

Green Banking Policies and Their Impact on the Sustainable Performance of Public and Private Sector Banks in India

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Abstract

Green banking has emerged as an important component of sustainable finance, encouraging banks to integrate environmental considerations into their operations, lending decisions, and investment strategies. This study examines the implementation of green banking policies and evaluates their impact on the sustainable performance of public and private sector banks in India. The study focuses on major green banking initiatives, including paperless banking, digital banking, energy-efficient operations, green financing, renewable-energy lending, environmentally responsible investment, and sustainable banking practices. A comparative assessment of public and private sector banks is undertaken to identify differences in the adoption, effectiveness, and implementation of green banking practices. The study further investigates how green banking contributes to environmental sustainability, operational efficiency, financial performance, customer awareness, and long-term competitiveness. The findings are expected to demonstrate that effective green banking policies can reduce environmental footprints while simultaneously supporting cost efficiency, innovation, and sustainable financial growth. The study also highlights the need for stronger regulatory frameworks, standardized green-finance guidelines, improved disclosure mechanisms, and greater awareness among banking stakeholders. The research provides useful implications for policymakers, banking institutions, investors, and customers seeking to promote a more sustainable and environmentally responsible Indian banking sector.

Keywords

Green Banking; Sustainable Banking; Green Finance; Environmental Sustainability; Public Sector Banks; Private Sector Banks; Sustainable Performance; Green Lending; Digital Banking; India.

I. INTRODUCTION

The growing concern over climate change, environmental degradation, resource depletion, and sustainable development has encouraged financial institutions to incorporate environmental considerations

into their business strategies. The banking sector, although not a major direct source of pollution, has considerable **indirect environmental influence through lending, investment, and financing decisions**. Green banking has therefore emerged as an

important approach through which banks can reduce their environmental footprint while directing financial resources toward environmentally responsible activities.

Green banking broadly refers to the integration of environmental sustainability into banking operations, products, services, lending decisions, and investment activities. It includes practices such as **paperless banking, digital transactions, energy-efficient branches, electronic documentation, green loans, renewable-energy financing, environmental risk assessment, and sustainable investment**. Gill et al. emphasize that green banking requires systematic adoption of environmental, social, and governance-oriented practices and provides a framework that can support banks and regulators in developing appropriate green banking policies [1].

In the Indian context, green banking has become increasingly important because banks play a central role in mobilizing financial resources for economic development. Through responsible lending and investment decisions, banks can encourage businesses and consumers to adopt environmentally sustainable activities. Sharma and Choubey's study of Indian public and private banks identified **green product development, green corporate social responsibility, and green internal processes** as important dimensions of green banking initiatives. Their findings demonstrate that such initiatives can contribute to green brand image and customer trust, highlighting the strategic importance of sustainability within the Indian banking sector [2].

Recent empirical evidence further indicates that green banking practices can improve banks' environmental performance. Thapliyal et al. found that green banking practices significantly contribute to banks' environmental performance and sources of green financing in India. Their study also identified green financing as an important mechanism through which green banking

practices can generate environmental benefits. The study included employees from both public and private sector banks, thereby providing evidence for examining green banking across different types of banking institutions [3].

The relationship between green banking and overall bank performance has also gained increasing research attention. Thapliyal and Gupta's 2026 study on Indian banks examined whether green banking practices influence competitiveness and performance. The study highlights that banks can use green financing and environmentally friendly products and services not only to address environmental concerns but also to strengthen competitiveness and organizational performance [4].

However, the implementation of green banking policies may differ between **public sector banks and private sector banks** because of differences in organizational structures, technological capabilities, strategic priorities, regulatory exposure, customer segments, and investment capacity. Existing research has examined various dimensions of green banking in India, but there remains scope for a comparative assessment of how green banking policies influence the sustainability and performance of public and private sector banks. In particular, examining operational efficiency, environmental performance, green financing, customer-oriented green products, and sustainable competitiveness together can provide a broader understanding of the effectiveness of green banking policies.

Therefore, the present study, "**Green Banking Policies and Their Impact on the Sustainable Performance of Public and Private Sector Banks in India**," seeks to examine the adoption of green banking policies and evaluate their influence on sustainable banking performance. The study provides a comparative perspective on public and private sector banks and aims to identify the major green banking practices, their benefits, implementation challenges, and their contribution to environmental

sustainability and long-term banking performance. The findings can be useful for banking managers, policymakers, regulators, investors, and other stakeholders in strengthening India's transition toward a more sustainable and environmentally responsible financial system.

II. RESEARCH OBJECTIVE

- To study the concept and importance of green banking policies in the banking sector.
- To examine the various green banking initiatives adopted by public and private banks.
- To analyze the impact of green banking practices on environmental sustainability.
- To compare the implementation of green banking policies between public and private sector banks.
- To evaluate the effectiveness of digital banking services in reducing paper consumption and carbon emissions.
- To assess customer awareness and acceptance of green banking initiatives.
- To identify the benefits of green banking in improving operational efficiency and cost reduction.
- To examine the role of green financing in promoting sustainable economic development.
- To analyze the challenges faced by banks in implementing green banking policies.
- To provide suggestions for enhancing the adoption and effectiveness of green banking practices in public and private banks.

III. RESEARCH METHODOLOGY

- Research Design: Descriptive and analytical research design.
- Study Area: Public and private sector banks operating in India.
- Data Type: Both primary and secondary data were used for the study.

- Primary Data Source: Structured questionnaire distributed among bank customers and banking professionals.
- Secondary Data Source: Annual reports of banks, research journals, books, RBI reports, websites, and published articles related to green banking.
- Sampling Technique: Convenience sampling method.
- Sample Size: 100 respondents selected from customers of public and private banks.
- Data Collection Method: Survey method using questionnaires and personal interactions.
- Study Variables: Green banking awareness, digital banking usage, customer satisfaction, environmental benefits, and operational efficiency.
- Data Analysis Tools: Percentage analysis, frequency distribution, mean analysis, tables, and graphical representations.
- Statistical Techniques: Comparative analysis and descriptive statistics.
- Research Period: Data collected during the study period of 2025–2026.
- Scope of the Study: Evaluation of green banking policies and their impact on public and private sector banks.
- Limitations of the Study: Limited sample size, time constraints, and reliance on respondent opinions and available secondary data..

IV. REVIEW OF LITERATURE

[1] Biswas (2011) examined the concept of green banking and emphasized the role of banks in promoting environmental sustainability through eco-friendly financial practices. The study highlighted that green banking helps reduce carbon emissions, improve resource utilization, and encourage environmentally responsible investments.

[2] Bihari and Pandey (2015) analyzed green banking initiatives in India and found that banks have increasingly adopted digital banking services, paperless transactions, and green financing programs. The study concluded that green banking contributes significantly to sustainable development and environmental protection.

[3] Kumar and Prakash (2019) investigated the implementation of green banking practices in Indian commercial banks. The findings revealed that private sector banks were more proactive in adopting innovative green technologies, while public sector banks focused on regulatory compliance and sustainable lending practices.

[4] Sharma and Choubey (2020) studied customer awareness regarding green banking services and observed that increasing environmental consciousness among customers positively influences the adoption of online banking, mobile banking, and electronic payment systems. The study recommended greater awareness campaigns to improve customer participation.

[5] Masukujjaman and Aktar (2018) explored the relationship between green banking and environmental sustainability. The research highlighted that banks play a vital role in financing renewable energy projects, green infrastructure, and environmentally responsible business activities, thereby supporting sustainable economic growth.

[6] Meena (2013) evaluated the status of green banking in India and found that banks were gradually integrating environmental considerations into their operational and lending activities. The study emphasized the importance of government support and regulatory guidelines for successful implementation.

[7] Rahman, Ahsan, and Hossain (2021) examined the impact of green banking practices on organizational performance. The study reported that green banking initiatives improved operational efficiency, reduced

administrative costs, enhanced corporate image, and increased customer satisfaction.

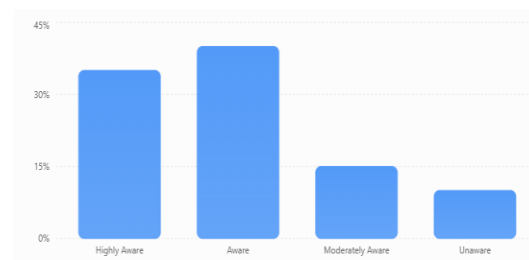
[8] Nisha (2016) analyzed the challenges faced by banks in implementing green banking policies. The research identified factors such as lack of customer awareness, high implementation costs, technological barriers, and limited employee training as major obstacles to effective adoption.

[9] Singh and Verma (2022) conducted a comparative study of public and private sector banks regarding green banking initiatives. The findings indicated that private banks demonstrated higher levels of technological innovation, whereas public sector banks exhibited broader outreach and participation in government-sponsored environmental programs.

[10] Gupta and Arora (2023) investigated the future prospects of green banking and concluded that continuous technological advancements, digital transformation, and sustainable finance practices would strengthen the role of banks in achieving environmental and economic sustainability.

V. Data Analysis & Interpretation

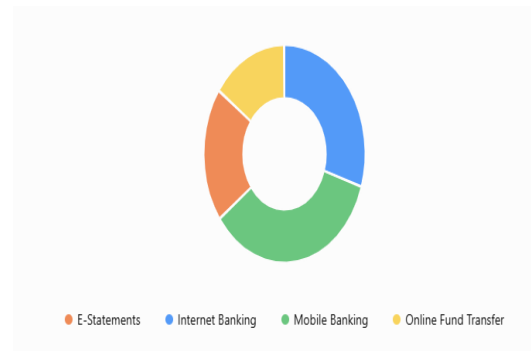
1. Awareness of Green Banking Services



Interpretation

The table indicates that 40% of respondents are aware of green banking services, while 35% are highly aware. Only 10% of respondents are unaware of green banking initiatives. This shows a good level of awareness among banking customers regarding environmentally friendly banking practices.

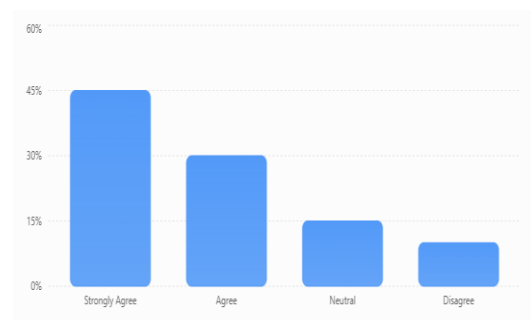
2. Most Preferred Green Banking Service



Interpretation

The analysis shows that Mobile Banking is the most preferred green banking service with 35% of respondents, followed by Internet Banking with 30%. This indicates the increasing adoption of digital banking platforms among customers.

3. Impact on Environmental Protection



Interpretation

A majority of respondents (75%) either strongly agree or agree that green banking contributes significantly to environmental protection. This highlights the positive role of banking institutions in promoting sustainability.

4. Comparison of Green Banking Adoption



Interpretation

The data reveals that private sector banks have a higher adoption rate of green banking practices (65%) compared to public sector banks (35%). This may be due to greater technological innovation and investment in digital infrastructure by private banks.

VI. Findings

- The study found that a majority of respondents are aware of green banking services and their environmental benefits.
- Green banking initiatives such as internet banking, mobile banking, e-statements, and online fund transfers are widely used by customers.
- Mobile banking emerged as the most preferred green banking service among respondents due to its convenience and accessibility.
- Most customers believe that green banking practices contribute significantly to environmental protection by reducing paper consumption and carbon emissions.
- The adoption of digital banking services has increased customer participation in eco-friendly banking activities.
- Private sector banks have shown a higher level of adoption of green banking policies compared to public sector banks.
- Public sector banks are actively promoting green banking through government-supported sustainability programs and digital banking initiatives.
- Green banking has helped banks reduce operational costs associated with paper usage, printing, and physical record maintenance.

- Customers perceive green banking as a time-saving and efficient method of conducting financial transactions.
- Environmental protection and time-saving benefits were identified as the major advantages of green banking practices.
- The implementation of green banking policies has enhanced the corporate image and social responsibility of banks.
- Increased use of electronic statements and digital transactions has significantly reduced dependency on paper-based banking processes.
- Green financing initiatives have encouraged investments in renewable energy and environmentally sustainable projects.
- Customer awareness regarding green banking is growing due to technological advancements and digital literacy programs.
- Banks adopting green technologies have experienced improved operational efficiency and service quality.
- Green banking contributes to sustainable economic development by supporting environmentally responsible business activities.
- Lack of awareness among some customers remains a challenge for the effective implementation of green banking policies.
- Initial investment costs and technological infrastructure requirements are major barriers to the adoption of green banking practices.
- Continuous innovation and employee training are essential for the successful implementation of green banking initiatives.
- The overall findings indicate that green banking policies positively impact public and private sector banks by improving efficiency, customer satisfaction, environmental sustainability, and long-term organizational performance.

VII. POLICY IMPLICATIONS

The findings of the study on green banking policies and their impact on public and private sector banks in India have several important policy implications for regulators, policymakers, and banking institutions. Green banking should be considered not merely as an environmental initiative but as an important component of long-term financial sustainability and competitiveness.

1. Strengthening Regulatory Frameworks:

Regulatory authorities should establish clear and standardized guidelines for green banking practices. Banks should be encouraged to integrate environmental and climate-related risks into their lending, investment, and risk-management frameworks. Consistent regulatory standards can improve the adoption of green banking practices across both public and private sector banks.

2. Promoting Green Financing:

Banks should be encouraged to increase financing for renewable energy, clean transportation, energy-efficient infrastructure, sustainable agriculture, waste management, and other environmentally responsible projects. Appropriate incentives and risk-sharing mechanisms can encourage banks to expand green lending portfolios.

3. Developing Standardized Green Banking Indicators:

A common framework should be developed to measure and compare banks' green performance. Indicators covering green lending, paperless operations, energy consumption, carbon emissions, digital banking, environmental risk assessment, and sustainable investments can improve transparency and accountability.

4. Encouraging Technological Adoption:

Banks should continue investing in digital banking infrastructure, electronic documentation, online transactions, and energy-efficient technologies. Such measures can reduce paper consumption and operational costs while simultaneously improving customer convenience and environmental performance.

5. Improving Environmental Risk Management:

Banks should incorporate environmental and climate-related risks into credit appraisal and investment decisions. Projects with significant environmental risks should undergo appropriate environmental assessment before financing. This can help reduce potential financial losses arising from climate-related and environmental risks.

6. Supporting Public and Private Sector Banks Equally:

Policy measures should recognize the different operational capabilities of public and private sector banks. Public sector banks may require greater technological and institutional support, whereas private sector banks can be encouraged to further strengthen innovation and sustainable financial products. A balanced policy framework can promote sustainable practices across both banking segments.

7. Enhancing Disclosure and Transparency:

Banks should be encouraged to regularly disclose their green banking activities, green-finance portfolios, environmental performance, and sustainability-related targets. Transparent reporting can help regulators, investors, customers, and other stakeholders evaluate the actual contribution of banks toward environmental sustainability.

8. Increasing Customer and Employee Awareness:

Banks should conduct awareness programs to educate customers and employees about green financial products and environmentally responsible banking practices. Greater awareness can increase the adoption of green loans, digital banking, electronic statements, and other sustainable financial services.

9. Providing Incentives for Green Banking:

Government and regulatory authorities can introduce suitable incentives, such as preferential financing mechanisms, refinancing support, tax benefits, or recognition schemes for banks

demonstrating strong performance in green financing and environmental sustainability. Such incentives can encourage wider participation in green banking.

10. Strengthening Long-Term Sustainability Strategies:

Green banking policies should be integrated into the core strategic planning of banks rather than treated as short-term corporate social responsibility activities. As highlighted by recent research, green banking can contribute not only to environmental performance but also to competitiveness and overall banking performance. Therefore, banks should establish measurable long-term sustainability objectives and periodically evaluate their progress.

VIII. LIMITATIONS AND FUTURE SCOPE

A. Limitations

1. **Limited Study Scope:** The study focuses primarily on green banking policies and their impact on public and private sector banks in India. Therefore, the findings may not be directly generalizable to banking sectors in other countries.
2. **Data Availability:** The availability and consistency of bank-level information related to green financing, environmental performance, carbon emissions, and sustainability indicators may be limited. Differences in reporting practices among banks can affect the comparability of results.
3. **Dependence on Secondary Data:** If the study relies mainly on annual reports, sustainability reports, regulatory publications, and other secondary sources, the analysis may not fully capture the perceptions and experiences of bank employees and customers.
4. **Variation in Green Banking Practices:** Public and private sector banks may follow different

approaches to implementing green banking initiatives. Differences in technological infrastructure, organizational policies, financial capacity, and management priorities may influence the observed outcomes.

5. **Measurement Challenges:** Green banking and sustainable performance are multidimensional concepts. It can be difficult to capture their complete impact using a limited set of financial and environmental indicators.
6. **Time Period Constraint:** The findings may be influenced by the selected study period. Changes in regulations, technology, climate-related risks, and customer preferences over time may produce different results in future studies.
7. **External Factors:** Bank performance is influenced by several factors beyond green banking, including interest rates, economic conditions, regulatory changes, technological developments, and market competition. Separating the specific effect of green banking policies from these factors can therefore be challenging.

B. Future Scope

1. **Longitudinal Studies:** Future research can examine green banking practices over a longer period to determine whether their effects on financial and environmental performance increase or decrease over time.
2. **Comparative International Research:** Future studies can compare Indian banks with banks in other emerging and developed economies to identify differences in green banking regulations, adoption, financing mechanisms, and sustainability outcomes.

3. Advanced Statistical and Econometric Methods:

Researchers can employ panel-data models, Structural Equation Modeling (SEM), Data Envelopment Analysis (DEA), and other advanced techniques to establish stronger relationships between green banking practices and bank performance.

4. Inclusion of Customer Perspectives:

Future research can investigate customer awareness, attitudes, satisfaction, and willingness to adopt green banking products. This would provide a broader understanding of demand-side factors influencing green banking.

5. Impact of Digital Banking:

Further studies can examine how digital banking, artificial intelligence, blockchain, cloud computing, and paperless financial services contribute to reducing the environmental footprint of banking operations.

6. Green Finance and Climate Risk:

Future research can investigate the relationship between green financing, climate-related financial risks, credit risk, and long-term financial stability of banks.

7. Bank-Level Comparative

Analysis: Future studies can compare individual public and private sector banks to identify which institutions have achieved stronger outcomes through green banking initiatives and determine the practices responsible for their performance.

8. Development of Green Banking

Index: Researchers can develop a comprehensive **Green Banking Performance Index** incorporating green lending, digitalization, energy efficiency, environmental risk management, sustainability disclosure, and green investment. Such an index could facilitate

systematic comparison among banks.

IX. CONCLUSION

Green banking has become an essential component of the modern banking system, promoting environmental sustainability while enhancing operational efficiency and customer convenience. The study reveals that both public and private sector banks have made significant efforts to implement green banking policies through initiatives such as internet banking, mobile banking, electronic statements, online fund transfers, and green financing programs. These initiatives have contributed to reducing paper consumption, lowering carbon emissions, minimizing operational costs, and improving the overall efficiency of banking services. The findings indicate that customers are increasingly aware of and receptive to green banking practices, recognizing their benefits in terms of time savings, convenience, and environmental protection.

The study further highlights that private sector banks have demonstrated a relatively higher level of adoption of advanced green banking technologies, while public sector banks have played a crucial role in expanding sustainable banking practices through government-supported programs and broader customer outreach. Green banking not only supports environmental conservation but also strengthens the corporate image, social responsibility, and long-term sustainability of banking institutions. Although challenges such as technological costs, infrastructure requirements, and limited customer awareness still exist, the overall impact of green banking policies is highly positive. Therefore, banks should continue to invest in innovative green technologies, customer awareness programs, and sustainable financing initiatives to achieve greater environmental and economic benefits. The study concludes that green banking serves as an effective tool for promoting sustainable development and creating a greener, more responsible banking sector for the future.

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