

Customer Awareness and Adoption Drivers of Sustainable Banking: An Investigation on Punjab National Bank (PNB)

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ABSTRACT

Purpose of the study:

This research project seeks to explore consumer understanding and awareness of the sustainable banking products offered by Punjab National Bank, while also shedding light on the elements that impact their acceptance. This investigation aspires to furnish valuable perspectives for augmenting customer involvement, advancing sustainable banking methodologies and bolstering PNB's initiatives to synchronize its operational practices with ecological and sustainability objectives.

Design/ Methodology:

A structured questionnaire was used to carry out the survey. Data were gathered using both offline and online methods. Data were gathered online using Google Forms. Participants were chosen using random sampling and convenience sampling methods. A total of 111 replies from consumers were used for data analysis.

Findings:

The research elucidated a moderate level of customer awareness regarding PNB's green banking offerings, with electronic statements and digital banking services emerging as the most acknowledged. Principal determinants influencing adoption encompassed environmental awareness, user-friendliness and financial savings. Nevertheless, insufficient awareness and perceived intricacies constituted significant impediments, underscoring the necessity for focused awareness initiatives and user-centric strategies.

Limitations:

The study's sample size and diversity may limit the generalizability of findings to all PNB customers. Data collection's regional focus may restrict understanding of nationwide trends. The use of customer surveys or interviews may introduce bias, leading to inaccurate reflections of actual behaviour. Rapid developments in green banking products and shifting customer preferences may diminish the findings' relevance over time. Limitations in accessing PNB's internal data on customer behaviour may constrain the analysis's depth.

Originality Value:

The study introduces a novel contribution by investigating customer cognizance and acceptance of Punjab National Bank's environmentally friendly banking services, a relatively underexplored area within the domain of sustainable finance. It provides unique insights into consumer behaviour, thereby enhancing scholarly discussions and supporting financial institutions in proficiently promoting eco-friendly financial practices.

Paper Type: Research Paper

Keywords: Customer Perceptions, Sustainable banking, Punjab National Bank, Adoption of green banking, eco-friendly practices, Bengaluru.

1. INTRODUCTION

The concept of green banking has emerged as an increasingly critical initiative that plays a significant role in fostering sustainable development within the broader financial sector (Narmadha, 2016)(Shah et al., 2023), which is often seen as a key contributor to environmental degradation (P Deepa, 2018).



This multifaceted approach encompasses a variety of environmentally friendly practices and initiatives that are specifically designed to mitigate the carbon footprint associated with banking operations (D. S. Murugan, 2019), while simultaneously encouraging customers to adopt financial habits that are more aligned with ecological sustainability (Marwah, 2019). By leveraging advanced digital platforms, promoting paperless banking solutions and implementing renewable energy technologies (Saromi & Sahayaselvi, 2023), financial institutions can assume a central position in addressing and alleviating pressing environmental challenges that society faces today (Qureshi & Hussain, 2020).

Punjab National Bank (PNB), identified as a leading public sector bank in India, has actively engaged in the cultivation of green banking practices by supplying a diverse range of ground breaking products, encompassing digital statements, thorough internet banking services and environmentally sustainable loan solutions. These initiatives not only resonate with global sustainability objectives (Anggraini et al., 2024), but also serve to highlight PNB's unwavering commitment to embedding environmental considerations into the very fabric of its business operations. However, in spite of the increasing prominence and relevance of green banking initiatives (Thi et al., 2023), there exists a notable inconsistency in customer awareness and the subsequent adoption of these products, which may inadvertently restrict the overall efficacy and impact of such environmentally conscious initiatives (Anwasha & Majumder, 2024). This analysis is aimed at two significant purposes: initially, to execute a detailed review of the extent of knowledge that PNB customers have about the bank's sustainable banking options and subsequently, to explore the different factors that could sway their decision-making in relation to the uptake of these green practices. Several key elements are expected to influence how green banking is embraced, including how customers view it, the level of environmental awareness shown by people, the perceived simplicity of using technological innovations and the advantages seen from participating in these eco-friendly banking methods (Solekah, 2019). A comprehensive understanding of these aspects is imperative for the formulation of effective strategies that aim to enhance customer engagement and promote the widespread adoption of green banking initiatives (Sahoo et al., 2016). The findings obtained from this research project will support PNB in improving its strategic tactics, guaranteeing that its product offerings resonate with the wide-ranging needs and desires of its customer demographic, while concurrently fostering the establishment of a more sustainable banking framework that values ecological integrity.

This work addresses the current knowledge deficiencies and meaning, making a notable addition to the wealth of information regarding green banking and it offers practical guidance for financial organizations striving to harmonize their operational methods with significant environmental sustainability aims, ultimately encouraging the emergence of a greener and more sustainable economy that benefits everyone.

2. REVIEW OF LITERATURE

2.1 Level of Awareness

The extent of customer awareness concerning the green banking products offered by Punjab National Bank exhibits a notable variance between the urban and rural demographics located within the region of Bengaluru, which can be attributed to several socio-economic factors. In the urban locales, it is observed that the clientele tends to possess a higher level of awareness and information regarding these sustainable banking initiatives (Akhila & Nedumaran, 2024), largely a consequence of their increased exposure to advanced digital banking solutions and various environmental sustainability campaigns that are prevalent in metropolitan areas (Katti, 2022). Specifically, services such as electronic statements, internet banking facilities and the facilitation of transactions devoid of paper usage are widely acknowledged and appreciated (Katti, 2022), particularly amongst individuals who are technologically adept and those who reside within higher income brackets (Rajan, 2017). Furthermore, it is reasonable to assert that urban customers display a heightened engagement with issues pertaining to environmental sustainability (Bouteraa et al., 2021), thereby rendering them more amenable and receptive to the adoption of green banking products (Burhanudin et al., 2020).

Conversely, the awareness surrounding green banking initiatives within rural areas remains considerably lower, a situation that can be largely attributed to the restricted access to modern technology and the limited availability of comprehensive financial education resources within these regions (Bouteraa et al., 2021) (Burhanudin et al., 2020). A significant proportion of rural clientele continues to depend upon traditional banking methods, which prominently include the utilization of physical passbooks and the receipt of paper statements for their banking transactions (Burhanudin et al., 2020). The concept of green banking remains relatively obscure in these rural territories (Burhanudin et al., 2020), leading to the emergence of a substantial knowledge gap concerning the eco-friendly banking alternatives that are provided by Punjab National Bank.

Multiple factors influence the discrepancies in awareness levels, which include technology accessibility, educational qualifications of the individuals and their involvement in various environmental initiatives and movements (S. & D. G. J. Murugan, 2017). While it is evident that urban customers benefit from superior communication channels and digital platforms that actively promote sustainable practices and green banking solutions (Debnath & Roy, 2019), rural areas necessitate the implementation of more focused and targeted strategies to enhance awareness concerning green banking products (Rai et al., 2019). This can be achieved through the utilization of offline channels, including but not limited to, the organization of local events (Ankita Dhamija, 2021), educational workshops and dedicated community outreach programs that aim to inform and engage rural customers about their banking options that prioritize environmental sustainability (Tara & Kumar, 2015).



2.2 Factors Influencing to Adoption

2.2.1. Regulatory Environment:

In the context of the banking sector, it is essential to recognize that various governmental entities and regulatory organizations frequently establish comprehensive guidelines aimed at promoting and encouraging sustainable practices within the financial industry (Tara & Kumar, 2015). These regulations, which may encompass mandatory environmental disclosures, detailed carbon footprint reporting and the provision of incentives for green banking initiatives (Meesaala et al., 2023), serve to motivate institutions such as Punjab National Bank (PNB) to actively develop and offer eco-friendly financial products. By following these regulations, banks not only respect legal mandates but also greatly enhance the promotion of sustainable operations in their practices.

2.2.2. Stakeholder Pressure:

The banking industry is increasingly subjected to considerable pressure from a diverse array of stakeholders, including but not limited to investors, customers and environmental advocacy groups (Kurian, 2022), all of whom fervently advocate for the adoption of sustainable business practices. Stakeholders are progressively expecting corporations (Shantha, 2019), including banks, to take proactive measures that contribute positively to environmental conservation efforts (Ahuja, 2015). This mounting pressure frequently compels financial institutions to introduce a variety of green banking products and services, thereby aligning their offerings with stakeholder expectations and enhancing their overall reputation within the marketplace (Herath & Herath, 2019).

2.2.3. Policy Directive:

The existence of government policies that actively support green initiatives and promote sustainable financial practices can have a profound and far-reaching impact on the adoption and implementation of green banking products within the financial sector (Vijai, 2018) (Sharma & Choubey, 2022). Policies that advocate for advancements in digital banking, the facilitation of renewable energy projects and the provision of eco-friendly loans serve to motivate financial institutions to create and offer products that are in direct alignment with these progressive directives (Sharma & Choubey, 2022), thereby fostering a more sustainable banking environment.

2.2.4. Financial Incentives:

Financial institutions may be presented with various financial incentives, which could take the form of tax rebates or subsidies (Ullah et al., 2024), specifically aimed at encouraging the implementation of green initiatives within their operational frameworks (Ullah et al., 2024). These financial incentives are instrumental in alleviating the costs associated with the adoption of innovative green technologies, thereby fostering an environment that encourages the development of sustainable banking products that are poised to attract a clientele that is increasingly environmentally conscious and responsible (Ahmed, 2012).

2.2.5. Cost Savings and Efficiency:

The introduction of green banking products, such as paperless transactions and electronic statements, has the potential to lead to substantial reductions in operational costs for financial institutions (Nath et al., 2014). By significantly minimizing the usage of paper and optimizing processes through the utilization of advanced digital platforms (Nedumaran, 2020), banks can enhance their overall operational efficiency while simultaneously reducing expenditures associated with printing and maintaining physical infrastructure, thus promoting both economic and environmental benefits (Prabhu & Aithal, 2023).

2.2.6. Customer Demand:

The surging demand from customers for sustainable and environmentally friendly products is a significant driving force that compels banks to expand their offerings to include various green banking solutions (Pratap, 2024). Environmentally conscious consumers are increasingly inclined to favour products that resonate with their personal values, such as electronic statements and green loans, thereby encouraging banks to adapt and cater to this burgeoning demand for eco-friendly financial options (Zhang et al., 2022), ultimately aligning their business models with the preferences of their clientele (Prabhu et al., 2021).

2.2.7. Innovation and Competitive Advantages:

The strategic offering of green banking products can confer upon banks a distinct competitive advantage within the increasingly crowded financial marketplace (Stauropoulou et al., 2023). By fostering innovation in digital banking alongside the introduction of sustainable products, financial institutions can effectively differentiate themselves from their competitors (Prabhu et al., 2021), thereby attracting a new and diverse customer base while simultaneously enhancing customer loyalty and retention through their commitment to sustainability (Zhang et al., 2022).

2.2.8. Collaboration and Partnership:

The establishment of collaborative partnerships between banks and various environmental organizations or government agencies can serve as a powerful catalyst for the development and proliferation of innovative green banking products (Zhang



et al., 2022). By partnering with influential entities in the environmentally-focused field, banks can harness unique expertise, secure vital resources and elevate their standing (Pratap, 2024), all of which are important for creating more powerful and effective sustainable banking initiatives that cater to both fiscal and environmental matters (Prabhu & Aithal, 2023).

2.3 Demographic Factors

Gender and location represent crucial demographic elements that significantly impact both the level of awareness surrounding and the subsequent adoption rates of green banking products within various populations.

2.3.1. Gender:

Extensive research has found that women frequently possess a heightened sensitivity to environmental matters and, as such, are more often inclined to participate in sustainable efforts and actions (Nath et al., 2014). This trend suggests that, in numerous instances, women may demonstrate a more substantial engagement with eco-friendly initiatives, especially in the context of managing the financial aspects of their households (Sharma & Choubey, 2022). It is essential to realize that the total pace of uptake for these green banking initiatives can shift dramatically influenced by several supplementary factors (Vijai, 2018), encompassing, though not restricted to, the reach of technology and the standards of financial knowledge and education among diverse demographic categories.

2.3.2. Location:

Customers residing in urban environments, notably in metropolitan areas such as Bengaluru Urban, are statistically more inclined to possess an awareness of and subsequently embrace green banking products (Meesaala et al., 2023), a phenomenon which can be attributed to their superior access to advanced technological resources, an elevated level of environmental awareness and greater exposure to the mechanisms of digital banking (Ankita Dhamija, 2021). Conversely, rural regions may encounter a comparatively sluggish rate of adoption of these innovative banking solutions (Qureshi & Hussain, 2020), primarily due to the constraints posed by limited technological infrastructure and a general lack of awareness regarding the availability and benefits of green banking offerings, which ultimately culminates in a diminished level of engagement with sustainable banking practices.

3. RESEARCH METHODOLOGY

3.1 Research Context

The present research meticulously investigates the level of customer awareness and the degree of acceptance regarding the environmentally sustainable banking products offered by Punjab National Bank, specifically within the diverse geographical contexts of Bengaluru Urban and its adjacent Rural regions. The investigation aims to elucidate the various region-specific determinants that significantly impact the propensity for adoption of these green banking initiatives, thereby offering invaluable insights that could facilitate the enhancement and promotion of sustainable banking practices within this critical metropolitan area and its surrounding rural locales.

3.2 Objectives of the study

To evaluate the level of awareness among individual's customer about PNB's green banking products.

To determine the factors that impact the decision to adopt the green banking practice.

3.3 Hypothesis of the study

H₀₁: There is a significant difference in level of awareness towards green banking products across customer of different location.

H₀₂: There is a significant relationship between adoption factor and level of awareness.

4. ANALYSIS AND INTERPRETATION

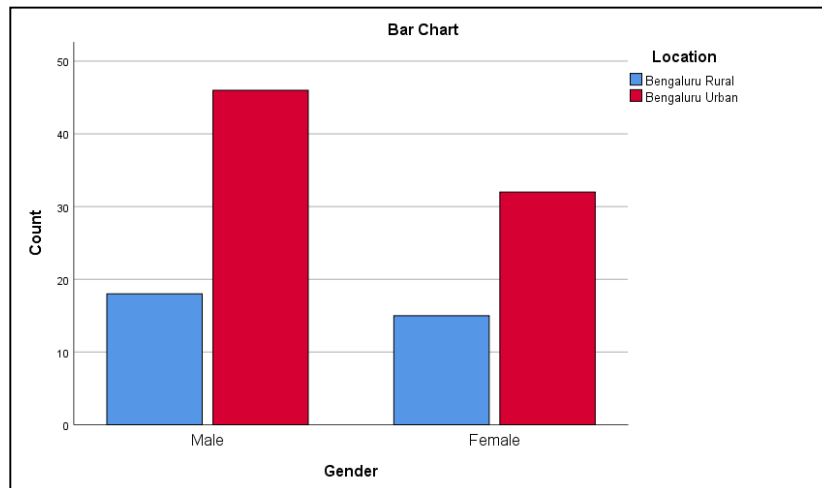
This part presents the results of detailed analysis of 111 customers of Punjab National Bank. The researcher has collected data regarding the level of awareness of green products among respondents and the factors impacting towards the adoption of green banking practice. The objective of this study was itself to evaluate the level of awareness among individual's customer about PNB's green banking products and to determine the factors that impact the decision to adopt the green banking practice. The data was processed and analysed using statistical tools such as tabulation, charts, descriptive statistics, correlation, and Mann Whitney U test to ascertain the precise relationships and differences among the variables.



Table no 1: Cross tabulation of respondents on Gender basis and Location wise

			Location		Total
			Bengaluru Rural	Bengaluru Urban	
Gender	Male	Count	18	46	64
		Expected Count	19.0	45.0	64.0
		% within Gender	28.1%	71.9%	100.0%
	Female	Count	15	32	47
		Expected Count	14.0	33.0	47.0
		% within Gender	31.9%	68.1%	100.0%
Total		Count	33	78	111
		Expected Count	33.0	78.0	111.0
		% within Gender	29.7%	70.3%	100.0%

Chart no 1: Chart showing Cross tabulation of respondents on Gender basis and Location wise



Interpretation:

As per the above table and chart, the respondents are presented in a cross tabulation on the basis of their gender (male and female) and place of habitation (Bengaluru Rural and Bengaluru Urban). The total respondents for the study were 111, out of which 33 were from Bengaluru Rural while 78 were from Bengaluru Urban. Out of the 64 respondents who were male, 28.1 % (18 individuals) were from rural area of Bengaluru while 71.9 % (46 individuals) were from the urban area of Bengaluru. In the case of females about 31.9 % (15 individuals) were from rural area of Bengaluru, while 68.1 % (32 individuals) were from the urban area of Bengaluru out of a total of 47 respondents who were female.

The scenario is similar for female responders, with a more urban-centric population. The majority of male respondents lived in Bengaluru's urban regions, reflecting a more urban-centered population. There are no major differences between the observed and expected counts which is envisaged by the expected counts which simply gives proportions as per the total distribution of respondents. For majority of the aspects expected and observed counts were so much intertwined that there were no significant biases or anomalies with this data taking into the gender-location distribution.

Objectives 1: To evaluate the level of awareness among individuals customer about PNB's green banking products.

In order to evaluate the level of awareness among individual customer about PNB's green banking products, the responses is been collected in five pointer scale of Not all Aware to Very much Aware from 111 customer and analysed using statistics tool like mean, SD and to know the difference of level of awareness among the respondents from different location like Bengaluru rural and urban, a Mann-Whitney U test is employed, which is a non-parametric alternative to the independent-samples t-test, has been conducted. The test is used to assess differences between two independent groups about ordinal data or non-normally distributed continuous data. Unlike the t-test, which compares means, the Mann-Whitney U Test evaluates



medians. It then assesses if the rankings of the two groups vary considerably.

Table no 2: Descriptive Statistics of Level of Awareness

	N	Minimum	Maximum	Mean	Std. Deviation
Level of Awareness	111	1.00	5.00	3.9005	.52343
Valid N (list wise)	111				

Interpretation:

The above data depicts the level of awareness which was measured on a range of 1 to five, with 1 being the lowest and 5 the highest, the data encompasses 111 valid responses without any missing data. The mean level of awareness was calculated to be 3.9005, means the respondents seem to possess a high level of awareness and lean more towards the upper end of the scale. With a standard deviation of 0.52343, this indicates that the level of awareness had a mild variation, the studied population as a whole seemed to have a fairly high level of awareness towards the green products of PNB despite some small level of variations across individuals.

Mann–Whitney U test

Hypothesis

H₀: There is no significant difference in level of awareness towards green banking products across customer of different location.

H₁: There is a significant difference in level of awareness towards green banking products across customer of different location.

Table no 3: Table showing the results of ranks, median report and test statistics

Ranks					Test Statistics ^a				
	Location	N	Mean Rank	Sum of Ranks	Median Report	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Level of Awareness	Bengaluru Rural	33	46.48	1534.00	3.9500	973.00	1534.00	-2.030	0.042
	Bengaluru Urban	78	60.03	4682.00	4.1000				
	Total	111							

Interpretation:

The above table showing results of mean ranks for Bengaluru rural (N-33, Mean rank-46.48) and Bengaluru Urban (N-78, Mean rank-60.03) along with median reports showing median value of 3.95 and 4.1 for Bengaluru rural and Bengaluru urban respectively. The test statistics shows the value for Mann-Whitney u test, Wilcoxon w and Z value, this test is conducted to know the difference in level of awareness towards green banking products across customer of different location. And to know the effect size statistic, r need to be calculated using $r = Z/\sqrt{N}$, therefore $r = -2.030/\sqrt{111} \rightarrow r = 0.1933$. According to Cohen (1988) criteria 0.1 = Small Effect, 0.3 = Medium Effect, and 0.5 = Large Effect. In this scenario, there is a small effect. As a result, test revealed significant difference where p value is less than the significance value, $U = 973.00$, $z = -2.030$, $p = .042$, $r = .1933$. Hence H₁ is supported as there is significant difference in level of awareness towards green banking products across customer of different location.

Objectives 2: To determine the factors that impact the decision to adopt the green banking practice.

To know the factors that are impacting the customer decision to adopt the green banking practice, a structured questionnaire is framed which includes the factors which supports the decision of customer towards the green banking practice, for the same, response is been collected in the scale of Least impacting to most impacting for them in choosing the green banking products, the data is been analysed using descriptive statistics and as a further study a correlation test is been conducted to know relationship between level of awareness and factors impacting the adoption of green baking practices.

Table no 4: Descriptive Statistics of factors impacting adoption of green banking practices

	N	Minimum	Maximum	Mean	Std. Deviation
Regulatory environment	111	1.00	5.00	3.8705	.61790
Stakeholder pressure	111	1.00	5.00	3.8255	.72678
Policy directive	111	1.00	5.00	3.9110	.59457



Financial Incentives	111	1.00	5.00	3.8649	.64346
cost savings and efficiency	111	1.00	5.00	3.8237	.64176
Customer demand	111	1.00	5.00	3.8237	.64176
Innovation and competitive advantages	111	1.00	5.00	3.8649	.56515
Collaboration and partnership	111	1.00	5.00	3.8093	.64934
Valid N (list wise)	111				

Interpretation:

The above table provides descriptive statistics for various factors influencing the adoption of green banking practices, measured on a scale from 1 (least impactful) to 5 (most impactful). Among the factors, it was shown that the policy directives have the highest mean value of 3.9110 and therefore it is considered the most influential for it has least variation of responses as indicated by its standard deviation which is 0.59457. Similarly, regulatory environment and financial incentives also score high with mean values of 3.8705 and 3.8649 respectively hence they also have strong influence to the adoption of green banking practices.

Stakeholder pressure on the other hand is reported to be have slightly more variation as it has a standard deviation of 0.72678. Other factors have mean values that are in the range of approximately 3.82 which indicates a moderate to an above average rating. However, things such as cost savings and efficiency, and customer demand are reported to have a comparatively lower mean value of about 3.82. Innovation and competitive advantages also tend to have strong influence with a mean of 3.8649 but has the least standard deviation of all factors at 0.56515 indicating a general consensus on its significance. Collaboration and partnership measures average about 3.8093 in means. So, they can be said to possess slightly less degree of influence when compared with other factors. But still, they have considerable level of control regarded with the degree of variation expressed by their standard deviation which is 0.64934.

Overall, the results indicate that all these factors are viewed as moderately to highly impactful in driving the adoption of green banking practices, with policy directives and regulatory environments emerging as the most significant motivators. The variations in standard deviations highlight differences in how consistently respondents perceive the importance of these factors.

Correlation test**Hypothesis**

H₀: There is no significant relationship between adoption factor and level of awareness.

H₁: There is a significant relationship between adoption factor and level of awareness.

Table no 5: Descriptive statistics and correlation between Adoption factor and level of awareness

Descriptive Statistics			Correlations		
	Mean	Std. Deviation		Adoption factor	Level of Awareness
Adoption factor	3.8492	.48422	Pearson Correlation	1	.783**
			Sig. (2-tailed)		.000
			N	111	111
Level of Awareness	3.9005	.52343	Pearson Correlation	.783**	1
			Sig. (2-tailed)	.000	
			N	111	111

** . Correlation is significant at the 0.01 level (2-tailed).

Interpretation:

The above table provides descriptive statistics and a correlation analysis between the Adoption Factor and the Level of Awareness regarding green banking practices. The mean score for the Adoption Factor is 3.8492, with a standard deviation of 0.48422, indicating a generally high perception of adoption with minimal variability in responses. Similarly, the Level of Awareness has a mean score of 3.9005 and a standard deviation of 0.52343, suggesting that respondents demonstrate a high level of awareness with slightly greater variability compared to the Adoption Factor.

The Pearson correlation between adoption factors and level of awareness ($r = 0.783$ and $p < 0.01$) was found to be highly positive and statistically significant, where the p value is less than the significance level, i.e., 0.01 and 0.05. This indicates that with an increase in one variable, the other also increases. This outcome indicates that higher the awareness is significantly correlated with greater adoption of green banking practices. The results depicts the significance of awareness in promoting the adoption of green banking practices, illustrating the interrelatedness of these two factors in affecting green banking



adoption.

5. CONCLUSION

This research underscores the critical significance of comprehending customer awareness and the determinants that affect the acceptance of environmentally sustainable banking products at Punjab National Bank, particularly within the urban and rural locales of Bengaluru. The results suggest that urban clientele exhibit a heightened awareness and a greater propensity to embrace green banking initiatives, largely propelled by access to technology and an increased consciousness regarding environmental issues. Conversely, rural clientele encounter obstacles such as restricted availability of digital banking resources and a deficiency in awareness pertaining to eco-friendly financial offerings. Fundamental drivers of adoption encompass environmental consciousness, user-friendliness, cost efficiency and financial incentives. Additionally, gender disparities manifest, with female customers demonstrating a stronger inclination toward sustainable practices. Furthermore, regulatory exigencies and policy frameworks stimulate banking institutions to devise and advocate for green banking alternatives. In order for Punjab National Bank to bolster the uptake of green banking services, it is imperative to concentrate on tailored awareness initiatives, particularly in rural regions, utilizing offline modalities such as workshops and community engagement programs. The institution should persist in its innovative endeavors and offer financial incentives to entice customers, all the while ensuring that green products meet customer expectations for convenience and operational efficiency.

In summary, green banking possesses the capacity to make a substantial contribution to both ecological sustainability and commercial advancement. By enhancing public awareness and addressing the barriers to adoption, Punjab National Bank can assume a pivotal role in fostering eco-conscious banking practices and catalyzing the transition towards a more sustainable financial landscape.

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