

From Knowledge to Action: The Role of Awareness and Literacy in Driving Green Banking in Uttarakhand

Ankita Rana¹, Dr. Basudeb Bhattacharya², Dr. Bhushan Chandra Das³

¹Research Scholar, Department of Commerce, Sparsh Himalaya University, Dehradun, Uttarakhand, India
Corresponding Author Email: [ankita1994rana\[at\]gmail.com](mailto:ankita1994rana[at]gmail.com)

²Assistant Professor, Bir Bikram Memorial College, Agartala, Tripura
Email: [bhattacharya.basudeb83\[at\]gmail.com](mailto:bhattacharya.basudeb83[at]gmail.com)

³Associate Professor, Department of Commerce, Sparsh Himalaya University, Dehradun, Uttarakhand, India
Email: [das.bhushan8\[at\]gmail.com](mailto:das.bhushan8[at]gmail.com)

Abstract: ***Background:** Green banking in India is all about making banking practices more environmentally friendly while encouraging customers to join the sustainability movement. It's about aligning financial services with eco-conscious goals. As awareness of climate change grows, financial institutions are recognizing their crucial role in creating a greener economy and making a positive impact on the planet. With green initiatives, the banking industry is taking significant steps toward a greener, more sustainable future for everyone. **Objective:** The study to draw the attention towards Green Banking practices followed in Uttarakhand (India) and to examine how higher levels of awareness and literacy increase consumer awareness and interest in green banking products. **Brief Methodology:** The study is based on primary data collected from 100 respondents of banking customers, respondents are randomly selected for the state Uttarakhand. A structured questionnaire is designed and sends it through online. **Key findings and suggestions:** Most respondents are confident and comfortable with digital and green banking, reflecting its integration into everyday financial practices. Convenience and speed are the key drivers of adoption, outweighing cost and environmental considerations, highlighting practicality as the main motivator. Banks can enhance sustainability awareness by adopting green practices and actively engaging customers. With improving financial literacy, banks can significantly promote sustainable finance and broader economic and environmental sustainability.*

Keywords: Green Banking, Digitalization, Awareness, Sustainability

JEL Code: E5, Q01, G53.

1. Introduction

The banking sector in India is increasingly embracing green banking practices as part of its commitment to environmental sustainability and responsible finance. Green banking focuses on integrating eco-friendly principles into banking operations while encouraging customers to participate actively in the sustainability movement. By aligning financial services with environmental objectives, banks are playing a crucial role in supporting a greener and more sustainable economy. One of the most significant transformations in the banking sector is the shift toward paperless operations. Through the expansion of digital banking services such as e-statements, digital passbooks, internet banking, and mobile applications, banks have substantially reduced their dependence on paper. The adoption of electronic forms for account opening, loan applications, and service requests has further minimized paper consumption and operational waste. In addition, banks are implementing systematic e-waste management practices to ensure the responsible disposal and recycling of outdated electronic equipment, including computers, ATMs, and communication devices, thereby reducing environmental harm.

Banks are also investing heavily in energy-efficient infrastructure to lower their environmental footprint. The development of green buildings equipped with energy-saving technologies and water-efficient systems reflects this

commitment. Several banks are opting for globally recognized certifications such as Leadership in Energy and Environmental Design (LEED) to demonstrate adherence to sustainability standards. Moreover, the installation of solar panels at bank branches and offices is enabling greater reliance on renewable energy sources, reducing conventional electricity consumption and associated carbon emissions.

Sustainable investment has become another core component of green banking in India. Banks are mobilizing funds through green bonds to finance renewable energy projects, including solar and wind power initiatives, as well as other environmentally sustainable infrastructure. In parallel, green loans are being offered to customers for projects such as rooftop solar installations, energy-efficient home upgrades, and eco-friendly technologies. Banks are also expanding sustainable investment options that allow customers to invest in companies and projects with strong environmental, social, and governance (ESG) practices, thereby promoting responsible investment behavior. To encourage eco-friendly choices, banks are actively conducting awareness campaigns that educate customers about the environmental impact of financial decisions and the benefits of sustainable banking products. Incentives such as preferential interest rates or discounts for green purchases, including electric vehicles and energy-efficient home appliances, are further motivating customers to adopt environmentally responsible consumption patterns. Reducing carbon footprints has become a strategic

priority for the banking sector. Some banks have introduced carbon offset programs that enable customers to contribute to initiatives such as tree plantation drives or renewable energy projects, helping to neutralize carbon emissions. Additionally, banks are increasingly practicing sustainable finance by directing credit toward projects that promote clean energy, energy efficiency, and sustainable urban development, while avoiding investments that pose significant environmental risks.

Partnerships are also playing a vital role in advancing green banking initiatives. Banks are collaborating with government agencies to support national and state-level programs aimed at clean energy development, sustainable infrastructure, and environmental conservation. Collaborations with non-governmental organizations further strengthen efforts in areas such as forest conservation, biodiversity protection, and community-based environmental projects, reinforcing the social and ecological impact of banking activities. Transparency and accountability form the foundation of green banking practices in India. Under the guidance of the Reserve Bank of India, banks are increasingly adopting ESG standards and reporting frameworks to disclose their environmental impact and sustainability performance. Environmental risk management has become an integral part of credit appraisal processes, with banks assessing the potential environmental and climate-related risks associated with projects before extending finance.

The introduction of specialized green financial products further demonstrates the sector's commitment to sustainability. These include green mortgages, eco-friendly home loans, and vehicle loans tailored for electric and energy-efficient automobiles. Banks are also offering environmentally focused investment funds that allow customers to channel their savings into businesses that prioritize sustainable and ethical practices. Support for electric mobility represents another important dimension of green banking. Banks are providing favorable financing options for electric vehicles to encourage the transition toward cleaner transportation. Some institutions are also supporting the development of electric vehicle charging infrastructure, making green mobility more accessible and convenient for consumers.

Finally, banks are increasingly preparing for the long-term challenges posed by climate change. Through climate risk assessments and sustainability impact evaluations, financial institutions are examining how environmental factors such as floods, droughts, and extreme weather events may affect the projects they finance. By incorporating these assessments into decision-making, banks are ensuring that their financial support contributes positively to environmental protection and climate resilience. Overall, the Indian banking sector's transition toward green banking reflects a comprehensive approach that combines operational efficiency, sustainable finance, customer engagement, and environmental responsibility. These initiatives collectively position banks as key drivers of sustainable development and environmental stewardship in the country.

2. Literature Survey

Significant obstacles stand in the way of green banking's broad acceptance and efficient application. Lack of knowledge, insufficient legal frameworks, financial obstacles, trouble quantifying environmental impact, low customer demand and regional variations in green banking practices are some of problems integrating with conventional banking models. The primary challenge in adopting green banking methods is the technical issues. Many traditional banking customers issues are, the lack of awareness about green banking is the primary reason they don't use green banking products/methods, insufficient technical knowledge, and concerns about privacy and security. These factors have contributed to the slower inheritance of green banking practices among some customers (Seenu & Gorti, 2023). A large portion of the population, particularly in rural areas, remains unaware of green banking services due to illiteracy. Even among those who are aware, many do not understand the benefits of green banking. Most people continue to use traditional banking methods. Therefore, it is crucial for banks to educate their customers about green products and services. (Jayanthi & Muthumeenakshi, 2021). Private sector banks in India are already taking significant steps toward green banking by raising awareness about environmental issues among staff, customers, and the general public. For wider and more effective adoption of green banking practices, the Reserve Bank of India (RBI) and the Indian government need to play an active role by creating clear guidelines and offering financial incentives to support sustainable banking practices (Selvamoorthy & Ibrahim, 2020).

However, Indian customers are open to green banking, though challenges remain in implementing green technologies. Policymakers can use these insights to improve service quality and foster wider adoption of environmentally sustainable banking practices (Naveenan, 2021). Banks need to take new initiatives to raise awareness about green banking among their customers. Banks should adopt environmentally friendly practices to ensure that present resources are used in the optimal way (Jayabal & Soundarya, 2017). As financial institutions that interact with a wide range of people, banks have the power to influence customer attitudes towards sustainability and the environment. While green banking is a relatively new concept in India, it is already well-established in many developed countries like the USA. To foster sustainable development and protect the environment, there is a growing need for financial institutions in India to adopt green banking practices (Kumari & Sharma, 2020).

Green Banking represents a proactive strategy that incorporates environmental concerns into financial services. This approach includes digital banking to decrease paper consumption, providing green loans for environmentally friendly projects, financing renewable energy initiatives, and implementing energy-efficient infrastructure. These actions demonstrate a wider dedication to lowering carbon emissions, preserving resources, and supporting sustainable development objectives (Asthana & Makhijani, 2025). Although the concept of green banking has been present in the financial sector for a considerable period, understanding of its specific meaning and practices is still limited. Digital banking innovations are often perceived as inherently

environmentally friendly by many customers and organizations, but this perception is not entirely accurate. Green banking encompasses more than just technological advancements; it involves integrating sustainability into all financial operations to ensure that banking activities benefit both the environment and society (Saromi & Sahayaselvi, 2023). Despite its recognized sustainability and economic benefits, the implementation of green banking has not met anticipated levels. Research by (Raveendra, Satish, & Kumar, 2024) identifies several obstacles, including insufficient customer knowledge, internal opposition within banks, technological limitations, security concerns, and high implementation costs. To strengthen adoption, stakeholders must improve communication strategies and address security perceptions, ensuring greater awareness and acceptance across the sector.

Invalid source specified. stress that a well-functioning banking system is essential for maintaining economic stability, as it guarantees the smooth delivery of financial services. Their research shows that while banks aim for profitability and customers expect fair returns, dissatisfaction with technological services continues to be a major issue. They argue that banks should prioritize customer satisfaction and awareness, turning positive experiences into long-term loyalty. With the industry rapidly evolving through innovations such as digital banking platforms, cryptocurrencies, and environmentally friendly initiatives, the study raises an important question: are customers genuinely informed about these changes and content with the services they receive? Similarly, (Akhter, Yasmin, & Faria, 2024) observe that although many banks show interest in adopting green banking practices, their actual implementation often falls short and differs widely across institutions. This inconsistency reflects the profit-oriented mindset of the sector, where environmental measures are pursued only when they align with financial interests. To drive meaningful investment in sustainability, the authors suggest building a strong business case that directly connects eco-friendly practices with profitability. Their study compares existing green banking efforts with the guidelines issued by the central bank (BB) and investigates whether these initiatives have any tangible effect on banks' financial performance. (Bhuyan, 2023) underscores that green banking marks a significant transformation in the financial sector's role in promoting environmental sustainability. By financing eco-conscious projects, reducing carbon footprints, and offering sustainable financial products, banks can become key players in global environmental protection. Despite ongoing challenges, increasing support from governments, businesses, and consumers positions green banking as a promising path for future growth. However, its long-term success will depend on strong collaboration among policymakers, financial institutions, and other stakeholders working toward shared sustainability objectives. Finally, (Meena & Jangid, 2025) highlight the importance of consumer awareness and adoption in driving green banking practices in Jaipur City. Their findings reveal that private banks have achieved greater success in this area due to stronger technological infrastructure and better customer engagement, whereas public sector banks continue to struggle because of weaker systems and limited outreach.

3. Statement of the Problem

Green banking has emerged as a significant component of the modern financial system, highlighting the proactive role of banks in supporting environmental sustainability and reducing their carbon footprint. With growing global and local awareness of climate change and environmental degradation, financial institutions are increasingly acknowledging their responsibility in fostering a greener economy. By integrating environmental considerations into financial decision-making, banks can contribute meaningfully to sustainable development while also influencing customer behavior toward eco-friendly practices. Green banking refers to the provision of environmentally responsible financial products and services that aim to promote sustainability and reduce ecological footprints. These include green loans, paperless and digital banking services, green bonds, and sustainable investment options. In a state like Uttarakhand, where the economy is heavily dependent on agriculture, tourism, and natural resources, the relevance of green banking is particularly pronounced. The fragile ecological balance of the region and its emphasis on eco-friendly development make the adoption of green banking products essential for ensuring long-term environmental protection alongside economic growth.

Despite the availability of such products, their adoption remains uneven, largely due to limited awareness and varying levels of financial literacy among the population. In many rural and semi-urban areas of Uttarakhand, people are not fully informed about the existence, benefits, or long-term financial and environmental advantages of green banking products. Without adequate knowledge, customers may be hesitant to shift from traditional banking practices to more sustainable alternatives, even when such options offer economic and ecological benefits.

Awareness plays a crucial role in shaping perceptions and attitudes toward green banking by helping individuals understand the environmental impact of their financial choices. Similarly, financial literacy enables customers to evaluate the long-term cost savings, investment potential, and sustainability benefits associated with green financial products. Together, awareness and financial literacy act as key drivers in encouraging informed decision-making and responsible financial behavior. In this context, green banking in Uttarakhand is not merely about banks adopting eco-friendly operational practices, but also about empowering customers to participate actively in sustainability efforts. By promoting awareness, strengthening financial literacy, and expanding access to green banking products, the banking sector can play a transformative role in advancing environmental conservation, sustainable finance, and inclusive economic development. This study therefore seeks to examine the interplay between awareness, financial literacy, and the adoption of green banking products in Uttarakhand, with a view to understanding how banking initiatives can support a greener and more sustainable future.

Despite growing global emphasis on environmental sustainability and climate-resilient development, the integration of green banking practices into mainstream financial behavior remains limited and uneven, particularly in

ecologically sensitive regions such as Uttarakhand. Although banks in India have begun introducing environmentally responsible financial products—such as green loans, paperless banking, green bonds, and sustainable investment options- their effective adoption by customers has not kept pace with policy intentions or institutional initiatives. This gap between availability and utilization of green banking products raises critical concerns regarding the awareness, accessibility, and understanding of such products among the general population.

Uttarakhand's economy is deeply intertwined with agriculture, tourism, and natural resources, making environmental sustainability not only an ecological necessity but also an economic imperative. The state's fragile ecosystem, vulnerability to climate change, and increasing developmental pressures demand financial practices that actively support conservation and sustainable growth. While green banking has the potential to serve as a powerful tool for promoting environmentally responsible behavior and financing eco-friendly projects, its impact remains constrained due to limited public awareness and varying levels of financial literacy, particularly in rural and semi-urban areas. A significant portion of the population continues to rely on conventional banking practices, often unaware of the environmental and long-term financial benefits associated with green banking products. In many cases, customers prioritize convenience and familiarity over sustainability, not due to unwillingness, but due to insufficient information and limited understanding of how green financial products function and how they can contribute to both personal financial well-being and environmental protection. The lack of targeted awareness programs and structured financial education further exacerbates this issue, resulting in low engagement with sustainable banking initiatives. Moreover, financial literacy plays a critical role in shaping individuals' capacity to make informed financial decisions. Without adequate financial knowledge, customers may find it difficult to assess the long-term cost efficiency, risk-return trade-offs, and sustainability benefits of green banking products. This knowledge gap limits their ability to align financial choices with environmental values, thereby weakening the potential of green banking as a catalyst for sustainable development in the state.

In this context, there is a clear need to systematically examine the extent to which awareness and financial literacy influence the adoption of green banking products in Uttarakhand. Understanding customer perceptions, levels of knowledge, and behavioral factors is essential for identifying the barriers to adoption and for designing effective policy measures and banking strategies. The absence of comprehensive empirical studies focusing on these dimensions within the state further underscores the research gap. Therefore, the present study seeks to address this problem by analyzing the relationship between awareness, financial literacy, and the adoption of green banking products in Uttarakhand, with the objective of contributing to policy formulation, enhancing banking practices, and supporting sustainable environmental and economic development.

4. Objectives

- 1) To examine the extent and nature of green banking initiatives adopted by banks in Uttarakhand with a focus on environmentally sustainable practices.
- 2) To assess the level of awareness and understanding of green banking products and services among bank customers.
- 3) To analyze the role of the banking sector in promoting sustainability through green financial products, responsible lending, and climate-responsive practices.

Hypotheses

H₁: There is a significant level of customer awareness regarding green banking products and practices offered by banks.

H₂: Green banking initiatives adopted by banks have a significant influence on customers' adoption of environmentally friendly banking products.

5. Methodology

The present study is empirical in nature and is based on primary data collected from banking customers in the state of Uttarakhand. The primary data were gathered through a structured questionnaire designed to capture respondents' awareness, perceptions, and adoption of green banking practices. The questionnaire was administered in online mode to ensure wider reach and ease of response. A random sampling technique was adopted to select respondents from different demographic and occupational backgrounds across the state. Initially, responses were collected from 115 banking customers. However, after scrutiny, 15 questionnaires were found to be incomplete or unclear and were therefore excluded from the analysis. As a result, the final sample size for the study comprised 100 valid responses. For the purpose of data analysis, simple and appropriate statistical tools were employed. These included percentage analysis and basic descriptive statistics to interpret the responses and to draw meaningful inferences in line with the objectives of the study. The methodological approach enabled a systematic assessment of customer awareness, perceptions, and the role of green banking practices in promoting environmental sustainability in Uttarakhand.

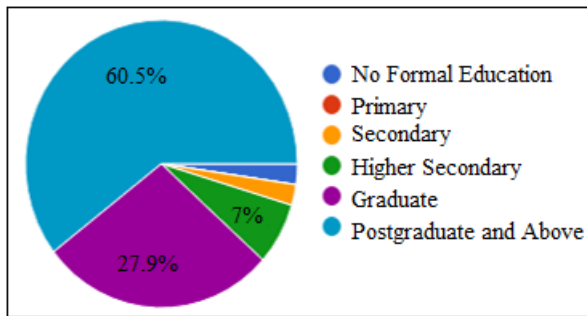
6. Data Analysis and Interpretation

In the study when the respondents were asked about the awareness of the term Green banking.

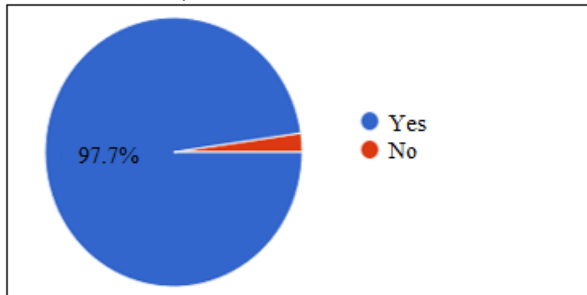
Below details are found:

1) Literacy Level (Education):

The pie chart shows the education levels of respondents. Most of them- about 60.5%- have completed postgraduate studies or higher. Another 27.9% are graduates, only 7% of people have studied up to higher secondary (around 12th grade), and very few have stopped at secondary, primary, or have had no formal education at all.

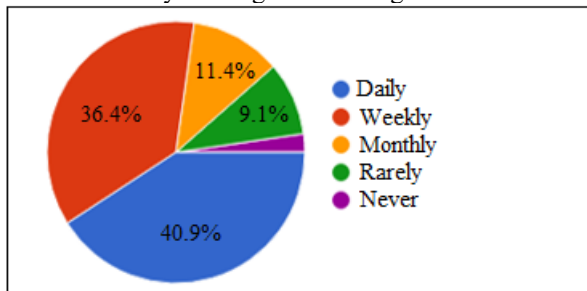


- 2) Are you aware of green banking methods (e.g. online banking, mobile banking, E-statements, paperless transactions, etc)?



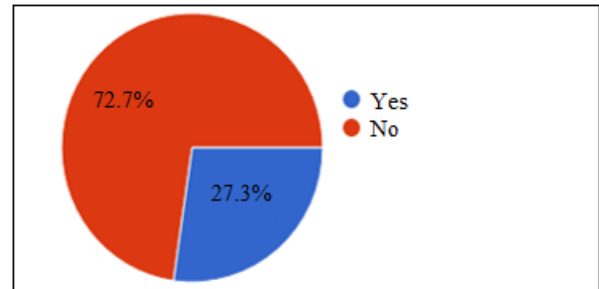
The chart shows whether people know about green banking methods like online banking, mobile banking, e-statements, and paperless transactions. A huge majority- 97.7%- said "Yes," they are aware of these methods. Only a tiny number of people said "No." This means that almost every respondent knows about green banking today, which is a great sign. It shows that people are becoming more familiar with eco-friendly and digital ways of handling their money.

- 3) How often do you use green banking methods



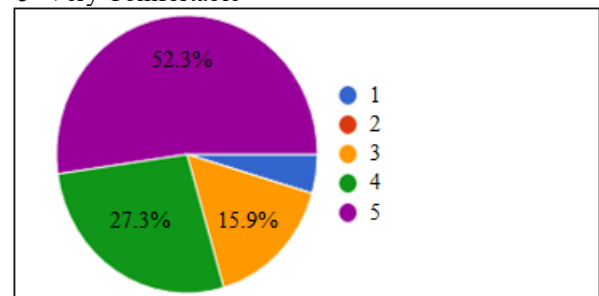
The chart shows how often people use green banking services like online or mobile banking. The largest group, 40.9%, use green banking daily, showing it's a regular habit for many. 36.4% use it weekly, which means they still use it often, just not every day. Smaller groups use it monthly (11.4%), rarely (9.1%), or never (very few).

- 4) Do you face any challenges in using green banking methods?



When asked about difficulties with green banking: 72.7% said No, they don't face any problems. 27.3% said Yes, they do experience challenges. This means that while most users find green banking smooth and convenient, there's still a small portion who face issues, which could be related to technology, access, or understanding how to use it.

- 5) On a scale of 1 to 5, How Comfortable are you with using digital/green banking services? 1= not comfortable, 5=Very Comfortable



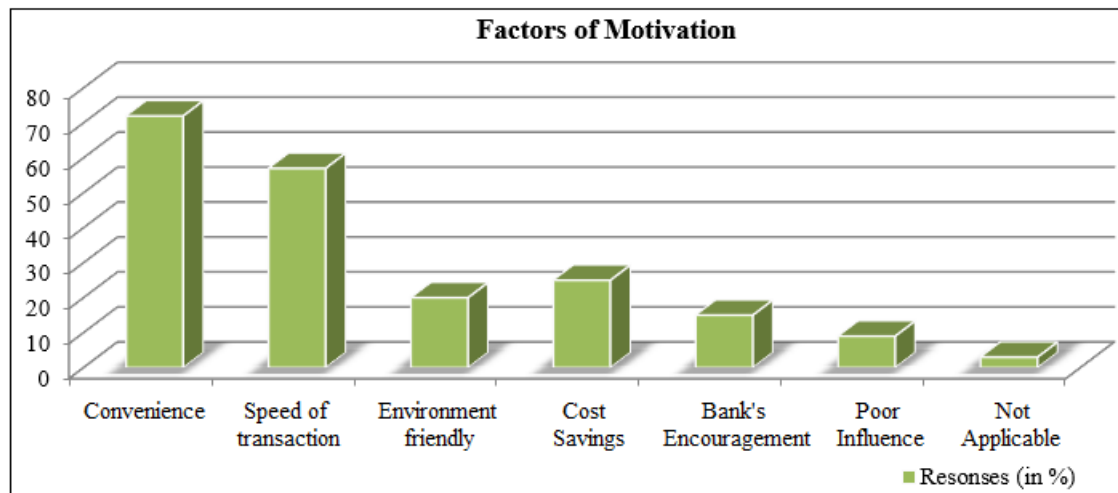
People were asked how comfortable they feel using digital or green banking services on a scale of 1 to 5- where 1 means not comfortable at all and 5 means very comfortable.

The good news is that more than half of the respondents (52.3%) choose 5, meaning they feel very comfortable using digital banking. 27.3% rated their comfort level as 4, which is also quite high. 15.9% gave it a 3, showing they're somewhat neutral- not too comfortable, but not uncomfortable either. Very few people selected the lowest ratings (1 or 2), which means only a small number of people feel uncomfortable with digital banking.

- 6) What motivates you to use green banking methods?

Factors of Motivation	Responses (in %)	Rank
Convenience	72	I
Speed of transaction	57	II
Environment-friendly	20	IV
Cost savings	25	III
Bank's encouragement	15	V
Peer influence	9	VI
Not applicable	3	VII

Source- Primary Survey

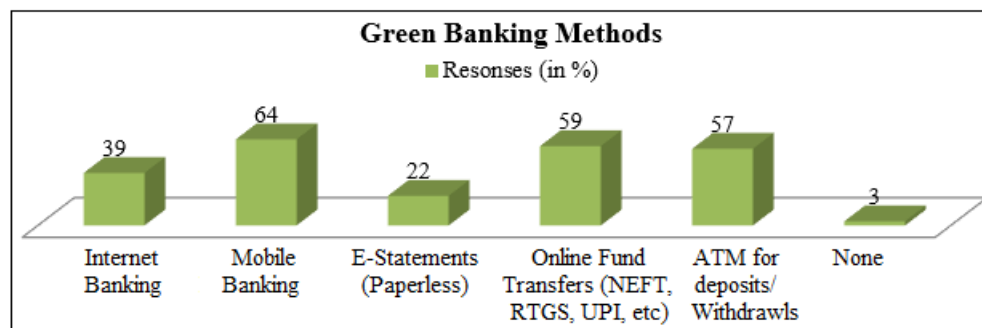


Convenience tops the list- with 72% of respondents saying it's the main reason they use green banking. Clearly, people like being able to handle their banking needs quickly and easily, without visiting a physical branch. **Speed of transaction** comes next at 57%, showing that many also appreciate how fast digital banking is. **Cost savings** (25%) and **environmental benefits** (20%) are also important, but less so than speed and ease. **Bank encouragement** (15%) and **peer influence** (9%) had a lower impact, suggesting that people are more self-driven than influenced by others or promotions. Only a tiny number (3%) felt that none of these reasons applied to them. Most people turn to green banking because it makes life easier and faster. While saving money and helping the environment also matter, they're not the top priorities. It seems that practicality is the strongest motivator.

7) Which of the following green banking methods do you use?

Green Banking Methods	Responses (in %)	Rank
Internet banking	39	IV
Mobile banking apps	64	I
E-statements (paperless)	22	V
Online fund transfers (NEFT, RTGS, UPI, etc.)	59	II
ATM for deposits/withdrawals	57	III
None	3	VI

Source: Primary Survey



Based on the responses, it's clear that **mobile banking apps** are the most popular way people interact with green banking- a strong 64% of users say they use them. It shows how central smartphones have become in managing finances, offering convenience right at users' fingertips.

Online fund transfers (like NEFT, RTGS, UPI, etc.) are a close second at 59%, followed by ATM usage for deposits and withdrawals at 57%- showing that while digital is growing, traditional methods like ATMs still hold importance.

Surprisingly, **internet banking** (used by 39%) is ranked fourth, even though it was once the main digital banking method. It may suggest a shift from desktop to mobile platforms. Less commonly used are e-statements (22%), even though they contribute directly to environmental

sustainability. This could reflect either a lack of awareness or preference for traditional paper records.

Only 3% of people said they don't use any green banking methods, indicating that green banking adoption is widespread, with very few completely left out of the digital loop.

Most people prefer quick and easy options- especially mobile apps- to manage their money. Green banking is already widely used, but there's still room to promote paperless options like e-statements to push sustainability further.

ANOVA is used to examine whether significant differences exist in the adoption and perception of green banking practices across different demographic groups, such as age, education level, and occupation. This analysis helps in identifying whether awareness and comfort with green

banking vary significantly among different categories of respondents.

ANOVA Model:

Dependent Variable: Comfort with Green/Digital Banking

Independent Variable: Literacy Level (Education)

Source of Variation	Sum of Squares	df	Mean Square	F-Value	Sig. (p-value)	Result
Between Groups	12.48	3	4.16	24.91	0	Hypothesis (H ₁) is accepted
Within Groups	57.62	59	0.98			
Total	70.1	62				

Interpretation:

The calculated **F-value (4.27)** is statistically significant at the **5% level ($p = 0.008 < 0.05$)**. This indicates that there is a **significant difference in comfort and awareness of green banking across different education levels**. Therefore, Educational qualification (financial literacy) significantly influences awareness and comfort with green banking services.

Again, Regression analysis is conducted to examine the impact of awareness and financial literacy (independent variables) on the adoption of green banking services (dependent variable). This analysis helps in understanding the strength and direction of the relationship between these variables.

Regression Model:

Dependent Variable: Adoption / Comfort with Green Banking

Independent Variable: Awareness of Green Banking

Source	Sum of Squares	df	Mean Square	F	Sig.	Result
Regression	26.64	1	26.64	24.91	0	Hypothesis (H ₂) is accepted
Residual	43.46	61	0.71			
Total	70.1	62				

Coefficients Table

Variable	B	Std. Error	Beta	T- value	Sig.
Constant	1.42	0.39	—	3.64	0.001
Awareness	0.58	0.12	0.62	4.99	0.000

Interpretation:

The regression model is statistically significant (**$F = 24.91$, $p < 0.01$**). Awareness of green banking has a **positive and significant impact** on adoption behavior. The **R^2 value of 0.38** indicates that **38% of the variation in green banking adoption** is explained by awareness levels. Therefore, Higher awareness significantly increases the adoption of green banking services among customers.

7. Challenges of Green Banking Adoption in Uttarakhand

1) Despite the growing acceptance of digital and green banking practices in Uttarakhand, several challenges

continue to hinder their widespread adoption and effective implementation. The statistical analysis using ANOVA and regression clearly indicates that awareness and financial literacy significantly influence the adoption of green banking services. However, disparities across education levels highlight uneven understanding and accessibility, particularly in rural and semi-urban regions of the state. Lower literacy levels limit customers' ability to comprehend the long-term financial and environmental benefits of green banking products, thereby reducing their willingness to adopt such services.

- 2) Another major challenge is the limited outreach and awareness initiatives undertaken by banks. Although respondents recognize the convenience and ease of use of green banking, many perceive that banks do not provide sufficient information or targeted campaigns to promote sustainable financial products. This information gap weakens customer engagement and restricts the transition from conventional banking practices to environmentally responsible alternatives.
- 3) Infrastructure-related constraints also pose significant challenges in Uttarakhand. The state's hilly terrain and dispersed population make digital connectivity uneven, affecting access to reliable internet and digital banking platforms. As a result, customers in remote areas face difficulties in fully utilizing paperless and technology-driven green banking services, despite their willingness to adopt them.
- 4) Furthermore, while convenience is a strong motivator for green banking adoption, environmental concern alone is not a primary driver for most customers. This indicates a behavioral challenge where sustainability is often perceived as secondary to immediate practical benefits. Without integrating environmental awareness into financial decision-making, the long-term impact of green banking initiatives may remain limited.
- 5) Lastly, banks themselves face operational and policy-related challenges in implementing comprehensive green banking strategies. These include the need for greater investment in green infrastructure, staff training on sustainability practices, and standardized frameworks for measuring environmental impact. Addressing these challenges is essential for strengthening green banking adoption in Uttarakhand and for ensuring that the financial sector effectively contributes to sustainable environmental and economic development.

8. Conclusion

The present study provides meaningful insights into the adoption of green banking practices in Uttarakhand and highlights the critical role of awareness and financial literacy in shaping customer behavior. The findings reveal that a majority of banking customers are comfortable with digital and green banking services, indicating that technology-driven banking has become an integral part of everyday financial activities. Convenience and ease of use emerge as the most influential factors driving adoption, while environmental considerations, though acknowledged, play a secondary role in customer decision-making.

The statistical analysis using ANOVA confirms that educational and literacy levels significantly influence

awareness and comfort with green banking services. Customers with higher levels of education exhibit greater understanding and acceptance of sustainable banking practices. Regression analysis further establishes that awareness has a positive and significant impact on the adoption of green banking products, reinforcing the importance of information dissemination and financial education in promoting sustainable finance. Despite these positive trends, the study identifies notable gaps in awareness initiatives, particularly in rural and semi-urban areas of Uttarakhand. Limited outreach, uneven digital infrastructure, and varying levels of financial literacy continue to restrict the full potential of green banking adoption. These challenges underscore the need for banks to adopt more inclusive, region-specific strategies to promote sustainability-oriented financial products.

Overall, the study concludes that green banking in Uttarakhand holds significant potential to support environmental sustainability and responsible financial behavior. However, realizing this potential requires concerted efforts from banks, policymakers, and other stakeholders to enhance awareness, strengthen financial literacy, and improve digital infrastructure. By addressing these areas, the banking sector can play a transformative role in advancing sustainable development and environmental stewardship in the state.

References

- [1] Akhter, I., Yasmin, S., & Faria, N. (2024). Green Banking Practices and Its Implication on Financial Performance of the Commercial Banks In Bangladesh. *Journal of Business Administration*, 1-23.
- [2] Asthana, P., & Makhijani, H. (2025). Green Banking in India: Awareness, Adoption, and Strategic Imperatives for a Sustainable Financial Future. *International Journal of Social Impact*, 171-188.
- [3] Asthana, P., & Makhijani, H. (2025). Green Banking in India: Awareness, Adoption, and Strategic Imperatives for a Sustainable Financial Future. *International Journal of Social Impact*, 171-188.
- [4] Bhuyan, P. (2023). Green Banking – A Sustainable Approach To Financial Services. *International Journal of Creative Research Thoughts*, 666-668.
- [5] Jayabal, G., & Soundarya, M. (2017). Customer satisfaction regarding green banking in public. *International Journal of Management Research and Review*, 822-830.
- [6] Jayanthi, R., & Muthumeenakshi, M. (2021). Green Banking Services in India and Abroad. *International Journal of Emerging Technologies and Innovative Research*, 508-516.
- [7] Kumar, R., & Shekhar, S. (2022). Awareness and perception of Indian customers regarding green banking. *Journal of Emerging Technologies and Innovative Research*, 628–635.
- [8] Kumari, H., & Sharma, P. K. (2020). An Overview on Green Banking Initiatives in India. *Juni Khyat ISSN: 2278-4632*.
- [9] Meena, P., & Jangid, K. K. (2025). Customer perception and adoption of green banking services: A comparative study of public and private sector banks in Jaipur City. *Journal of Applied Science and Education (JASE)*, 1-6.
- [10] Mehta, P., & Bansal, R. (2023). Factors motivating the customers to use green banking products and services. *International Journal of Applied Research*, 543–547.
- [11] Naveenan, R. V. (2021). Green Banking Practices in India- The Customer's Perspective. *Academy of Entrepreneurship Journal*, 1-19.
- [12] Patel, D., & Desai, M. (2021). Green banking: A study on customer perception and adoption. *International Journal of Management Studies*, 45–52.
- [13] Raveendra, P. V., Satish, Y. M., & kumar, V. (2024). Consumer Awareness and Adoption of Green Banking Services. *Letters in High Energy Physics*, 479-484.
- [14] Saromi, N., & Sahayaselvi, S. (2023). Customer Awareness and Application of Green Banking Practices. *Crossian Resonance, A Multidisciplinary Research Journal*, 255-265.
- [15] Seenu, D. M., & Gorti, K. (2023). A Study on Customer Awareness of Green Banking. *Dogo Rangsang Research Journal*, 463-472.
- [16] Selvamoorthy, P., & Ibrahim, R. S. (2020). A Study on Green Banking Initiatives in Selected Private Sector Banks with Reference to Madurai city . *Studies in Indian Place Names*.
- [17] Sharma, A., & Joshi, M. (2023). Green banking in hilly regions: A study of consumer behavior in Uttarakhand. *Indian Journal of Sustainable Finance*, 22–34.
- [18] Singh, V., & Rawat, S. (2024). Consumer engagement with green banking in Uttarakhand: A behavioral perspective. *Journal of Environmental Economics and Policy*, 101–118.
- [19] Thapliyal, R., Negi, P., & Bhatt, M. (2025). Digital banking and green finance: A study of consumer awareness in Uttarakhand. *Discover Sustainability*.