

The Influence of Green Banking Practices on Customer Satisfaction: The Role of Privacy

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Abstract

Green banking has become a strategic imperative for financial institutions worldwide, but emerging markets face a unique challenge: balancing sustainability commitments with customer trust in data security. This study examines how privacy protection strengthens the relationship between green banking practices and customer satisfaction in Indonesia's digital banking sector. Using structural equation modeling with 313 users of green banking services in state-owned banks, the study found that privacy acts as a critical mediating factor, amplifying customer satisfaction, which in turn drives customer trust, loyalty, and continued adoption of green financial services. The implications go beyond regulatory compliance to reveal how banks can differentiate themselves competitively through integrated sustainability and privacy governance. This "trust-based" model is increasingly essential for emerging markets facing digital transformation alongside environmental commitments. Our findings suggest that customer satisfaction serves as a key driver of long-term behavioural change towards green finance adoption, indicating that business profitability and societal environmental goals are complementary rather than contradictory objectives for banks in emerging markets.

Keywords: Green Banking, Privacy Protection, Customer Trust, Digital Banking, Sustainability, Emerging Markets, Customer Loyalty.

1. Introduction

Indonesia's banking sector is at a crucial point. Until 2025, central state banks such as Bank Mandiri, BRI, BNI, and BTN will process millions of digital transactions each month, but customer adoption of eco-friendly financial products remains uneven (Gunawan et al., 2022). This paradox shows that, even as banks invest in sustainability, customers still have doubts about the safety of their data during transactions (Ryu & Ko, 2020; Yousafzai et al., 2005). The mismatch between environmental commitments and digital trust is becoming a critical challenge in emerging markets, where regulatory pressures, ecological awareness, and digital expansion are creating new expectations for financial institutions (Yin & Edward, 2025).

This research answers an essential question in banking leadership: Can sustainability be a competitive advantage instead of a regulatory burden? From our study of 313 green banking users in Indonesia, the answer is nuanced and applicable. Privacy protection is not just about compliance; it is also a bridge that transforms sustainability commitments into true customer loyalty and drives long-term behavior change.

The business case is compelling. Customers who trust their data security are three times more likely to use green financial services and suggest them to others (Al Amin et al., 2023). In emerging markets, where financial inclusion remains inconsistent, this trust-driven adoption significantly fuels growth (Ubeda et al., 2024). Furthermore, banks that effectively combine sustainability governance with privacy

protections will gain a competitive edge in the increasingly crowded digital finance landscape (Zarifis, 2024).

2. Literature Review

Green Banking and the Emerging Market Context

Indonesia has established a unique testing ground to explore how green banking functions within a developing economy (Gunawan et al., 2022). With over 17,000 islands and 95,181 kilometers of coastline, maritime and environmental issues are critical for the nation (Safuan & Syafira, 2024). Yet, historically, the financial sector has often been slow to adopt sustainability practices (Hens, 2016). Recent initiatives, including the 2020-2024 National Medium-Term Development Plan (RPJMN) and the Indonesia Blue Economy Index, aim to promote greater environmental responsibility among banks (Ozili, 2023). Nonetheless, policy changes alone are insufficient; customer engagement and acceptance are equally vital.

Green banking practices include digital banking to reduce paper use, offering green loans for environmentally friendly projects, implementing sustainability policies, and reducing carbon emissions through green technology (Karki et al., 2025). The use of eco-friendly digital services and green loan programs significantly increases perceptions of value and customer satisfaction, as customers see banks as more socially and environmentally responsible (Filgueiras et al., 2024).

Privacy as a Mediator in Customer Satisfaction

In digital banking, privacy refers to the level of security and protection of customer data (Choi et al., 2025). With protected data, customers feel more confident and comfortable when using green banking services (Almaiah et al., 2023). Maintaining security and privacy can increase customer trust, which ultimately increases their loyalty and satisfaction with the service (Casaló et al., 2007). In addition, transparency in the management of customer data is essential to encourage the use of green banking services and strengthen the long-term relationship between banks and customers (Ringel & Mjekic, 2023).

Customer Satisfaction as a Driver of Sustainable Behavior

Customer satisfaction refers to how pleased customers are with bank services (Mehta et al., 2011). It is affected by factors such as employee dedication, customer involvement, and perceived value. In green banking, satisfaction is tied to how customers view the quality of digital services, the ease of access, and whether the services meet their expectations (Malc et al., 2023). Loyalty in banking is driven by satisfaction, trust, and positive service experiences (Aldas-Manzano et al., 2011). Additionally, corporate social responsibility is crucial for fostering trust and enhancing customer satisfaction and loyalty to banking services (Leclercq-Machado et al., 2022).

3. Methods

Variable Measurement

This study utilizes measurement scales validated in recent literature, including Green Banking Practices adapted from Mir et al. (2025), Privacy from Mir et al. (2025), Customer Satisfaction from Leclercq-Machado et al. (2022); Mir et al. (2025), Customer Trust from (Leclercq-Machado et al., 2022; S. Pawar & Munuswamy, 2022),

Loyalty from (Leclercq-Machado et al., 2022), and Green Finance Continuance Behavior from Dang & Ha (2024). All items were assessed on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Respondent Profile

The main study involved 313 purposively selected green banking service users in Indonesia during the period March to June 2025. The respondents' profiles show a fairly diverse demographic.

Table 1. Respondent Profile

Features	Category	Frequency	Percentage (%)
Gender	Male	214	68,4
	Women	99	31,6
Age	>54 years old	106	33,9
	27-35 years old	90	28,8
	36-45 years old	42	13,4
	18-26 years old	36	11,5
	46-54 years old	39	12,4
Marital Status	Married	220	70,3
	Unmarried	93	29,7
Banks Used	Bank Mandiri	179	57,2
	Bank Negara Indonesia (BNI)	99	31,6
	Bank Rakyat Indonesia (BRI)	69	22,0
	National Savings Bank (BTN)	29	9,3

This profile confirms that green banking is not limited to an elite that cares about the environment. The even age distribution, with 33.9% aged 54 or older, shows that green banking adoption has spread across all age groups, not just digital-native millennials. In addition, the high percentage of respondents who are married (70.3%) indicates that household decision-making also influences green financial choices. Thus, this behavior has become part of mainstream finance.

Data Analysis

Data analysis was carried out using Structural Equation Modeling (SEM) in SmartPLS 4.0. SEM was chosen for its ability to test complex causal relationships between latent variables simultaneously. The measurement model was evaluated using composite reliability and average variance extracted (AVE), while the structural model was evaluated using path coefficients and t-statistical values.

4. Result and Discussion

Our structural equation modeling analysis of data from 313 respondents identified a clear causal pathway, supported by strong empirical evidence.

Hypothesis Research and Testing Models

The research model tested six key hypotheses regarding the relationships among green banking practices, privacy, customer satisfaction, trust, loyalty, and sustainable green finance behaviors. The results of the hypothesis testing showed that all pathways were statistically significant:

Table 2. Hypothesis test results

Hipotesis	Coeficin (β)	T- Statistics	P- value	Conclusion
Green Banking Practices → Privacy	0,764	13,718	<0.001	Supported
Green Banking Practices → Customer Satisfaction	0,409	3,634	<0.001	Supported
Privacy → Customer Satisfaction	0,348	3,094	<0.001	Supported
Customer Satisfaction → Customer Trust	0,698	12,694	<0.001	Supported
Customer Satisfaction → Loyalty	0,730	12,494	<0.001	Supported
Customer Satisfaction → Green Finance Continuance Behavior	0,759	14,969	<0.001	Supported

These findings indicate that all relationships within the model are positive and statistically significant.

Model Quality and Predictive Relevance

The research model demonstrates a good fit. The R^2 values for each dependent variable show sufficient predictive capability.

Table 3. Model Quality and Predictive Relevance test result

Variabel Dependenden	R^2	Q^2	Interpretasi
Privacy	0,584	0,402	Moderate
Customer Satisfaction	0,506	0,328	Moderate
Customer Trust	0,487	0,325	Moderate
Loyalty	0,533	0,359	Moderate
Green Finance Continuance Behavior	0,576	0,384	Moderate

An R^2 value of 0.506 for Customer Satisfaction shows that 50.6% of the variation in customer satisfaction is explained by green banking practices and privacy, with the remaining 49.4% due to other factors outside the model. Additionally, a Q^2 value greater than 0 for all dependent variables suggests the model has strong predictive relevance.

Key Findings: Privacy Mediation

Mediation analysis with SmartPLS 4.0 bootstrapping indicates that privacy is a key mediating factor.

The Direct Pathway of Green banking practices has a significant impact on customer satisfaction, with a coefficient of 0.409. Additionally, the Green Banking Practice Mediation Pathway influences Privacy, which in turn affects Customer

Satisfaction, with an effect size of 0.764 multiplied by 0.348, resulting in 0.266 (significant).

$$\text{Total Effect} = 0.409 + 0.266 = 0.675.$$

This shows that privacy contributes an additional positive effect of 0.266, representing a 65% increase over the immediate impact. In essence, when customers perceive that green banking services safeguard their privacy, their satisfaction is significantly enhanced.

Customer Satisfaction as a Key Driver

Customer satisfaction most significantly impacts three primary outcomes:

- a. Loyalty: $\beta = 0.730$ ($t = 12.494$) indicates customers who are regulars at the bank.
- b. The sustainability of green financial behavior has a coefficient of $\beta = 0.759$ ($t = 14.969$), indicating it has the most significant impact in the model.
- c. Customer Trust: $\beta = 0.698$ ($t = 12.694$), showing that customers are more inclined to recommend the service.

Practically, a 10 percentage point rise in customer satisfaction leads to a 7.59 percentage point boost in sustainable green financial behaviors. This offers a tangible return on investment for banks that focus on customer satisfaction.

Discussion

For Banking Leadership

Banks in emerging markets often view sustainability as a costly regulatory requirement rather than an added value, thereby shifting perceptions of green banking (Saif-Alyousfi & Alshammari, 2025). However, our data indicates that combining sustainability with privacy governance can boost profits. Customers trusting the bank's commitment to environmental and data security tend to increase transaction volume and choose premium green products. These findings are consistent with Sharma (2024) research, indicating that trust in eco-friendly brands enhances the intention to purchase green products. This implies that customers who trust the bank's environmental efforts are more inclined to buy green products.

Privacy surpasses being a mere cost; it is essential for maintaining sustainability credibility. Banks are prioritizing green banking while ignoring privacy risks and missing valuable business opportunities (Moffett et al., 2025). Our research indicates that safeguarding privacy can boost customer satisfaction by approximately 65% when combined with green initiatives. In a developing market with an as-yet-fully established regulatory framework and widespread customer doubts about digital security, privacy becomes critically important. This supports the findings of Enzmann & Schneider (2005), who discovered that enhancing privacy can boost customer loyalty and satisfaction.

Integrate digital architecture with a focus on trust. The major banks in the study have combined architectural green initiatives with security features, such as encrypted, paperless transactions and automated biometric verification in mobile banking. The e-wallet top-up feature also features a fraud monitoring system. Banks must conduct audits to ensure that appropriate security enhancements accompany the rollout of their green services. This aligns with research by Hopali et al. (2022), indicating that mobile wallets are an eco-friendly, cashless, and traceable payment

option that enhances sustainability and underscores the significance of security features such as privacy protection and biometric verification.

For financial regulators and policymakers

Sustainability mandates should incorporate privacy requirements. Indonesia's developing regulations for green banking must clearly connect sustainability efforts with robust data protection standards. Regulators can motivate banks that align with both environmental and privacy objectives by offering improved capital requirements or simplified market access.

Emerging markets require sustainability frameworks tailored to their specific context. Green banking practices cannot be directly transferred from developed countries. In Indonesia, the framework must account for the fact that customers value both environmental responsibility and data security equally, which may differ from Western markets. Our research confirms that these concerns are genuine and significantly impact customer behavior.

For Customers and Civil Society

The security of your data is connected to the environmental impact you generate. When selecting green banking options, customers should evaluate not just the sustainability claims but also the privacy protections in place. While banks can engage in greenwashing, they cannot deceive regarding their security frameworks. Civil society organizations can help consumers make well-informed choices by examining both environmental and security aspects.

Recommendations

For banks that are launching or expanding their green services.

Perform a privacy audit during the green service development process to ensure that the security infrastructure is updated before launching any green banking initiatives. The optimal approach is to roll out green features alongside privacy and security measures simultaneously and communicate both clearly to customers. Use privacy investments as a marketing advantage; instead of viewing privacy spending merely as a compliance expense, actively promote it. Demonstrating a strong commitment to privacy can foster positive customer reactions. Additionally, create a feedback loop by conducting simple, regular surveys after key green banking transactions. Research indicates that even minor enhancements in perceived security or ease of use can significantly boost customer loyalty.

For policymakers in emerging markets

Incorporate privacy standards into the green finance mandate. When requiring banks to offer green products, also specify a privacy certification, such as ISO 27001 or applicable local cybersecurity standards. Promote "trust-based sustainability" by providing incentives, such as tax benefits or regulatory relief, to banks that excel in green finance product quality and customer confidence metrics.

5. Conclusion

The false choice between business profitability and environmental responsibility has proven that the two are interconnected, especially in emerging markets. Banks that adopt green finance and privacy governance can boost profits by increasing

customer loyalty while supporting global sustainability and expanding access to trustworthy financial services, benefiting society and the environment. The Indonesian case provides valuable lessons for emerging markets worldwide. Customers see banks holistically, not separating "good finances" from "safe" or "sustainable" ones. Banks that promote sustainability but ignore privacy risk losing trust, whereas those focusing on privacy but neglecting environmental issues may miss competitive opportunities. The future belongs to banks that understand sustainability and trust as linked. This research highlights the importance of prioritizing customer satisfaction in green finance. Satisfaction encourages behavioral change, loyalty, and positive word of mouth, especially when it is grounded in environmental responsibility and strong privacy measures. For banking leaders, this underscores both the risks of neglecting privacy in green banking and the opportunities for those who integrate both considerations, enhancing customer loyalty, profits, and environmental impact. This synergy is already evident in emerging markets.

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