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WISE BANKING FOR GREEN FUTURE A CUSTOMER CENTRIC STUDY ON SBI: AI AIDED SUSTAINABLE DEVELOPMENT IN BENGALURU

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Abstract—*In the current era of climate change and global warming, green banking has become a crucial topic of concern because financial institutions are essential to advancing environmental sustainability. The RBI's 2013 Green Banking Act in India makes environmental responsibility more important. Through several creative and sustainable methods, SBI is leading the way in advancing Green Banking projects. Artificial intelligence's quick development is changing everything.*

With a high usage of online banking (60%) and mobile banking (70%), AI-powered digital platforms have enabled SBI to drastically reduce paper usage by promoting online transactions, e-statements, and mobile banking; optimum energy usage in bank branches and data centers by using predictive analytics to manage electricity consumption, air conditioning, and lighting systems, thereby reducing the carbon footprint. Objective aims to understand how AI fosters green banking and sustainable growth while raising customer awareness of eco-friendly financial services.

Methodology the data collected from 100 respondents by following descriptive statistics further ANOVA test used. The study is investigating green banking and customer satisfaction at SBI Bengaluru. Funding is directed in accordance with green financing principles toward environmentally beneficial initiatives. Findings indicate that although SBI has achieved impressive progress in green banking, customer awareness and engagement continue to be major obstacles. Through intelligent content delivery platforms, AI may also be utilized to personalize green product offerings, customize communication, and educate consumers.

Keywords: *Artificial Intelligence, Green Banking, Sustainable growth, green products, Paperless currency*.

Introduction

The banking industry in India has seen significant change. A more inclusive and organized financial system has resulted from advancements in banking services, growth into rural regions, savings mobilization, and credit diversification into underserved industries. Simultaneously, over the past 25 years, significant environmental issues like pollution, global warming, acid rain, and ozone layer depletion have become more widely recognized. The idea of sustainable development, which emphasizes meeting present needs without jeopardizing the capacity of future generations to meet their own, was born out of these worries. The financial sector's involvement in advancing environmental sustainability has grown in importance since it is a pillar of economic development.

By implementing green banking practices, the Indian banking industry, particularly public sector behemoths like the State Bank of India, has made major strides toward sustainable growth. The term "green banking" describes procedures and regulations that make banking socially, ecologically, and economically viable.

By making effective use of resources, such as digital services and IT infrastructure, it aims to reduce the environmental impact of banking activities. AI has recently shown itself to be a potent enabler in the advancement of sustainable and green banking objectives. Banks like SBI are progressively utilizing technology to streamline operations, save energy use, and offer more effective, environmentally friendly services. For instance, "AI driven platforms support paperless banking by digitizing documentation and facilitating online transactions".

Virtual assistants reduce carbon emissions by reducing the need for in-person branch visits. AI is being used to evaluate credit risk for sustainable initiatives like electric vehicle finance and renewable energy loans, as well as to analyze consumer behavior and customize green financial products. Green house and auto loans, solar-powered ATMs, eco-friendly infrastructure, and online and mobile banking services are just a few of the green efforts that SBI has started. In addition to improving client satisfaction, these services help safeguard the environment.
SBI and Green Banking: According to the most recent reports from July and August of 2025, SBI has over 50 crore customers and runs a network of over 22,500 branches, 63,580 ATMs, and 82,900 business outlets. SBI has advanced digital banking significantly. As of 2025, the bank's principal digital platform, the YONO app, had over 74 million registered customers, demonstrating its dedication to provide accessible and technologically advanced financial services.

- **Green Channel Counters:** Quick card-based transactions at paperless counters.
- **Self Service Kiosks**: Are devices that update passbooks and check balances without the assistance of employees.
- **Green Remit Cards:** Prepaid cards that allow you to send money without filling out paperwork.
- **Smart payout cards:** Quick cashless enabling transactions are known as payment cards.
- **Green financing**: It refers to loans for environmentally friendly projects, such as solar and electric vehicles.
- **Online banking:** No paper, no travel, do your banking from home.
- **Mobile Banking:** Use mobile apps whenever you need to do any kind of banking.

Review of Literature

Prathibha, R. M., Dhanya, K. A., Mohanty, P., and Malhotra, S. (2025): A thorough analysis of AI-driven credit evaluation in Indian banks and non-banking finance companies (NBFCs) in Financial Data Science Machine Learning and Modelling Methods. Global Scientific Publishing, IGI. Non-performing loans (NPL) are a crucial factor in determining banks' financial performance.

According to Takahashi & Vasconcelos (2024): They showed how NPLs have a detrimental impact on return on assets (ROA), which lowers total profitability. Using fixed effects and two-step system generalized method of moments models,

Duong, Tran, Nguyen, and Pham (2023) found that NPLs reduce ROA by 0.075 across 37 Vietnamese banks from 2005 to 2020. The effect of regulatory capital on bank profitability is complicated. Bihari.

According to P (2015), online banking is more environmentally friendly and contributes to environmental preservation. SBI's well-known CSR initiatives include installing windmills, funding Save the Child projects and distributing lakhs of electric fans and water filters to Indian schools. It also promotes green banking by switching from traditional paper banking to card-based banking. The case study also examines how other banks apply the green banking idea.

According to the study's findings, a lot of Indian banks are currently working to "Go Green" by providing their clients with a range of environmentally friendly goods and services. Banks, businesses, and the economy will all profit from the idea of green banking.

A study on the overall green initiatives of the Indian banking industry was carried out by Katyal N. (2014). IDBI, SBI, Axis Bank, and SIDBI are among the notable banks from the main industries that were chosen for the study. Leading banks offer a variety of green banking solutions, including solar-powered ATMs, instant banking, vehicle financing, carbon footprint calculators, green home loan programs, and SIDBI's energy-saving financing schemes.

The researchers concluded that banks should make better use of environmental data when making credit and investment decisions.

Statement of Problem

Today banking does much more than just take deposits and make loans. Banks have a big part to play in making sure that their funds aren't going to companies that are bad for the environment. The green banking concept, which emphasizes sustainable financial practices targeted at lowering the ecological imprint of banking operations and lending activities, is based on this obligation. AI is required to help banks make better lending decisions by tracking and reporting the carbon footprints of financed companies, assessing the environmental impact of projects, and providing personalized, paperless digital banking experiences that support sustainable goals by taking the customer's perspective into account. In this sense, it is an earnest effort to address a pressing problem.

Objectives

- To find out how AI helps green banking and supports sustainable growth.
- To understand how AI improves customer awareness in eco-friendly banking services.

H_0: There is no association between AI, Sustainab Growth and Green Banking.

H_0: There is significant association between AI, Sustainable Growth and Green Banking.

Methodology

With emphasis on SBI Bengaluru, this descriptive and analytical study seeks to assess green banking activities and consumer satisfaction. A structured questionnaire and interviews with 100 respondents were used to gather primary data using the convenience sample approach and a Likert 5-point scale. By assisting in the creation of precise questions, ensuring the accuracy of responses, and minimizing bias, artificial intelligence techniques aided this process. Secondary data was collected from reliable sources, including books, journals, periodicals, newspapers, and online databases. Charts and suitable statistical techniques are utilized for analysis. Customer awareness and satisfaction with SBI's green banking services were better understood because of the faster, more accurate, and more insightful research approach made possible by the inclusion of AI.

Scope of the Study

The study examines how AI can boost adoption of SBI's green banking products among customers in Bengaluru. It looks at customer awareness and how AI-driven digital tools influence their choices, aiming to help SBI enhance sustainable banking through better digital engagement.

Limitation of the Study

- Time constraints were the limitation.
- The study was restricted to Bengaluru.
- Respondents are reluctant to share information.
- High cost incurred for the study.

Analysis and Interpretation

Table-1: AI, Sustainab Growth and Green Banking awareness

AI Sustainab Growth and Green Banking	No. of Respondents in Percentage
Strongly Disagree	15
Disagree	15
Neutral	20
Strongly Agree	25
Agree	25

Source: *Primary data.*

From point of view of AI, Sustainable growth, Green banking and Customer awareness out of 100 percent respondents, 15 percent strongly disagree, 15 percent disagree, 20 percent are neutral, 25 percent strongly agree, and 25 percent agree, as per the Likert scale five point there is fluctuation, it is observed that majority of respondents are having positive awareness upon topic of discussion.

Table-2: AI, Sustainab Growth and Green Banking Initiatives of SBI

Services	Online Banking	Mobile Banking	Green Deposits	Green Credit Cards	Green Financing
High	60	70	5	10	10
Average	30	20	30	60	25
No	10	10	65	30	65
Total	**100**	**100**	**100**	**100**	**100**

Source: *Primary data.*

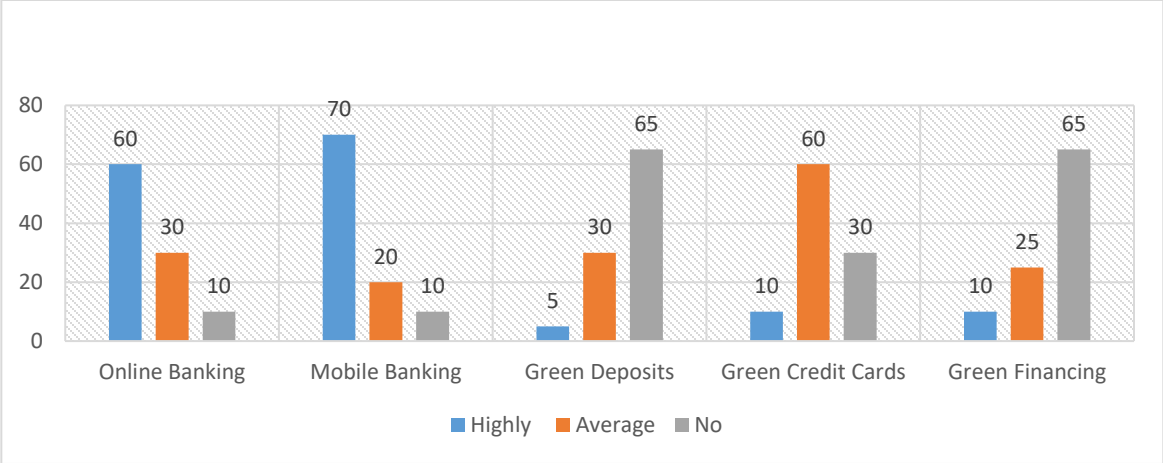

Table-3: Summary

Groups	*Count*	*Sum*	*Average*	*Variance*
Highly	5	155	31	980
Average	5	165	33	245
No	5	180	36	767.5

Table-4: ANOVA

Source of Variation	*S. S*	*D.F*	*MS*	*F*	*P-value*	*F-crit*
Between Groups	63.333	2	31.66667	0.047679	0.9536	3.88529
Within Groups	7970	12	664.1667			
Total	**8033.333**	**14**				

Source: *Calculated data.*

From the ANNOVA table since calculated value is more than table value at 0.05, degree of freedom i.e. F-value is 0.04591 *P-value* 0.9536, and Critical-value is 3.88529 more, hence accept H_0.

Findings

The study's findings of the study unequivocally demonstrate how customers are becoming more conscious of and satisfied with the State Bank of India's efforts in artificial intelligence, sustainable development, and green banking. Although there is some variation in the responses 15% strongly disagreeing, 15% disagreeing, 20% remaining neutral, and 50% (25% strongly agreeing and 25% agreeing) expressing positive views the majority of respondents have a favorable awareness of the subjects covered. This implies that consumers have a positive opinion of SBI's initiatives.

Many respondents are aware of SBI's green initiatives, especially the digital banking services like online and mobile banking, which are extensively used since they are convenient and support paperless, environmentally friendly operations.

By lowering the requirement for physical infrastructure, consuming less energy, and using less paper, these AI-enhanced services assist SBI in promoting sustainable banking practices. The study also shows a lack of knowledge about certain green financial instruments, like green certificates of deposit and green deposits, which highlights the need for more marketing and instruction on these products.

Significantly, 89% of respondents say they are happy with SBI's green banking initiatives, especially the time and money-saving advantages of AI-enabled digital banking services.

AI is essential for automated customer service, tailored banking, and effective backend operations all of which support sustainable development objectives. Additionally, SBI uses AI to promote the implementation of eco-friendly policies, monitor environmental impacts, and evaluate credit risks in green finance.

The conclusion that there is a statistically significant correlation between AI, sustainable growth, and awareness of green banking is supported by the ANOVA test. The null hypothesis H_0 is rejected and the alternative hypothesis H_1 is accepted based on the computed F-value of 0.04591, p-value of 0.9536, and critical value of 3.88529.

This demonstrates that, in the context of sustainable and green banking at SBI, AI-driven solutions are greatly increasing customer awareness and pleasure.

Suggestions

Artificial intelligence's incorporation into SBI's green banking programs is turning out to be a key factor in promoting sustainable growth and raising customer happiness and engagement.

By tailoring digital banking experiences and suggesting environmentally friendly financial products, including green deposits and green certificates of deposit, particularly to users who are concerned about sustainability, artificial intelligence (AI) plays a critical role in closing awareness and service gaps.

Through promoting e-statements, online transactions, and mobile app-based banking, SBI's AI-powered platforms are considerably reducing paper usage, with online banking accounting for 60% and mobile banking for 70%. These initiatives complement SBI's dedication to digital transformation and environmental responsibility.

Despite these advancements, the study indicates that customer awareness about specific green products like green deposits and green CDs remains low, signaling the need for targeted communication strategies.

Examining consumer behavior and creating awareness campaigns that educate consumers about the financial and environmental advantages of these products, AI can help further. Customers' involvement in green projects can be increased by using intelligent chatbots and recommendation engines to proactively recommend sustainable banking options. Even if 89% of respondents say they are generally satisfied, customer satisfaction levels can still be raised.

With quicker reaction times, predictive customer care, and tailored interactions, AI can improve the quality of services.

Ensuring banking is more effective, inclusive, and environmentally conscientious, these enhancements not only boost client trust but also support the larger objectives of sustainable development.

SBI and other banks must take proactive measures to increase awareness and satisfaction by utilizing AI-driven insights to maintain and expand these beneficial results.

This entails carrying out focused educational initiatives, including sustainability metrics into digital banking dashboards, and making sure that all client segments can readily access and comprehend green banking solutions.

AI contributes to the accomplishment of the two objectives of improved customer happiness and environmentally friendly banking procedures. Using AI to raise awareness, customize services, and encourage eco-friendly banking practices, SBI solidifies its position as a pioneer in digital and green banking, actively supporting India's sustainable development strategy.

Conclusion

Economic and sustainable development are greatly aided by the banking industry, especially the State Bank of India. To connect its operations with social and environmental aims and support India's sustainability plan, SBI has embraced green banking. Although consumers are highly aware of digital services like online and mobile banking, they are still not as aware of certain green products like green deposits and rewards. By tailoring consumer experiences, examining usage trends, and endorsing pertinent eco-friendly solutions, artificial intelligence can close this gap. Recommendation engines, chatbots powered by AI, and predictive analytics are examples of tools that can improve outreach and engagement. Furthermore, AI can support targeted tactics and evaluate the effects of green initiatives, ensuring that SBI's green banking activities are successful and broadly embraced.

Scope Further Study

"AI for Sustainable Banking - A Study on select private sector Banks Green Initiatives."

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