

GREEN BANKING IMPLEMENTATION TO USE ECO-FRIENDLY TECHNOLOGY: SBI

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ABSTRACT

Green banking has emerged as an essential strategy for promoting sustainable development and environmental conservation within the financial sector. The concept focuses on minimizing the environmental impact of banking operations through digitalization, paperless transactions, energy-efficient practices, and environmentally responsible lending policies. This study examines the implementation of green banking initiatives at the State Bank of India (SBI) and evaluates customer awareness, adoption patterns, and satisfaction levels regarding green banking services. The research employs both primary and secondary data sources to analyze customer perceptions and the effectiveness of green banking practices. Findings indicate that digital banking services such as mobile banking, internet banking, online bill payments, and paperless transactions have significantly enhanced customer convenience while reducing carbon emissions and resource consumption. The study also reveals that customer awareness plays a crucial role in the successful adoption of green banking services. However, challenges such as limited awareness of advanced green products, technological barriers, and trust concerns continue to hinder widespread acceptance. The research concludes that green banking not only supports environmental sustainability but also improves operational efficiency and customer satisfaction. Strengthening awareness programs, introducing innovative green financial products, and encouraging sustainable investment practices can further enhance the effectiveness of green banking initiatives in India.

Keywords: Green Banking, Sustainability, SBI, Digital Banking, Environmental Protection, Paperless Banking, Customer Satisfaction, Sustainable Finance.

I. INTRODUCTION

The increasing concern regarding climate change, environmental degradation, and sustainable economic development has encouraged organizations across industries to adopt environmentally responsible practices. Green banking has emerged as a significant initiative within the financial sector, promoting eco-friendly banking operations and sustainable financing activities (Bihari & Pandey, 2023) [1]. Green banking refers to the integration of environmental and social considerations into banking activities to reduce carbon footprints and encourage sustainable development (Raj & Rajan, 2022) [2]. Financial institutions play a crucial role in supporting environmentally responsible projects through green lending policies (Murugan, 2024) [3]. The adoption of digital banking technologies such as internet banking, mobile banking, electronic fund transfers, and paperless transactions has significantly reduced resource consumption (Riya Gupta, 2024) [4]. Sustainable banking practices enhance environmental protection while improving operational efficiency (Narayanan & Chandrasekaran, 2022) [5]. Green banking also contributes to cost reduction through decreased paper usage and energy conservation

(Vijayakumar & Shashikumar, 2021) [6]. Financial institutions worldwide have increasingly recognized their responsibility toward environmental sustainability (ADB, 2019) [7]. The banking sector indirectly influences environmental outcomes through financing decisions (Gobinda Deka, 2024) [8]. Therefore, integrating sustainability into banking operations has become a strategic priority (Girmakar & Sudharshan, 2023) [9]. The Reserve Bank of India has encouraged banks to adopt environmentally responsible banking frameworks (Rumila & Guruswamy, 2023) [10]. Green banking practices include green loans, renewable energy financing, green mortgages, and environmentally friendly investments (Bhardwaj & Malhotra, 2023) [11]. These initiatives help achieve long-term environmental and economic sustainability (Beigi et al., 2022) [12]. Green banking also enhances customer engagement by providing convenient digital services (Suresh Chandra Bihari & Mahapatra, 2022) [13]. Consequently, green banking has become an integral component of sustainable financial management (Kavitha & Muthumeenaksh, 2021) [14].



State Bank of India (SBI), being India's largest public sector bank, has undertaken several green banking initiatives aimed at promoting sustainability and environmental awareness among customers (Datey, 2020) [15]. The bank encourages customers to use digital channels and paperless banking services (Sethu & Saini, 2021) [16]. SBI has introduced various eco-friendly financial products to support sustainable development (Singh & Soni, 2021) [17]. Customer awareness and acceptance are essential for the successful implementation of these initiatives (Mandal, 2021) [18]. Studies indicate that customer perceptions significantly influence the adoption of green banking services (Dib & Al-Msallam, 2020) [19]. The growing use of mobile banking and internet banking has accelerated green banking adoption (Meenu Kumar, 2019) [20]. Service quality dimensions such as reliability and responsiveness influence customer satisfaction (Mishra, 2019) [21]. Technological innovation has enabled banks to improve green banking service delivery (Selvamuthukumar & Arul, 2018) [22]. Environmental consciousness among consumers continues to increase (Suvittawat, 2018) [23]. Green banking supports financial inclusion and sustainable growth (Saddy, 2017) [24]. Enhanced service quality contributes to customer retention (Velanganni, 2014) [25]. Digital transformation facilitates efficient banking operations (Gupta, 2024) [26]. Sustainable financial products support environmental preservation (Narayanan & Chandrasekaran, 2022) [27]. Green banking strengthens corporate social responsibility initiatives (Raj & Rajan, 2022) [28]. It promotes responsible consumption and production patterns (Murugan, 2024) [29]. Therefore, evaluating SBI's green banking initiatives

is important for understanding their impact on customer satisfaction and environmental sustainability (Vijayakumar et al., 2024) [30].

II. LITERATURE SURVEY

Several researchers have examined the role of green banking in promoting sustainability and customer satisfaction. Riya Gupta (2024) [1] reported that customers are increasingly aware of environmental issues but face challenges in adopting green banking products. Narayanan and Chandrasekaran (2022) [2] found that demographic factors significantly influence customer commitment toward green banking services. Vijayakumar and Shashikumar (2021) [3] observed that bankers exhibit varying perceptions regarding the implementation of green banking systems. Gobinda Deka (2024) [4] identified technical barriers and lack of awareness as major obstacles to green banking adoption. Girmakar and Sudharshan (2023) [5] emphasized the importance of creating awareness among middle-aged and senior citizens. Raj and Rajan (2022) [6] highlighted the indirect role of banks in environmental sustainability through responsible financing. Murugan (2024) [7] stated that green banking supports sustainable economic growth through environmentally responsible strategies. Vijayakumar et al. (2024) [8] argued that financial institutions should establish clear green objectives. The Asian Development Bank (2019) [9] stressed the need for policy interventions supporting green finance. Rumila and Guruswamy (2023) [10] concluded that electronic banking services significantly reduce carbon footprints. Bihari and Pandey (2023) [11] found that paperless banking enhances sustainability. Bhardwaj and Malhotra (2023) [12] emphasized reducing operational carbon emissions through technological innovation. Beigi et al. (2022) [13] demonstrated a positive relationship between e-banking quality and customer loyalty. Suresh Chandra Bihari and Mahapatra (2022) [14] identified reliability as a key determinant of customer satisfaction. Kavitha and Muthumeenaksh (2021) [15] observed that cooperative banks lag in technology adoption.

Further studies reveal that customer relationship management significantly influences banking satisfaction (Datey, 2020) [16]. Sethu and Saini (2021) [17] emphasized maintaining service quality in digital platforms. Singh and Soni (2021) [18] identified multiple factors affecting customer satisfaction. Mandal (2021) [19] reviewed dimensions influencing retail banking satisfaction. Dib and Al-Msallam (2020) [20] established a strong relationship between service quality and loyalty. Meenu Kumar (2019) [21] applied the SERVQUAL model to evaluate public sector banking services. Mishra (2019) [22] reported gaps between expected and perceived service quality. Selvamuthukumar and Arul (2018) [23] emphasized product innovation. Suvittawat (2018) [24] highlighted security and customer support as critical factors. Saddy (2017) [25] discussed risks associated with banking services. Velanganni (2014) [26] linked service quality improvements to customer satisfaction. Gupta (2024) [27], Deka (2024) [28], Murugan (2024) [29], and Vijayakumar et al. (2024) [30] collectively emphasized that awareness, technology, and sustainability remain the key drivers of successful green banking implementation.

III. RESEARCH METHODOLOGY

This study adopts a descriptive research design to evaluate the implementation and effectiveness of green banking practices at the State Bank of India (SBI). Both primary and secondary sources of data were utilized to obtain

comprehensive information regarding customer awareness, perception, adoption behavior, and satisfaction with green banking services. Primary data were collected through a structured questionnaire distributed among SBI customers. The questionnaire included demographic details, awareness levels, usage patterns of green banking products, factors influencing adoption, and customer satisfaction regarding green banking initiatives. Secondary data were collected from journals, research articles, books, RBI reports, SBI annual reports, government publications, and published literature related to sustainable finance and green banking. The use of multiple data sources enhanced the reliability and validity of the findings.

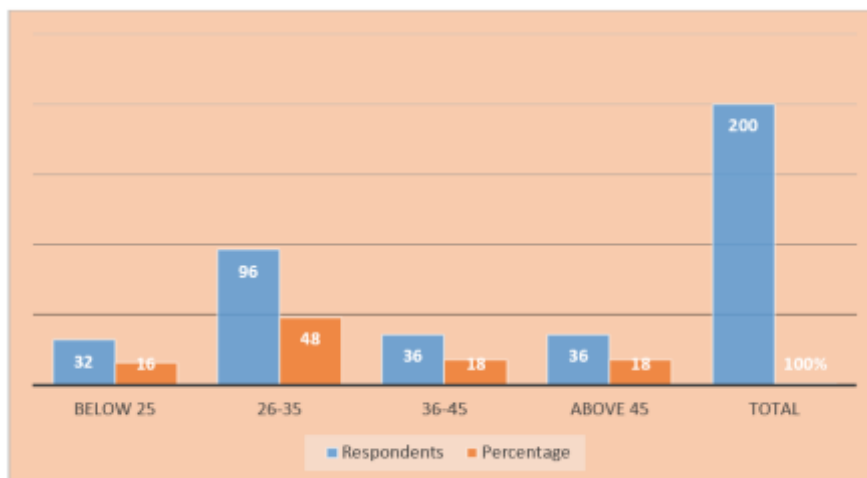
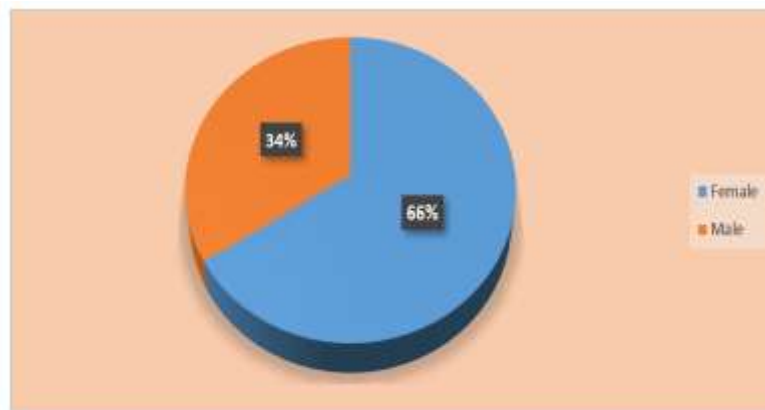
The study employed a simple random sampling technique to select respondents from the target population. A sample size of 200 customers was considered adequate for analyzing customer perceptions and identifying trends associated with green banking adoption. Data collected from respondents were systematically organized and analyzed using statistical techniques such as percentage analysis, frequency distribution, and descriptive statistics. The analysis focused on customer awareness of green banking services, preferred green banking products, barriers to adoption, and satisfaction levels. Findings were interpreted to identify patterns and relationships between demographic variables and green banking behavior. The methodology further assessed the effectiveness of SBI's initiatives in promoting sustainable banking practices and reducing environmental impacts through digitalization. The research framework enabled the identification of major challenges and opportunities associated with green banking implementation. The outcomes provide practical recommendations for enhancing customer awareness, improving green product offerings, strengthening digital banking infrastructure, and encouraging environmentally responsible financial behavior. The methodology ensures a systematic approach for evaluating green banking initiatives and contributes valuable insights into sustainable banking development in India.

IV. RESULTS & DISCUSSION

The findings reveal a positive perception of green banking among SBI customers. The majority of respondents associated green banking with e-banking and paperless banking services, indicating growing awareness regarding environmentally responsible banking practices. Mobile banking, net banking, and online bill payment services emerged as the most preferred green banking products due to their convenience, accessibility, and time-saving benefits. The results further indicate that ease of use and convenience are the primary factors influencing customers to adopt green banking services. A significant proportion of respondents demonstrated awareness of online banking, mobile banking, and ATM services; however, awareness regarding advanced green financial products such as green deposits, green mortgages, green loans, and green credit cards remained relatively low. Lack of awareness was identified as the most significant barrier to adoption, followed by trust concerns and limited availability of specialized green banking products. The findings also suggest that digital banking contributes substantially to reducing paper consumption, operational costs, and environmental impacts while enhancing customer satisfaction.

Gender	Respondents	Percentage
Female	132	66
Male	68	34
Total	200	100

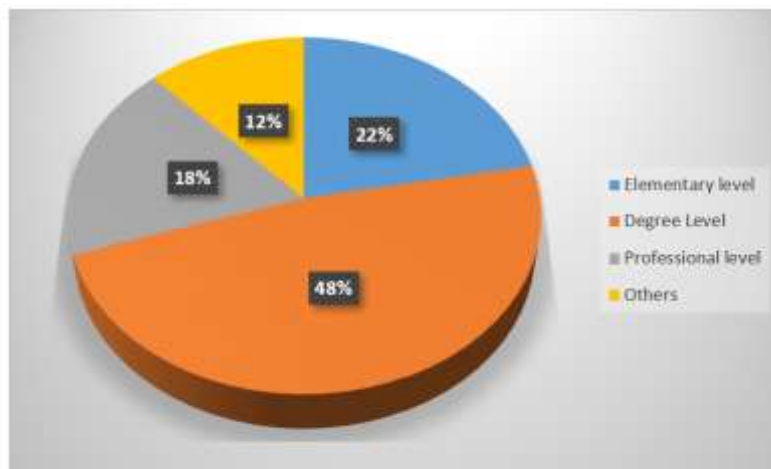
Source: Data compiled from the field study



Qualification	Respondents	Percentage
Elementary level	44	22
Degree Level	96	48
Professional level	36	18
Others	24	12
Total	200	100

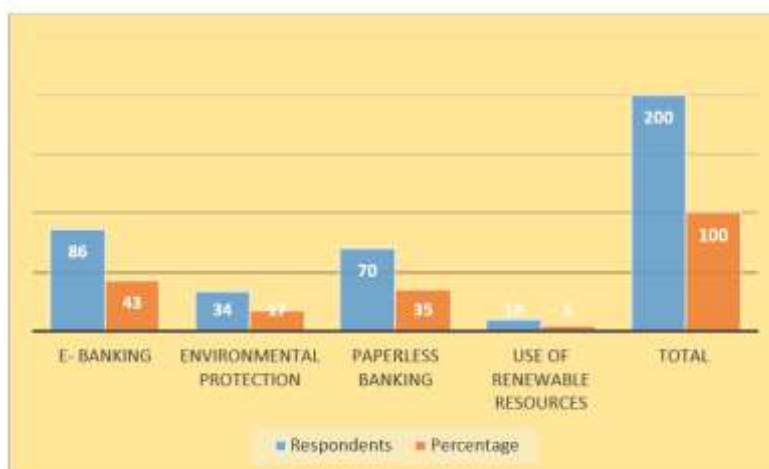
Source: Data compiled from the field study

Customers expressed positive opinions regarding the efficiency and effectiveness of SBI's digital banking initiatives. The study confirms that green banking practices support environmental sustainability while simultaneously improving service quality and operational performance. Furthermore, demographic factors such as age, education, and technological familiarity influence adoption behavior. The results demonstrate that green banking initiatives have successfully encouraged customers to shift toward digital channels, thereby supporting sustainable development objectives. However, continuous awareness campaigns, customer education programs, and the introduction of innovative green financial products are necessary to maximize customer participation and achieve broader environmental benefits through green banking.



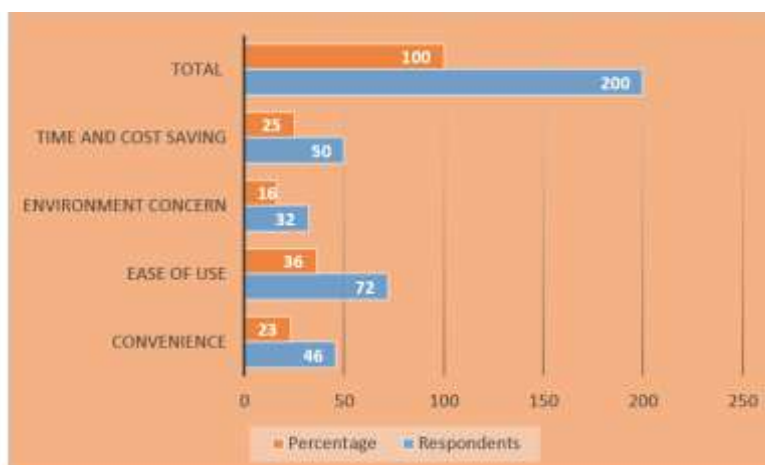
Green Banking	Respondents	Percentage
E- banking	86	43
Environmental protection	34	17
Paperless banking	70	35
Use of renewable resources	10	5
Total	200	100

Source: Data compiled from the field study

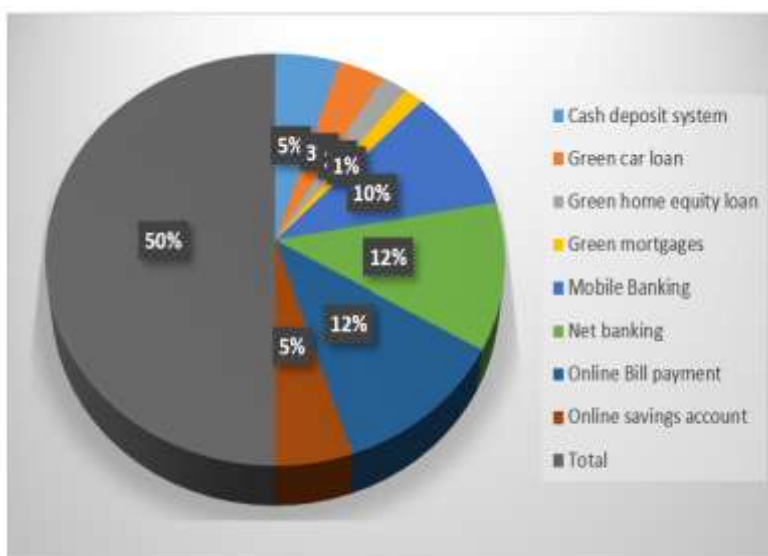


Influencing Factors	Respondents	Percentage
Convenience	46	23
Ease of use	72	36
Environment concern	32	16
Time and cost saving	50	25
Total	200	100

Source: Data compiled from the field study



Green banking service/product	Percentage of use
Cash deposit system	10
Green car loan	7
Green home equity loan	4
Green mortgages	3
Mobile Banking	20
Net banking	23
Online Bill payment	23
Online savings account	10
Total	100



Particulars	Percentage (%)		
	Aware	Neutral	Not aware
Online banking	85	15	0
Mobile banking	87	13	0
Banking through ATM's	95	5	0
Green deposits	12	32	56
Green mortgages & loans	13	35	52
Green credit cards	16	33	51
Green reward checking accounts	10	32	58

Particulars	Percentage (%)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Less time	60	35	5	0	0
Convenience	45	40	15	0	0
Cost effective	43	37	17	3	0
Saves travelling time	70	25	5	0	0
24*7 accessibility	65	30	5	0	0

Green Banking Products/Initiatives	Mean	SD
Green Checking	3.75	1.435
Green Loans	3.95	1.345
Green Mortgages	3.85	1.290
Green CD's	3.65	1.200
Controlled use of energy	3.55	1.300
E-Statement	3.45	1.465
Net Banking	3.90	1.385
Solar Powered ATMs	2.55	1.290
Energy-efficient branches and loans	3.60	1.465
Recyclable Debit and Credit Cards	3.70	1.445
Using Recycled Paper and Recycled Waste	3.90	1.355
Online Bill Payment	3.80	1.290
E-Investment Services	3.70	1.445
Total		

V. CONCLUSION

Green banking has become an important component of sustainable development and responsible financial management. The study concludes that SBI has made significant progress in implementing green banking initiatives through digital banking services, paperless transactions, and environmentally responsible operational practices. These initiatives have not only reduced the environmental footprint of banking operations but have also improved customer convenience, accessibility, and satisfaction. The findings indicate that customers generally possess a positive attitude toward green banking services, particularly internet banking, mobile banking, and online payment systems. However, awareness regarding specialized green financial products remains limited, highlighting the need for stronger promotional and educational efforts. The study also identifies lack of awareness, trust issues, and limited knowledge about green financial instruments as major challenges affecting adoption. Despite these challenges, the increasing use of digital banking demonstrates the potential of green banking to contribute substantially toward environmental sustainability. Financial institutions can further strengthen their green banking strategies by investing in technological innovation, enhancing customer education programs, introducing attractive green financial products, and integrating sustainability principles into lending and investment decisions. The success of green banking depends on active participation from banks, regulators,

customers, and policymakers. As environmental concerns continue to gain importance worldwide, green banking will play a vital role in promoting sustainable economic growth and responsible resource utilization. Therefore, SBI and other financial institutions should continue expanding their green banking initiatives to create long-term value for customers, society, and the environment while supporting national and global sustainability objectives.

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