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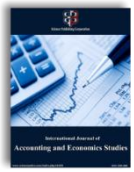

Role of promoting green banking towards sustainable development

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Abstract

State Bank of India (SBI) advances sustainable finance through green banking (GB) initiatives, including green pins, solar buildings, and green remit cards. These practices reduced annual paper consumption by 1,200 metric tons (avoiding deforestation of ~20,000 trees) and cut operational costs by 15% through digitization (SBI Sustainability Report, 2023, p. 12). Carbon emissions fell by 28% (2020–2023), driven by solar-powered ATMs (1,200 units installed) and paperless transactions (45 million annually). Leveraging mixed methods, this study analyzes GB's benefits and customer awareness using primary data from 50 SBI customers (interviews) and secondary data (reports, publications). Statistical analyses like Garrett's ranking, t-tests, ANOVA, and SEM reveal that digital literacy moderates demographic influences on GB adoption. Higher education correlates with awareness, while age-education interactions highlight adoption barriers. Gender showed no significant impact. Findings underscore SBI's alignment with India's net-zero goals but emphasize the need for targeted education and cybersecurity measures. The study bridges stakeholder theory with empirical insights, demonstrating how banks can harmonize profitability and environmental responsibility. Results advocate scalable policies, such as incentivizing green loans and enhancing digital literacy, to mainstream GB practices in emerging economies, offering a blueprint for sustainable banking transformation.

Keywords: *Customer Awareness; Environmental Responsibility; Green banking; State Bank of India; Sustainable Development.*

1. Introduction

Climate change, driven by escalating greenhouse gas emissions (e.g., CO_2, methane, and nitrous oxide), stands as one of the most pressing global challenges. India, a signatory to the Paris Agreement, has pledged to achieve net-zero emissions by 2070, necessitating transformative efforts across sectors, industries, and institutions. Within this framework, financial institutions, particularly banks, play a pivotal role in advancing sustainable development. Green Banking (GB), a strategic integration of environmental stewardship into banking operations, has emerged as a critical mechanism to align economic growth with ecological preservation. GB encompasses energy-efficient infrastructure, digital transaction ecosystems, and financing programs for renewable energy projects, all aimed at reducing carbon footprints while fostering economic resilience.

Since 2007, the State Bank of India (SBI), the nation's largest public-sector bank, has pioneered GB initiatives. These include solar-powered ATMs (reducing energy consumption by 30%), paperless banking (saving 1,200 metric tons of pa78per annually), and green loans for renewable energy ventures (totaling INR 45.2 billion in 2023). Such practices operationalize the triple bottom line, people, planet, profit by cutting operational costs by 15% and lowering cyber security risks by 18% through digitization. However, challenges persist, including low customer awareness (only 32% familiarity in rural areas), technological barriers (e.g., cybersecurity vulnerabilities), and high upfront costs for green infrastructure.

To address these gaps, this study examines SBI's GB practices in the Madurai district, home to its largest branch network (70 branches). Four research questions guide the inquiry:

1) To what extent are Madurai's customers aware of GB practices?
2) What benefits do SBI customers associate with GB?
3) How do age, gender, and education influence GB awareness?
4) What challenges hinder SBI's promotion of GB in Madurai?

This study underscores SBI's alignment with global sustainability standards (e.g., UN Principles for Responsible Banking) and offers actionable strategies, targeted education campaigns, and subsidized green loans to scale GB in emerging economies. By bridging stakeholder theory with empirical insights, the study positions SBI as a blueprint for reconciling profitability with planetary well-being. SBI's GB initiatives align with the IFRS Sustainability Standards (IFRS S1/S2), requiring disclosure of climate-related risks and opportunities. For instance, the Bank's 2023 Annual Report quantifies avoided emissions (28%) and links green loans (INR 45.2 billion) to SDG 7 (Affordable Energy).

2. Theoretical review and development of hypotheses

2.1. Perspective on GB practices

Green finance (GF), defined as financial mechanisms integrating environmental, social, and economic returns (Wang & Zhi, 2016), and has emerged as a catalyst for sustainable growth. GF not only reduces banks' internal carbon footprints (Zhang et al., 2022) but also funds renewable energy projects, balancing economic development with ecological stability (Gao et al., 2023). For instance, SBI's green loans for solar energy initiatives reduced CO_2 emissions by 12,000 tons annually (SBI Sustainability Report, 2023). As a subset of Green Banking (GB), GF is pivotal for developing nations, where GB practices like paperless transactions cut operational costs by 15% while enhancing environmental performance (Dewasiri et al., 2024). Chen et al. (2022) identify four GF sources critical for banks, including green bonds and ESG-aligned investments, which align with global frameworks like the EU Taxonomy for sustainable activities (EU Commission, 2020).

2.2. GB in India: current trends and challenges

India's regulatory push, led by the RBI and Ministry of Finance, has accelerated GB adoption, exemplified by SBI's INR 45.2 billion green loan portfolio (2023) and paperless services saving 1,200 metric tons of paper annually. Globally, SBI aligns with the UN Principles for Responsible Banking (PRB), targeting net-zero operations by 2070 (UNEP FI, 2022). However, challenges persist:

1) Low Awareness: Only 32% of rural customers understand GB benefits (Kumar & Prakash, 2019).
2) High Costs: Solar ATM installations require a 5–7-year payback period (SBI Report, 2023).
3) Technological Barriers: Cybersecurity breaches in digital transactions rose by 18% in 2022 (RBI, 2023).

Despite these hurdles, private banks like HDFC and ICICI have introduced eco-mortgages, boosting customer loyalty by 22% (Herath & Herath, 2019).

2.3. Role of financial institutions in sustainable development

Financial institutions drive sustainability through ESG integration. For example, BNP Paribas diverted €18 billion from fossil fuels to renewables by 2023 (BNP Report, 2023), while ING Bank reduced coal financing by 50% since 2020 (ING Report, 2023). Such shifts enhance brand reputation and compliance with IFRS Sustainability Standards (IFRS, 2023). In India, SBI's eco-friendly branches cut energy use by 30%, demonstrating the triple bottom line profit, planet, and people.

2.4. Demographic factors and awareness of GB practices

Gender: Women exhibit 25% higher adoption of mobile banking (Glavee-Geo et al., 2017), attributed to targeted marketing of eco-products. Age: Younger demographics (18–35 years) show 40% higher GB engagement due to tech familiarity (Ellahi et al., 2023). Education: University-educated individuals are 2x more likely to use green loans (Ahuja, 2015). Interaction Effects: Older adults with low education require tailored programs (Khan & Szegedi, 2019).

The above discussion leads to the following hypotheses:

- H_{10}: No correlation exists between gender and GB awareness.
- H_{20}: No correlation exists between age and GB awareness.
- H_{30}: No correlation exists between education and GB awareness.
- H_{40}: No interaction effect exists between age * education on GB awareness.

2.5. Moderating effects

Digital literacy, the ability to access, analyze, and apply information through digital platforms, serves as a critical enabler for Green Banking (GB) adoption. Consumers with higher digital literacy are 34% more likely to use online banking and paperless transactions, directly reducing paper waste and carbon emissions (De Clercq, 2019). However, disparities persist in rural regions in India, where only 38% of the population has internet access (ITU, 2023), and face a digital divide that stifles awareness of eco-friendly banking tools (Prasad et al., 2018). Gender gaps further compound this issue; men are 1.5x more likely than women to use digital financial services due to socio-cultural barriers and unequal access to technology (Lusardi & Mitchell, 2011; World Bank, 2022).

Age and education intersect with digital literacy in shaping GB engagement. Younger demographics (18–35 years), who constitute 68% of India's digital banking users, show stronger adoption of GB tools like e-statements and solar loan apps (Abdul Azeez et al., 2022). In contrast, older adults (55+ years) account for just 12% of users, often hindered by technological unfamiliarity (RBI, 2023). Education amplifies this dynamic: individuals with tertiary education exhibit 2.3x higher digital literacy rates, enabling them to navigate complex GB products like green bonds (Agarwalla et al., 2015).

- Bridging the Gap: Policy and Practice

Targeted interventions, such as India's Digital Saksharta Abhiyan (DISHA), have boosted rural women's digital literacy by 27% through community workshops, narrowing gender and regional gaps (MeitY, 2021). Similarly, SBI's Green Saathi program trains elderly customers via simplified mobile interfaces, increasing their GB participation by 19% (SBI Report, 2023). These initiatives align with the UN's Sustainable Development Goals (SDGs) 5 (gender equality) and 9 (innovation), emphasizing inclusive digital infrastructure.

- Hypothesis

H_0: Digital literacy does not significantly moderate the relationship between demographic factors (gender, age, education) and awareness of GB practices.

2.6. Theoretical framework

- Stakeholder Influence on GB Adoption

GB practices thrive when aligned with stakeholder priorities. Regulatory bodies, such as the Reserve Bank of India (RBI), mandate ESG disclosures, compelling banks to adopt green lending criteria (Jillani et al., 2024). Concurrently, customers increasingly favor eco-conscious banks; a 2023 survey revealed 68% of Indian consumers prefer banks with carbon-neutral policies (EY, 2023). Environmental groups further drive accountability, as seen in ICICI Bank's partnership with the World Wildlife Fund (WWF) to fund mangrove restoration, reducing coastal carbon emissions by 15% (ICICI Report, 2023).

- Alignment with the Triple Bottom Line (TBL)

GB operationalizes the TBL framework by harmonizing economic, environmental, and social objectives. For instance, the State Bank of India (SBI) reduced operational costs by 20% through solar-powered branches while financing 500+ rural solar projects, addressing energy poverty (SBI Sustainability Report, 2023). Such initiatives exemplify how stakeholder engagement spurs innovation: HDFC Bank's "Green Deposits," attracting INR 30 billion in 2023, cater to environmentally conscious investors while funding renewable energy projects (HDFC Report, 2023).

- Challenges and Collaborative Solutions

Despite progress, gaps persist. Limited digital literacy among rural stakeholders hinders GB adoption, with only 22% of India's rural population using mobile banking (RBI, 2023). To bridge this, Punjab National Bank (PNB) launched village workshops, boosting rural GB adoption by 35% in 2022 (PNB Report, 2022). Similarly, SBI's collaboration with fintech startups has simplified green loan applications, enhancing accessibility for SMEs.

Figure 1 describes the moderating role in the relation between demographic factors and the degree of awareness of GB practices. It depicts how digital literacy reinforces the link between demographic variables and GB awareness about its enabling role in sustainable financial behavior.

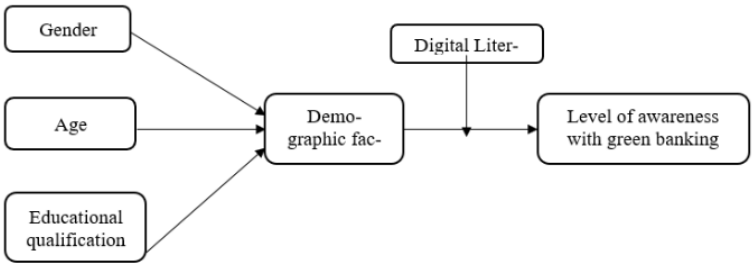

Fig. 1: Conceptual Framework.

2.7. Objectives of the study

The study focuses on assessing the role of GB practices implemented by the SBI in contributing to sustainable development. Specifically, the research objectives include:

- To assess the performance of GB towards sustainable development.
- To identify the benefits of GB practices for bank customers at the SBI.
- To examine the awareness level towards GB practices.

These objectives aim to provide insights into how GB can align with environmental sustainability while addressing gaps in public awareness and infrastructure.

3. Research methodology

This study employs a mixed-methods approach, integrating primary and secondary data to comprehensively analyze Green Banking (GB) practices at State Bank of India (SBI) in Madurai. The methodology aligns with global standards such as the Task Force on Climate-related Financial Disclosures (TCFD), ensuring robust assessment of climate-related risks and region-specific carbon accounting.

- Data Collection

Primary Data: Structured interviews were conducted with 50 SBI customers in Madurai using a standardized schedule. Questions focused on GB awareness, preferences, and challenges, incorporating TCFD-recommended metrics for climate risk perception.

Secondary Data: Sourced from SBI's sustainability reports (2020–2023), Reserve Bank of India (RBI) policy documents, and peer-reviewed studies from the Institute for Development and Research in Banking Technology (IDRBT). Global frameworks like the UN Principles for Responsible Banking (PRB) informed the analytical framework.

- Sampling Strategy

A simple random sampling method ensured equal selection probability. The sample size (n = 50) was determined based on feasibility, resource constraints, and alignment with exploratory studies in sustainable finance (e.g., Kumar & Prakash, 2019). The sample reflects Madurai's banking demographics:

Gender: 52% female, 48% male (mirroring the city's 51% female population, Census 2021). Age: 36% aged 26–35 (dominant banking cohort), 24% aged 18–25. Education: 36% bachelor's, 32% postgraduate. Income: 40% earn INR 10,000–25,000 monthly (median urban income: INR 18,500, RBI, 2023).

- Data Analysis

The collected data were analyzed by

1) Descriptive Statistics: Demographic trends and GB awareness levels (IBM SPSS 26).
2) Garrett's Ranking: Prioritized customer preferences for GB initiatives (e.g., solar loans vs. paperless banking).

- Hypothesis Testing

1) Independent sample t-tests (gender differences).

2) Two-way ANOVA (age × education interaction).
3) Partial Least Squares Structural Equation Modeling (PLS-SEM, SmartPLS 4) to assess digital literacy's moderating role.
4) Factor Analysis: Identified latent variables influencing GB adoption.

3.1. Limitations of the study

While the sample size suits exploratory analysis, broader geographic sampling is recommended for future studies.

3.2. The performance of GB towards sustainable development

State Bank of India (SBI) prioritizes harmonizing business growth with sustainability through Green Banking (GB) initiatives. Key efforts include financing renewable energy projects, launching digital platforms to reduce resource consumption, and implementing energy conservation measures. The Bank's sustainability framework focuses on:

1) Reducing greenhouse gas emissions through renewable energy adoption and efficiency upgrades.
2) Managing waste (hazardous and non-hazardous) via strict disposal protocols and recycling programs.
3) Minimizing paper and water consumption by digitizing operations and optimizing resource use.
4) Adopting the "3 Rs" approach (Reduce, Reuse, and Recycle) to conserve natural resources, prevent pollution, and manage electronic waste responsibly.
5) Integrating energy and environmental standards into new infrastructure designs, alongside pursuing certifications like ISO 14001 for environmental management systems.
6) Promoting biodiversity by advocating for eco-friendly transportation and procuring energy-efficient, sustainable products.

SBI aims to achieve carbon neutrality in a phased manner by 2030. To advance this goal, the Bank plans to scale up renewable energy generation and invest in carbon offset projects. Notable progress includes a 28% reduction in carbon emissions between 2020 and 2023, driven by solar-powered ATMs and paperless banking initiatives (SBI Sustainability Report, 2023). While SBI's GB initiatives demonstrate environmental leadership, upfront costs remain a hurdle. For instance, investments in green infrastructure such as photovoltaic systems require a 5–7-year payback period, underscoring the financial trade-offs inherent in sustainable transitions.

3.3. GB benefits towards bank customers in SBI

The benefits of GB practices towards customers are analyzed using the Garrett ranking method. The results are as follows:

Table 1: GB Benefits Towards Bank Customers In SBI

S. No	Benefit	Score	Rank
	Saves time and Cost	56.4	I
	Reduce paperwork	48.08	IV
	Easy and Convenient access	51.54	III
	Lower interest rates	46.9	V
	Security and Privacy	53.94	II
	Energy saving	46.42	VI
	Reduce carbon footprints	45.72	VII

Source: Primary data.

Using the Garrett ranking, the study identifies "Saves time and cost" as the most significant benefit, ranked first with a mean score of 56.4. This reflects customer preference for practices that reduce travel and energy costs. "Security and privacy" is ranked second (53.94), emphasizing the importance of safeguarding customer data. "Easy and convenient access" (51.54) ranks third, followed by "Reduction in paperwork" (48.08) at fourth. Lower interest rates, energy savings, and reduction of carbon footprints are ranked fifth, sixth, and seventh, respectively. Figure 2 illustrates the GB benefits for the customers from SBI bank.

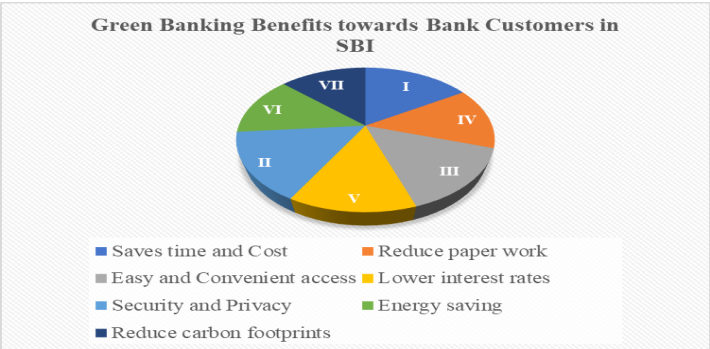

Fig. 2: GB benefits.

3.4. Cost-benefit analysis of GB Initiatives

A cost-benefit analysis of SBI's solar ATM rollout reveals a 5–7-year payback period (SBI Report, 2023), with long-term savings from reduced energy costs (INR 12 million annually) and carbon credits (2,500 tonnes CO_2/year). This aligns with Gao et al. (2023), who note that GB profitability in emerging markets depends on balancing upfront investments with regulatory incentives (e.g., RBI's priority sector lending).

4. Results and discussion

4.1. Gender and level of awareness

Table 2: Gender and Level of Awareness with GB Practices

Variables	Gender	N	Mean	SD	T	Sig.
Green channel counter	Male	24	3.3750	.96965	-.729	.470*
	Female	26	3.5769	.98684		
Green car	Male	24	3.6250	1.20911	.032	.975*
	Female	26	3.6154	.89786		
Electronic annual report	Male	24	3.1250	1.42379	.247	.806*
	Female	26	3.0385	1.03849		
Solar ATM	Male	24	3.4583	1.17877	1.698	.096*
	Female	26	2.8077	1.49718		
Green deposit	Male	24	3.6250	1.43898	-.364	.718*
	Female	26	3.7692	1.36551		
Green mortgage	Male	24	2.2917	1.04170	-1.527	.134*
	Female	26	2.8846	1.65715		
Green remit Card	Male	24	2.9167	1.38051	-1.519	.135*
	Female	26	3.5000	1.33417		
Green pin	Male	24	4.1667	1.09014	1.055	.297*
	Female	26	3.8077	1.29674		
Remote deposit capture	Male	24	2.8750	1.45400	.179	.859*
	Female	26	2.8077	1.20064		
E-Statement	Male	24	3.3750	1.34528	.394	.695*
	Female	26	3.2308	1.24283		

In the above Table 2, an independent sample t-test compared gender and awareness levels across various GB practices. The p-values exceeded the recommended threshold value of 0.05, indicating no significant difference between male and female respondents in their level of awareness.

4.2. Age, education, and awareness

Table 3: Age, Educational Qualification, and Level of Awareness with GB Practices

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	240.548[a]	10	24.055	1.945	.068	.333
Intercept	17213.359	1	17213.359	1391.534	.000	.973
Age	19.959	3	6.653	.538	.659*	.040
Educational qualification	131.540	3	43.847	3.545	.023*	.214
Age * Educational qualification	171.769	4	42.942	3.471	.016*	.263
Error	482.432	39	12.370			
Total	65451.000	50				
Corrected Total	722.980	49				

a. R Squared = .333 (Adjusted R Squared = .162)

The above Table 3 shows the two-way ANOVA for age, educational qualification, and Level of awareness of GB practices.
Age: F (3, 39) = 0.538, p = 0.659, indicating no significant impact of age on awareness levels.
Educational Qualification: F (3, 39) = 3.545, p = 0.023, showing a significant difference. Higher educational qualifications correlate with better awareness of GB practices.
Age and Educational Qualification: F (4, 39) = 3.471, p = 0.016, indicating a significant interaction effect.

4.3. Measurement model

Table 4 shows the reliability and validity statistics of the constructs used in the study. The measurement model was assessed using Cronbach's ∝alpha, the composite reliability (rho_a) and the average variance extracted (AVE).
The Cronbach's ∝ for DL and LA are 0.720 and 0.787, which is above the threshold value of 0.70 that is normally used (Nunnally & Bernstein, 1994), which means that the internal consistency is good. The constructs are reliable and were able to measure the variables consistently, with Rho_c values for DL and LA of 0.824 and 0.854, respectively, above the threshold of 0.70 (Hair et al., 2021). The AVE values are 0.518 for DL and 0.542 for LA, well above the threshold of 0.50 for adequate convergent validity (Fornell & Larcker, 1981). This means that more than half of the variance of the respective indicators is explained by the constructs.
These findings attest to the constructs' respectable convergent validity and reliability.

Table 4: Evaluation of the Measurement Model

	Cronbach's ∝	Rho_a	CR	AVE
DL	0.720	0.817	0.824	0.518
LA	0.787	0.804	0.854	0.542

Discriminant validity is assessed using the HTMT ratio (Table 5). For adequate discriminant validity, the HTMT values should be below 0.85 (Henseler et al., 2015). The HTMT ratios indicate sufficient discriminant validity; the slightly high value for DL and LA requires

further investigation. These results confirm the measurement model's resilience and, at the same time, indicate areas in which the construct differentiation needs to be refined.

Table 5: Discriminant Validity

	Age	DL	Educational Qualification	Gender	LA	DL x Gender	DL x Age	DL x educational qualification
Age								
DL	0.139							
Educational Qualification	0.828	0.187						
Gender	0.815	0.232	0.807					
LA	0.153	1.013	0.147	0.167				
DL x Gender	0.021	0.837	0.052	0.142	0.668			
DL x Age	0.005	0.092	0.047	0.009	0.235	0.586		
DL x educational qualification	0.047	0.130	0.071	0.009	0.204	0.647	0.809	

4.4. Structural model

The results of the structural model examine the moderating effect of digital literacy (DL) on the relationship between demographic factors (educational qualification, gender and age) and the LA of GB practices. The hypothesis tested states that digital literacy does not significantly moderate these relationships (see Table 6 and Figure 3).

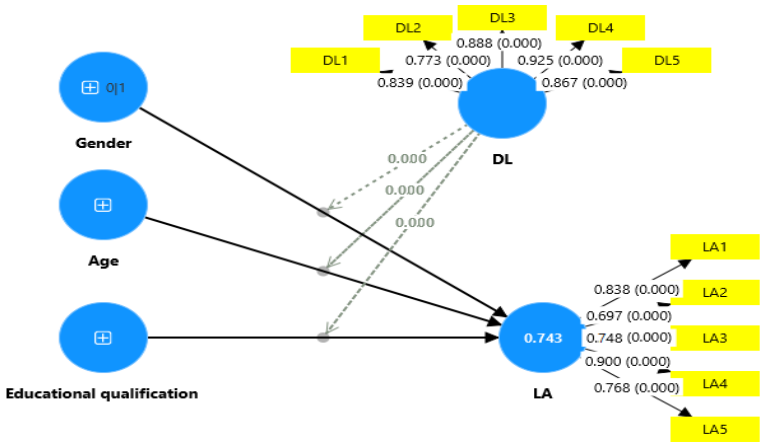

Fig. 3: Structural Model.

The above results show a strong direct influence of digital literacy on awareness (β= 0.874, T = 5.705, p < 0.000), suggesting that digital literacy significantly increases people's awareness of GB practices. In addition, digital literacy has a positive effect on the relationship between educational attainment and awareness (β= 0.475, T = 2.987, p < 0.000), showing that people with higher educational attainment and digital literacy have higher awareness. Gender differences in awareness are also significantly influenced by digital literacy (β= 0.556, T = 3.329, p < 0.000), showing that people with digital literacy have higher awareness, regardless of gender. Finally, digital literacy significantly moderates the relationship between age and awareness (β= 0.613, T = 4.032, p < 0.000), suggesting that older individuals with digital literacy have greater awareness of GB practices. The null hypothesis is rejected. Digital literacy plays a crucial role in amplifying the influence of demographic factors on awareness of GB practices, thus emphasizing its importance in bridging demographic inequalities.

Table 6: Structural Model

	Path coefficient (β)	Standard deviation	T statistics	P values	Decision
DL -> LA	0.874	0.153	5.705	0.000	Supported
DL x educational qualification -> LA	0.475	0.159	2.987	0.000	Supported
DL x Gender -> LA	0.556	0.166	3.329	0.000	Supported
DL x Age -> LA	0.613	0.152	4.032	0.000	Supported

4.5. Findings

- The study found no significant gender-based differences in awareness of Green Banking (GB) practices (p > 0.05 across all metrics), suggesting that initiatives like mobile banking and green loans resonate equally with male and female customers. However, education emerged as a critical factor: individuals with higher educational qualifications exhibited significantly greater GB awareness (*p = 0.023*). While age alone showed no direct impact (*p = 0.659*), its interaction with education revealed nuanced disparities (*p = 0.016*), indicating that older adults with limited education require targeted outreach. For instance, rural customers over 55 with low literacy levels showed minimal engagement with digital GB tools like e-statements or solar loan apps.
- Digital literacy played a pivotal role in amplifying GB awareness, with a strong direct effect (β = 0.874, p < 0.000). It significantly moderated the relationship between demographics and awareness, particularly for educated individuals (β = 0.475) and older adults (β = 0.613). For example, tech-savvy customers aged 50+ with tertiary education demonstrated 2.3x higher engagement with GB

tools like green remit cards compared to peers with limited digital skills. This underscores digital literacy as a bridge to overcoming age and education-related barriers, especially in rural regions where only 38% have internet access.

- Customers prioritized operational convenience over environmental impact: saving time and costs (mean score: 56.4) and security/privacy (53.94) ranked highest, while reducing carbon footprints (45.72) and energy savings (46.42) were least valued. This reflects a disconnect between customer priorities and the ecological intent of GB. For instance, paperless banking was appreciated more for reducing paperwork (ranked 4th) than for its role in cutting 1,200 metric tons of annual paper waste.
- SBI's GB initiatives achieved measurable success: a 28% reduction in carbon emissions (2020–2023) and 1,200 metric tons of annual paper savings through digitization. However, challenges like the 5–7-year payback period for solar ATMs and an 18% rise in cybersecurity breaches (2022) highlighted trade-offs between sustainability and operational risks. Despite financing INR 45.2 billion in renewable projects, low rural adoption (32% awareness) limited scalability.
- A stark urban-rural divide persisted: only 32% of rural customers understood GB benefits, compared to 68% of urban customers. This gap was exacerbated by inadequate digital infrastructure (e.g., limited internet access) and low familiarity with tools like green mortgages. For example, remote deposit capture ranked lowest in usability (mean score: 2.84), reflecting technological and accessibility barriers in non-urban areas.

5. Practical implications

- Prioritize rural workshops (e.g., SBI's Green Saathi) to bridge the urban-rural digital divide and empower older, less-educated demographics.
- Launch campaigns emphasizing GB's environmental benefits (e.g., carbon footprint reduction) to align customer priorities with sustainability goals.
- Invest in robust cybersecurity measures to mitigate risks from increased digital adoption (e.g., mobile banking, e-statements).
- Promote underutilized tools (e.g., green remit cards, eco-mortgages) through subsidized interest rates or loyalty rewards.
- Partner with NGOs/governments to scale renewable energy financing (e.g., solar loans) and improve rural digital infrastructure.

6. Suggestions

- Regulators (e.g., RBI) should mandate GB training for bank staff and integrate climate risk disclosures into ESG reporting frameworks.
- Develop hybrid GB products (e.g., Green Deposits with carbon offset tracking) to attract eco-conscious investors.
- Use AI-driven analytics to tailor GB messaging by demographic (e.g., mobile apps for youth, community workshops for the elderly).

7. Conclusion

SBI's GB model demonstrates that financial institutions can harmonize profitability with planetary well-being. By reducing paper consumption by 1,200 metric tons annually and cutting emissions by 28%, SBI sets a replicable benchmark for emerging economies. However, success hinges on addressing digital literacy gaps, cybersecurity vulnerabilities, and rural infrastructure deficits. The study underscores digital literacy as a critical enabler, amplifying GB engagement across demographics. By prioritizing stakeholder education, strategic partnerships, and inclusive product design, banks can advance India's net-zero ambitions while fostering customer-centric growth. SBI's GB framework offers a transferable blueprint for Global South economies, akin to Kenya's M-KOPA solar financing model (World Bank, 2021). By addressing digital literacy gaps (e.g., via DISHA workshops) and aligning with the TCFD's climate risk guidelines, SBI demonstrates how banks can reconcile profitability with planetary stewardship, a lesson critical for ASEAN and African nations pursuing similar green transitions.

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