on sustainable banking by providing empirical evidence on the link between green banking practices and Bank's ecological performance with the moderating role of Green Capacity development.*

INTRODUCTION

In today's business environment, embracing environmentally friendly practices has emerged as an essential aspect of corporate social responsibility and sustainability initiatives. The banking sector particular, has a significant role to play in promoting environmentally conscious practices, given its dominant position in financial systems (Solanki & Rana, 2019; Grover & Kaur, 2019). The growing concern for environmental protection and the need for sustainable development has led to the emergence of the concept of "Green Banking" (Prabhu & Aithal, 2021). Green banking encompasses a range of practices and guidelines that aim to make banks more sustainable in economic, environmental, and social dimensions. Banks have been implementing various green initiatives to reduce their carbon footprint and contribute to environmental conservation. One of the key aspects of green banking is the promotion of e-banking or online banking services. E-banking reduces the need for physical infrastructure, such as branches and paper-based transactions, thereby lowering the environmental impact of banking operations (Grover & Kaur, 2019; Solanki & Rana, 2019). Banks have been actively encouraging customers to adopt e-banking, mobile banking, and other digital services, which not only enhance convenience but also contribute to the reduction of energy consumption and greenhouse gas emissions. (Neeraja & Joseph, 2021). Furthermore, banks have been implementing other eco-friendly practices, such as the use of renewable energy sources, energy-efficient IT infrastructure, and the adoption of sustainable procurement policies.

Several studies have been undertaken regarding green banking (Zheng et al., 2021; Miah et al.,2020; Qureshi & Hussain, 2020; Zhixia et al., 2018; Choudhury et al., 2013; Bahl, 2012; Bhardwaj and Maholtra, 2013; Biswas, 2011; Jha & Bhome, 2013). However, these studies undermine the role of Green capacity development. The term green capacity building is a relatively new concept that emerged with the emergence of the sustainable development concept. There is no clear definition available in the literature for green capacity building. We define green capacity building as" developing skills, knowledge, and capabilities that enable individuals, organizations, and communities to transition towards a more sustainable, low-carbon, and resilient future. Green capacity development and bank environment performance are closely linked. Ecological banking involves understanding environmental problems, sustainability principles, and green financial products (Khairunnessa, 2021). By providing capacity-building programs, employees can gain knowledge about these topics, increasing their awareness of the importance of environmental sustainability. This knowledge equips them to make informed decisions and support the efficient implementation of green practices in firms (Hasim et al., 2015). Training programs for bank employees boost their competency base, which is required for green innovations (Chiarvesio et al., 2015). In the same fashion, adopting green banking practices for better environmental performance requires the capabilities built through capacity development programs.

Several theories and models support capacity-building efforts (Becker, 1975; Argyris & Schon, 1978; Grant, 1996; Moran & Brightman, 2001; Jackson, 2000; Preskill & Boyle, 2008). This study relies on the knowledge management theory and innovatively posits that green capacity development is crucial for the healthy relationship between green banking practices and environmental performance. Banks prioritizing ecological performance are also more likely to invest in green capacity development. By doing so, banks can demonstrate their commitment to sustainability, attract environmentally conscious clients, and contribute to a more sustainable future. The present research contribute to the literature in the following ways. Firstly, this research identifies how the adoption of green banking practices contributes to improving bank's ecological performance in Pakistan. Secondly, this study provides insights into the moderating role of green capacity building in the relationship between green banking practices and bank ecological performance. Besides this, most studies on green banking development in the Asian region have been done in China, India, Bangladesh, Nepal and Sri Lanka. Few studies have been done in Pakistan, so it

is essential to examine the ecological banking practices in Pakistan. This research will contribute to the broader goal of promoting sustainable development by reducing the environmental impact of banking activities.

2. Literature Review

The term "green banking" describes a banking system that benefits the environment by preserving and maintaining it. Green banks mainly design their banking operations towards environmentally friendly activities, such as reducing paper usage and other practices that help the environment, a bank can become a "green bank." (Meena, 2013). Green banking has emerged as a crucial strategy for financial institutions to mitigate their environmental impact and promote sustainable development (Kulsum & Huda, 2018). Banks can play a pivotal role in directing economic activities toward environmentally friendly practices by offering green financing options and integrating environmental considerations into their core operations (Prorokowski, 2016). Consequently, the Green Bank is well-known for its sole concentration on ecologically responsible and promote sustainability. Firms' commitment to preserving the environment impacts how they operate environmentally. Lober (1996) identified indicators for evaluating environment performance, including low ecological emits, pollution mitigation, waste reduction, and regeneration. Green banking addresses these issues by developing effective and widely applicable market-based remedies.

Shaumya and Arulrajah (2016) suggest that including ecological responsibility in bank activities can help reduce the environment's footprint (Masud et al., 2018). According to Lalon (2015), sustainable banking promotes ecologically friendly methods in banking, reducing carbon footprints and encouraging clients through innovative practices. Furthermore, the Institute for Development and Research in Banking and Technology (2013) defined ecological banking as the adoption of methods and principles by banks for the future growth of the economy and the natural world. Zhang et al. (2022) examined sustainable banking and environmental performance in Bangladesh. They showed that eco-friendly banking ventures reveal a remarkable productive effect on banks' ecological achievements. The sources of green financing and green funding significantly impact banks' environmental performance.

Nath et al. (2014) examined Green banking Practices in the private & public sector banks. They illustrate that, although bank operations have no direct physical relationship to the environment, the actions of their clients have a substantial impact on the environment. As a result, banks need to incorporate green practices into all aspects of their business, including their physical presence, investment decisions, and lending schemes. Risal and Joshi (2011) examined how Green Banking policies affect the environmental performance of Nepali banks. The survey included 189 employees from 5 banking institutions in Nepal, selected using convenience sampling. They suggested implementing energy-efficient technology and green policies significantly improve a bank's ecological sustainability. Earlier studies have shown that the implementation of green banking practices can have a positive impact on the financial performance of banks. This is attributed to the cost-saving potential of green initiatives, the ability to attract environmentally-conscious customers, and the improved reputation and social legitimacy associated with green banking.

Hypothesis (H1): Banks' operation-related practices have a significant impact on the Bank's Environmental performance

Hypothesis (H2): Bank's Policy-related practices have a significant impact on Banks' Environmental performance

2.1 The Moderating Role of Capacity Development

Building employee capacity is directly related to the human capital theory. Investments made by people, organizations, or countries that build up stocks of useful skills and technical knowledge are referred to as investments in human capital. (Becker, 1964). The Human capital theory explains that employee capacity-building practices enhance an organization's human capital via increased human capabilities, which results in increased performance (Aliaga, 2001). Proponents of the human capital hypothesis argue that education boosts workers' productivity

and efficiency by increasing their intellectual inventory, which is the outcome of inherent ability and investment in people (Olanyan & Okemakinde, 2008). Following the human capital theory, the development of green capacity might influence the employee's capabilities. Daily and Huang (2001) argued that green human resources management becomes crucial for successfully executing green strategies and environmental management practices. Gluch et al. (2009), the development of innovations depends not only on the resources acknowledged by an organization but on wide knowledge capabilities. Hasim et al. (2015), knowledge equips employees to make informed decisions and support the efficient implementation of green practices in firms. Chiarvesio et al. (2015), training programs for bank employees boost their competency base, which is required fogreen innovations. Chattopadhyay (2001) argued that Companies dedicated to implementing ISO14000 environmental management systems required the top management to develop resources for training and process improvements.Organizations might delay environmental management system adoption and completion if sufficient resources are not available. Daily et al. (2003, 2007) suggest that environment training, employee psychological empowerment, teamwork and rewards are significantly related to appraised environmental performance. Kaur (2011) argued that the human resources factors such as top management commitment to perceived environmental performance. Song et al. (2020) examined the association between green knowledge sharing, stakeholder demand, absorption capacity, and environmentally friendly innovation. They found that the absorptive capacity of employees fully mediates the relationship between the dissemination of green knowledge & green innovation. In the same context, if the banking sector invests in Employees' capacity building to enhance their skills, Green banking will facilitate achieving the perceived environmental performance.

Hypothesis (H3): Green capacity development significantly affects the relationship between Bank's operation - related practices and the Bank's environmental performance.

Hypothesis (H4): Green capacity development significantly affects the relationship between the Bank's Policy related practices and the bank environmental performance.

3. Methodology

3.1 Sample of Study

The population of the study is the employees working in scheduled commercial banks in Pakistan. About 24 scheduled banks, 16 foreign banks, and four cooperative banks are operating in Pakistan under the command of the State Bank of Pakistan (SBP). Being the wide-reaching funders of the practice, Commercial Banks are capable of maximum contribution to the economy development of any country. Commercial banks are also crucial for sustainable development by financing ecofriendly projects. Therefore, scheduled commercial banks are chosen for the current study. This study will collect the primary data to fulfil our research objectives. The primary data would be obtained directly from the employees of the selected commercial banks by a convenient sampling method. The sample size for the investigation was determined following the criteria proposed by Barclay (1995), who devised an exponential sampling method in which the maximum number of indicators employed in the SEM approach was multiplied by 10. The survey needs 270 (27*10) respondents based on this criterion.

Table 3.1: Questionnaire Items

BANK OPERATION-RELATED PRACTICES	
BORP1	Our Bank has adopted the 3 R Policy-Reduce, Reuse and Recycle towards all Tangible resources.
BORP2	Our Bank has installed solar power systems in Branches
BORP3	Replace CFL lights with energy-efficient LED lights
BORP4	Install new energy-efficient inverter AC units to replace old AC units at all branches.

BORP5	Our Bank has the initiative to reduce paper usage.
BORP6	Our Bank has acquired paperless deposit machines, CDS
BORP7	Our Bank has installed energy-efficient ATMs Machine in their branches

BANK POLICY RELATED PRACTICES

BPRP1	My Bank has developed a policy to set up green branches
BPRP2	Our Bank has developed internal policies on green banking
BPRP3	Our Bank communicated to us about SBP policies on Eco-friendly banking
BPRP4	Our Bank is implementing the SBP policies on green banking
BPRP5	Our Bank is promoting green banking among customers and employees

GREEN CAPACITY DEVELOPMENT

GCD1	Conducted training and workshops on Green banking
GCD2	Conducted training programs on cost-effective and efficient methods of performing operations
GCD3	Our Bank makes investments in green skill development programs
GCD4	My Bank has developed a green performance evaluation system
GCD5	My knowledge about green banking is constantly improving
GCD6	My banks perform annual green audits

BANK ECOLOGICAL PERFORMANCE

BEP1	My Bank has minimized the power consumption for banking operations
BEP2	My Bank has minimized the carbon footprints from banking operations
BEP3	My Bank has improved the environmental standards compliance
BEP4	My Bank has attained the essential environmental certifications
BEP5	My Bank's environmental performance has increased in the last five years.

3.4 Data Analysis Strategy

This analysis will use two main methodological approaches to analyze the primary data from Smart PLS. The main analytical techniques include exploratory factor analysis (EFA) and structural equation modelling (SEM). EFA is a data-directed approach, often used to utilize as a technique to identify the association ship among constructs. In this study, the EFA approach can be implemented to scrutinize the data for the analysis. The Cronbach's Alpha (CA) and composite reliability (CR) values have been employed to measure the reliability.

4. Results

4.1Assessment of Measurement Model

Construct validity and reliability have been established to assess measurement models. Construct validity is determined by convergent and discriminant validity.

Table 4.1 Factor Loading

Factors	Outer loadings
BEP1 <- BEP	0.800
BEP2 <- BEP	0.758
BEP3 <- BEP	0.861
BEP4 <- BEP	0.832
BEP5 <- BEP	0.883
BORP3 <- BORP	0.710
BORP4 <- BORP	0.728
BORP5 <- BORP	0.827

BORP6 <- BORP	0.748
BORP7 <- BORP	0.697
BPRP1 <- BPRP	0.798
BPRP2 <- BPRP	0.801
BPRP3 <- BPRP	0.857
BPRP4 <- BPRP	0.841
BPRP5 <- BPRP	0.745
GCD1 <- GCD	0.795
GCD2 <- GCD	0.818
GCD3 <- GCD	0.837
GCD4 <- GCD	0.850
GCD5 <- GCD	0.831
GCD6 <- GCD	0.787
GCD x BORP -> GCD x BORP	1.000
GCD x BPRP -> GCD x BPRP	1.000

Factor loading ≥ 0.7

Table 4.1 displays the factor loadings for the item. Outer loading values exceeding 0.7 suggest a more robust relationship between the observed and latent variables. The increased loadings indicate that the observed variables are more intimately connected to the latent construct.

Table 4.2 Cronbach's Alpha

	Cronbach's alpha	Composite reliability (Alpha)
BEP	0.884	0.887
BORP	0.798	0.813
BPRP	0.868	0.873
GCD	0.902	0.904

Composite Reliability acceptance = ≥ 0.7
Cronbach's Alpha acceptance= ≥ 0.7

Table 4.2 displays the findings related to Reliability, which serves as an indicator of internal consistency. Reliability is assessed using Cronbach's alpha and Composite reliability (Alpha). Each item's Cronbach alpha in the scale exceeds 0.7, signifying a high level of internal consistency. Additionally, the Composite reliability (Alpha) also surpasses 0.7, affirming the robust inter-correlation among all items within the constructs. It shows that the items in the scale are highly correlated, and the instrument is extremely reliable and suitable for measuring the same notion at different times in a broad range of circumstances.

Table 4.3 Convergent Validity

Construct	Average variance extracted (AVE)
BEP	0.686
BORP	0.553
BPRP	0.655
GCD	0.672

AVE Acceptance= ≥0.5

Table 4.3 presents the results of the convergent validity. According to Fornell and Larcker (1981), sufficient convergent validity is achieved when the AVE value of a construct is at least 0.5. It is can be clearly seen that all the values of AVE are greater than 0.5, so the convergent validity has established. The findings confirmed that the instrument used in this study and valid.

Table 4.4 Fornell- Larcker Criterion

CONSTRUCT	BEP	BORP	BPRP	GCD
BEP	**0.828***			
BORP	0.555	**0.743***		
BPRP	0.584	0.557	**0.809***	
GCD	0.679	0.438	0.581	**0.820***

Square root of the AVE (bold) on the diagonal

Table 4.4 shows the values on the diagonal are significantly greater than those beneath. All item loaded with values greater than 0.70 on the diagonal, meets the Fornel-Lacker criterion for determining discriminant validity.

Table 4.5 Heterotrait-monotrait ratio (HTMT) – Matrix

CONSTRUCT	BEP	BORP	BPRP	GCD	GCD x BPRP	GCD x BORP
BEP						
BORP	0.644					
BPRP	0.659	0.681				
GCD	0.758	0.507	0.656			
GCD x BPRP	0.412	0.126	0.341	0.358		
GCD x BORP	0.300	0.307	0.093	0.282	0.388	

HTMT value < 0.85 are acceptable (Kline, 2011; Garson 2016)

Table 4.5 indicates that all values fall below the threshold of 0.90, thereby confirming that discriminant validity has been achieved for the present study.

Table 4.6 Cross Loadings

	BEP	BORP	BPRP	GCD	GCD x BPRP	GCD x BORP
BEP1	0.800	0.359	0.371	0.552	-0.237	-0.161
BEP2	0.758	0.495	0.507	0.553	-0.317	-0.277
BEP3	0.861	0.520	0.508	0.577	-0.325	-0.227
BEP4	0.832	0.439	0.517	0.540	-0.391	-0.249
BEP5	0.883	0.468	0.500	0.585	-0.330	-0.251
BORP3	0.380	0.710	0.421	0.220	-0.107	-0.085
BORP4	0.407	0.728	0.369	0.360	0.075	-0.168
BORP5	0.520	0.827	0.432	0.410	-0.097	-0.314
BORP6	0.331	0.748	0.542	0.310	-0.086	-0.137
BORP7	0.387	0.697	0.333	0.301	-0.055	-0.316
BPRP1	0.410	0.551	0.798	0.442	-0.201	-0.117
BPRP2	0.446	0.403	0.801	0.415	-0.234	-0.039
BPRP3	0.505	0.472	0.857	0.528	-0.306	-0.069
BPRP4	0.529	0.462	0.841	0.484	-0.278	-0.087

BPRP5	0.456	0.373	0.745	0.475	-0.264	-0.038
GCD1	0.555	0.394	0.502	0.795	-0.259	-0.276
GCD2	0.554	0.350	0.420	0.818	-0.247	-0.174
GCD3	0.584	0.385	0.519	0.837	-0.346	-0.316
GCD4	0.602	0.361	0.463	0.850	-0.306	-0.263
GCD5	0.511	0.353	0.500	0.831	-0.281	-0.203
GCD6	0.525	0.308	0.458	0.787	-0.232	-0.087
GCD x BORP	-0.283	-0.285	-0.086	-0.272	0.388	1.000
GCD x BPRP	-0.389	-0.073	-0.320	-0.341	1.000	0.388

Table 4.6 presents the outcomes of the cross-loadings. It illustrates the relationship among the indicators of the latent variable. The correlation for all items within the construct exceeds 0.5, signifying discriminant validity. Therefore, it is justifiable to conclude that the items employed to assess the construct are valid and distinct from other constructs.

Table 4.7 Path coefficients

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
BORP -> BEP	0.290	0.293	0.079	3.683	0.000
BPRP -> BEP	0.120	0.127	0.080	1.491	0.136
GCD -> BEP	0.418	0.413	0.064	6.525	0.000
GCD x BPRP -> BEP	0.116	0.114	0.052	2.203	0.028
GCD x BORP -> BEP	0.426	0.421	0.059	7.221	0.000
				R-square	**R- square adjusted**
BEP				0.588	0.580

Table 4.7 presents the results of the path coefficients. The result confirms that Bank operation related practices (BORP) and Green capacity development (GCD) have a positive and significant effect on Bank Environment performance (BEP). At the same time, Bank Policy-related practices do not substantially affect Bank Environment Performance (BEP). However the joint effect of Green capacity development and Bank Policy Related Practices (GCD x BPRP) on Bank Environment Performance is positive and significant. It indicates that Bank Policy Related Practices (BPRP) are only sufficient to reduce the Bank's Environmental Performance once the bank emphasizes the Green Capacity Building Programs (GCD). At the same time, the joint effect of Green Capacity Development (GCD) and Bank Operation Related Practices (GCD x BORP) on Bank Environment Performance (BEP) is also positive and significant. Green capacity development programs (GCD) and Bank Operational Related Practices (BOPR) significantly improve environmental performance when considering the synergistic effect. The value of R- square is 0.588, indicating the model is well fitted and explaining the 58 per cent variation in the dependent variable. The adjusted R- Square value is also 0.580 per cent, indicating the estimated model is appropriate.

Table 4.8 F-Square Effect Size

Construct	**f-square**
BORP -> BEP	0.118
BPRP -> BEP	0.017
GCD -> BEP	0.252
GCD x BPRP -> BEP	0.057

GCD x BORP -> BEP	0.249

Table 4.8 presents the findings of the F-Square effect size. The practices related to bank operations have a value of 0.118, indicating that the BORP accounts for a moderate share of the variance in the dependent variable BEP. Bank Policy Related Practices (BPRP) has a value of 0.017, which signifies that the BPRP accounts for a small share of the variance in the dependent variable BEP. Green Capacity Development (GCD) has a value of 0.252, suggesting that the BPRP accounts for a larger share of the variance in the dependent variable BEP. The moderating effect of Green Capacity Development (GCD) and Bank Policy Related Practices (BPRP) has a value of 0.057, indicating that GCD x BPRP accounts for a moderate share of the variance in the dependent variable BEP. The moderating effect of Green Capacity Development (GCD) and Bank Operational Related Practices (BORP) has a value of 0.247, indicating that GCD x BORP accounts for a large share of the variance in the dependent variable BEP. Overall, the results demonstrate a strong and significant relationship between the independent and dependent variables, with the independent variable(s) making a substantial contribution to explaining the variance in the dependent variable.

4.2 Discussion

The findings of the study reveal that the ecological performance of the Bank is significantly influenced by green banking practices. As noted by Kulsum & Huda (2018), Grover & Kaur (2019), and Hossain et al. (2020), banks that adopt green banking strategies—such as encouraging paperless operations, utilizing energy-efficient appliances, and digitizing banking services—have been proven to aid in reducing carbon emissions, conserving water, and protecting natural resources. Nevertheless, the connection between ecological banking and the ecological performance of banks is intricate. Several factors, including the knowledge and awareness levels of bank employees, can affect the success of green banking efforts. As indicated by Asfaw et al. (2015) and Guest (1997), training and capacity-building programs are essential for the enhancement of human resources. Furthermore, Fletcher et al. (2018) assert that capacity building significantly influences employee performance and retention. Daily et al. (2003, 2007) emphasize that ecological training, psychological empowerment of staff, collaboration, and incentives greatly impact perceived environmental performance. The importance of capacity building for employee development encompasses various training types aimed at enhancing a worker's skills and ability to execute tasks efficiently and effectively. The findings suggest that practices related to bank policy alone are inadequate to improve the ecological performance of the bank. To realize the intended outcomes of the bank's environmental policy, it is crucial for banks to cultivate green capacity among their employees. This is due to the fact that policy-making establishes the framework for what employees need to know and do, while training provides them with the essential skills and knowledge to adhere to and implement these policies effectively. Additionally, the results underscored that practices related to bank operations have a strong influence on the environmental performance of the Bank. As stated by Chen et al. (2022), the ecological practices of financial institutions, such as environmentally friendly financial services and reducing paper uses, have significantly influenced the bank deposits inflow. Therefore, it can be concluded that Green banking activities, alone are less effective for improving the bank environment. Banks must focus on green capacity development programs to get the desired results of green banking practices.

5. Conclusion

The research focused on investigating the impact of ecological practices in banks on their ecological performance, considering the moderating influence of green capacity development within commercial banks in Pakistan. Primary data were collected from officials of commercial banks in Pakistan and subsequently analyzed. The empirical results indicated a direct correlation between Green Banking Practices and the environmental performance of banks, with this relationship strengthening upon the introduction of green capacity. The findings of the study offer significant implications for scholars, banking institutions,

bankers, managers, and government officials in Pakistan by advocating for green banking and facilitating green capacity development to enhance the ecological performance of banks, which in turn supports consistent economic growth. Consequently, it is recommended that organizations engage in capacity building by providing employees with essential environmentally friendly training to boost ecological performance. Furthermore, the daily operations and policy-related practices associated with green banking have a positive effect on the ecological performance of banks. Therefore, it is advisable for executives of commercial banks to formulate and implement green banking policies that focus on minimizing paper usage, offering eco-friendly banking services such as ATMs and electronic banking, establishing green branches, and enacting green policies to enhance the ecological sustainability of banks. In this context, the central bank should take an active role in the education, functioning, development, and oversight of activities related to green banking, thereby contributing to the achievement of the nation's ecological economic growth.

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