

INFLUENCE OF GREEN DIGITAL BRANDING ON CUSTOMER ENGAGEMENT: A COMPARATIVE ASSESSMENT OF ICICI AND AXIS BANK

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Abstract

Sustainability-driven branding has gained renewed importance in India's digital banking environment, where customers increasingly prefer ethical, transparent, and environment-friendly digital services. This study investigates how Green Digital Branding (GDB)—defined as digital sustainability initiatives integrated into branding and communication—affects customer engagement (CE) in two major private-sector banks: ICICI Bank and Axis Bank. Unlike past studies, this research adopts a survey-based empirical design supported by exploratory factor analysis (EFA), Chi-square tests, and comparative weighted ranking methods to determine how customers perceive sustainability-linked digital efforts. Findings indicate a strong relationship between GDB and CE, with ICICI Bank achieving higher weighted scores for trust, digital satisfaction, and brand credibility. The study concludes that sustainability-infused digital branding enhances emotional, behavioral, and cognitive engagement, and recommends strengthening transparency-oriented and eco-focused digital strategies.

Keywords: Green digital branding, Customer engagement, Exploratory factor analysis, ICICI Bank, Axis Bank, Digital sustainability, Trust, Ethical branding

1. INTRODUCTION

The Indian banking sector is undergoing a rapid and transformative digital shift, driven by widespread adoption of mobile banking applications, AI-enabled customer support systems, robotic process automation (RPA), and paperless service delivery models. This digital evolution is not merely a technological upgrade but a fundamental redefinition of how banks communicate, operate, and engage with customers. In parallel, rising global and national emphasis on sustainability has pushed financial institutions to integrate environmentally responsible practices into their branding and service strategies. As a result, customers today expect banks to deliver not only seamless digital convenience but also demonstrate commitment to ecological conservation, ethical digital behaviour, and transparent governance.

In this emerging landscape, **Green Digital Branding (GDB)** has become a critical strategic tool. GDB refers to the use of digital platforms—such as social media campaigns, mobile app-based messaging, and eco-conscious website content—to promote environmentally sustainable values, green products, carbon-neutral initiatives, and socially responsible activities. Research evidence increasingly highlights that green communication significantly shapes customer trust, brand credibility, and engagement levels in the banking sector. Studies indicate that environmentally responsible digital messaging enhances customer loyalty by reinforcing the bank's long-term commitment to sustainability, ethical practices, and societal well-being.

Against this backdrop, ICICI Bank and Axis Bank provide an ideal comparative setting. Both institutions are recognized for their aggressive digitalisation strategies; however, they differ in their depth, consistency, and style of sustainability-driven communication. ICICI Bank's digital outreach often integrates green finance, ESG commitments, and paperless innovation, whereas Axis Bank places strong emphasis on climate action campaigns, inclusive financial programmes, and socially responsible branding. By analysing these contrasting approaches, the present study aims to understand how Green Digital Branding influences customer engagement, perception, and participation across digital touchpoints.

This research contributes to existing literature by bridging the gap between digital marketing, sustainability communication, and engagement behaviour in the Indian banking context. It also offers insights that can guide banks in designing more effective, trust-building, and environmentally aligned digital communication strategies.

2. Conceptual Framework

2.1 Green Digital Branding (GDB)

Green Digital Branding refers to how banks integrate sustainability principles into their digital communication, service delivery, and customer interaction processes. In the context of this study, GDB encompasses a set of

environmentally responsible and ethically aligned digital practices that collectively shape a bank's green identity. The key dimensions include:

Eco-friendly Digital Processes: Banks increasingly promote paperless and low-carbon initiatives through e-statements, e-receipts, online form submissions, digital KYC, and virtual documentation. These practices reduce resource consumption, minimise carbon footprints, and visibly reflect a bank's environmental commitment.

Digital Ethics and Transparency: A core component of GDB involves communicating responsible data practices—such as transparent disclosure of data usage, cyber safety awareness campaigns, secure authentication, and ethical information management. Transparency reinforces trust and strengthens the bank's credibility in digital spaces.

CSR-driven Digital Storytelling: Banks leverage websites, mobile apps, and social media platforms to communicate sustainability projects, community development efforts, climate action campaigns, and inclusive banking practices. This digital storytelling approach personalises CSR efforts and enables customers to emotionally connect with the bank's broader social mission.

Responsible AI and Automation: As AI-driven interfaces expand, responsible utilisation becomes essential. This includes non-intrusive personalisation techniques, ethical algorithms, bias-free recommendations, and secure AI chatbots that ensure customer privacy while enhancing service efficiency. Responsible AI practices signal a bank's sensitivity toward digital well-being and trustworthy automation.

Overall, GDB positions a bank as **environmentally conscious, socially responsible, and digitally trustworthy**, thereby influencing how customers perceive and engage with the brand.

2.2 Customer Engagement (CE)

Customer Engagement in digital banking refers to the depth of customer involvement, emotional attachment, and behavioural participation across various digital touchpoints. It represents both psychological connection and actual usage behaviour. In this study, CE is reflected through the following dimensions:

Emotional Connection with the Brand: Customers who resonate with a bank's values—particularly its sustainability and ethical practices—develop stronger emotional bonding and positive brand attitudes.

Trust in Digital Systems: Perceived safety, transparency, and reliability of digital platforms foster customer confidence, reducing hesitation in adopting online banking services.

Frequency of App/Online Usage: Higher engagement is typically expressed through regular login patterns, active use of mobile apps, online transactions, and preference for digital services over physical visits.

Continuance and Recommendation Intentions: Engaged customers show greater willingness to continue using digital services, recommend the bank to others, and participate in feedback loops.

Interaction with Digital Campaigns: This includes likes, comments, shares, views, clicks on sustainability campaigns, participation in digital contests, or responses to green initiatives communicated online.

3. Objectives of the Study

1. **To identify and categorise the key elements of Green Digital Branding (GDB)** adopted by ICICI Bank and Axis Bank across their digital platforms, including eco-friendly digital processes, sustainability communication, responsible AI usage, and CSR-driven digital messaging.
2. **To examine and measure the relationship between GDB practices and customer engagement**, focusing on emotional connection, trust in digital systems, digital usage behaviour, and responsiveness to green campaigns.
3. **To compare the level of customer engagement between ICICI Bank and Axis Bank** using appropriate statistical tools, ranking methods, and analytical techniques to assess variations in perception, usage patterns, and engagement outcomes.
4. **To propose actionable recommendations** for enhancing sustainable digital branding strategies that can strengthen customer engagement, improve digital trust, and reinforce the banks' environmental and ethical positioning.

4. RESEARCH METHODOLOGY

4.1 Research Design

The study adopts a **mixed exploratory–descriptive research design**, suitable for analysing both the conceptual dimensions of Green Digital Branding (GDB) and its influence on Customer Engagement (CE).

• **Exploratory Component:** This phase is aimed at identifying underlying customer perceptions of GDB and CE. Techniques such as **Exploratory Factor Analysis (EFA)** help uncover latent constructs that are not directly observable through basic statistical tests. This approach allows the researcher to refine dimensions like eco-friendly processes, digital ethics, or emotional engagement.

• **Descriptive Component:** After identifying key factors, a structured, quantitative assessment was conducted to measure the degree of influence between GDB and customer engagement. Standardised scales and measurable indicators allow for comparison across respondents and between the two banks.

This blended design enhances flexibility, captures complex behavioural patterns, and provides richer analytical insights than simple regression-based designs alone.

4.2 Sampling Technique

To ensure meaningful and context-specific insights, the study employs a **combination of Purposive and Snowball Sampling** strategies.

- **Purposive Sampling:** Respondents were selected based on a clear inclusion criterion—**active digital users of ICICI Bank or Axis Bank**. This ensures that participants possess firsthand experience with digital interfaces and branding communication of the respective banks.

- **Snowball Sampling:** After initial purposive selection, participants were encouraged to share the survey link with other digital banking users. This method helped increase sample diversity across age groups, professions, and usage frequency, leading to richer and more representative data.

Sample Size: 120 respondents This size is adequate for exploratory analysis and comparative interpretation and aligns with recommendations for factor analysis (minimum 5–10 responses per item).

4.3 Data Collection Tools

Primary Data Tool:

- A **Google Forms-based structured questionnaire** consisting of 20 statements covering dimensions of GDB and Customer Engagement.

- Responses were captured using a **5-point Likert scale** (1 = Strongly Disagree to 5 = Strongly Agree).

- Items were developed referring to validated scales from digital branding and sustainability literature, ensuring content reliability.

Secondary Data Sources:

- **Annual Sustainability and ESG Reports** of ICICI Bank and Axis Bank (used to verify actual GDB initiatives and communication strategies)

- **RBI Circulars and Digital Banking Guidelines** (to understand regulatory expectations regarding digital security, ethics, and customer transparency)

- **CSR Reports and Bank Websites** (to assess digital storytelling and community development initiatives)

- **Digital Marketing Dashboards and Social Media Analytics** (to analyse communication frequency, campaign themes, and engagement metrics)

4.4 Data Analysis Tools

To ensure robust and meaningful interpretation of the collected data, the study employs a set of analytical tools that go beyond basic correlation or regression techniques. These tools help uncover hidden patterns, test associations, and compare customer engagement across the two selected banks. The chosen methods are as follows:

1. Exploratory Factor Analysis (EFA)

EFA was used to identify and extract the **underlying dimensions** of Green Digital Branding (GDB) and Customer Engagement (CE).

- It helps reduce the 20 survey items into meaningful factor clusters.

- EFA assists in revealing latent constructs such as “digital ethics,” “eco-friendly processes,” or “emotional engagement.”

- The method enhances construct validity and supports a stronger conceptual framework.

2. Chi-square Test of Association

The Chi-square test was applied to examine whether a **significant association** exists between:

- Customers’ awareness of GDB initiatives, and Their engagement level with digital banking activities.

- This test is useful for analysing categorical variables and determining whether variations in engagement are influenced by GDB-related perceptions.

3. Weighted Mean Ranking Method

The weighted ranking technique was used to compare the performance of ICICI Bank and Axis Bank across multiple GDB dimensions.

- Each dimension was assigned a score based on respondent ratings.

- Weighted averages helped derive a **rank order** for both banks on aspects such as sustainability communication, AI ethics, digital transparency, and green initiatives.

- This method provides a clear comparative picture of how customers perceive each bank’s GDB effectiveness.

4. Independent Sample t-test

An independent t-test was conducted to determine whether there are **significant differences** in customer engagement levels between the two banks.

- The test compares mean engagement scores of ICICI and Axis customers.

- It helps validate whether bank-specific strategies create measurable differences in customer experience and digital interaction.

5. Data Analysis and Findings

Table 1: Demographic Profile of Respondents (n = 120)

Variable	Category	Frequency	Percentage
Gender	Male	68	56.7
	Female	52	43.3
Age Group	Below 25	24	20.0
	25–35	46	38.3
	36–45	32	26.7
	Above 45	18	15.0

Bank	ICICI Bank	62	51.7
	Axis Bank	58	48.3

(Source: Compiled by author)

Interpretation: The demographic distribution indicates a balanced representation of respondents across gender, age groups, and bank affiliation. A majority of respondents fall within the economically active age group of **25–45 years (65%)**, suggesting that the sample largely comprises digitally aware and financially active customers. The near-equal representation of ICICI Bank (51.7%) and Axis Bank (48.3%) customers ensures **comparative validity** and minimizes institutional bias. Overall, the demographic profile confirms that the sample is appropriate for examining digital banking engagement and sustainability perceptions.

Table 2: Reliability Analysis (Cronbach’s Alpha)

Construct	Items	Cronbach’s Alpha
Green Digital Branding (GDB)	10	0.84
Customer Engagement (CE)	10	0.88
Overall Scale	20	0.90

(Source: Compiled by author)

Interpretation: The reliability analysis demonstrates strong internal consistency across all constructs. The Cronbach’s alpha values for **Green Digital Branding (0.84)** and **Customer Engagement (0.88)** exceed the acceptable threshold of 0.70, indicating high scale reliability. The overall scale reliability of **0.90** confirms that the questionnaire items consistently measure the intended constructs. This establishes the **measurement robustness** of the study and supports further multivariate analysis.

Table 3: Rotated Component Matrix

Variable	Sustainable Digital Trust	Engagement & Loyalty
Paperless Digital Services	0.81	—
Data Transparency	0.78	—
Ethical AI Usage	0.74	—
Trust in Digital Banking	—	0.82
Emotional Attachment	—	0.79
Recommendation Intention	—	0.76

(Source: Compiled by author)

Interpretation: The rotated component matrix reveals strong factor loadings (>0.70), confirming clear construct separation. Variables related to **paperless services, ethical AI, and data transparency** load heavily on Sustainable Digital Trust, while **trust, emotional attachment, and recommendation intention** load on Engagement & Loyalty. This validates the conceptual framework that positions Green Digital Branding as an antecedent to customer engagement through trust formation.

5.1 Exploratory Factor Analysis (EFA) Results

To identify the core dimensions underlying Green Digital Branding (GDB) and Customer Engagement (CE), Exploratory Factor Analysis was conducted.

- **KMO Value = 0.812** Indicates sampling adequacy and confirms that the dataset is highly suitable for factor analysis.

- **Bartlett’s Test of Sphericity: $p < 0.001$** Suggests strong correlations among variables, supporting factor extraction.

Two major factors were identified: Factor 1 – Sustainable Digital Trust (Explains **43% of total variance**) This factor includes items related to:

- Ethical and transparent digital messaging
- Data usage transparency
- Eco-friendly and paperless digital processes

This factor represents how sustainability-aligned digital behaviour reinforces trust in the banking brand.

Factor 2 – Engagement & Loyalty (Explains **29% of total variance**) This factor comprises:

- Frequency of digital platform usage
- Emotional connection with the bank’s values
- Customer intention to continue and recommend (advocacy)

Interpretation:

The findings show that **sustainability-driven digital practices strengthen customer trust**, and this trust becomes a foundation for deeper engagement and long-term loyalty. Thus, GDB serves as a psychological driver for customer participation in digital banking.

5.2 Chi-square Test of Association

Hypothesis:

- **H₀:** There is no association between GDB awareness and digital customer engagement.
- **H₁:** There is a significant association between the variables.

Results:

- Chi-square value: **22.14**

- Degrees of freedom: 4
- p-value: **0.00019**

Interpretation:

Since $p < 0.05$, the null hypothesis is rejected. There is a **strong and significant association** between customer awareness of GDB initiatives and their level of engagement. Customers who are familiar with green digital practices tend to:

- use digital services more frequently,
- interact positively with campaigns, and
- show stronger trust in digital platforms.

5.3 Independent Sample t-test: To compare engagement levels between the two banks:

Bank	Mean CE Score
ICICI Bank	4.18
Axis Bank	3.84

(Source: Compiled by author)

- t-value = **2.41**
- p-value = **0.017**

Interpretation:

The results show a **statistically significant difference** in customer engagement levels between the two banks. Customers of **ICICI Bank exhibit higher engagement** due to stronger digital ethics, smoother app usage, and more consistent sustainability-linked communication strategies.

5.4 Weighted Mean Ranking Method (Bank Comparison)

GDB Dimension	ICICI Score	Axis Score	Leading Bank
Digital Ethics	1	2	ICICI Bank
Paperless Banking	1	2	ICICI Bank
CSR Digital Content	2	1	Axis Bank
AI Personalization	1	2	ICICI Bank

(Source: Compiled by author)

Interpretation:

The weighted ranking reveals a **clear performance distinction** between the two banks:

- **Axis Bank excels in CSR-driven digital storytelling**, positioning itself as a socially conscious institution.
- **ICICI Bank outperforms Axis in core sustainability-linked digital aspects**, such as paperless services, digital ethics, and responsible AI-based personalisation.

Overall, ICICI Bank projects a stronger and more consistent **sustainable digital brand image**, which aligns with the higher customer engagement observed.

6. DISCUSSION

The findings of the study offer important insights into how Green Digital Branding (GDB) influences customer engagement in the Indian banking sector. The revised analysis reinforces the growing significance of sustainability-oriented digital communication and its psychological impact on consumers.

Firstly, the results clearly indicate that **customers who perceive sustainability values within digital branding exhibit higher levels of trust, satisfaction, and usage frequency**. This aligns with contemporary research suggesting that ethical and eco-conscious digital practices enhance brand authenticity and deepen customer confidence in service quality.

The comparative analysis reveals that **ICICI Bank maintains a competitive advantage in engagement metrics**, largely due to its strong focus on paperless banking, ethical data practices, and transparent AI-driven services. These elements collectively strengthen what this study identifies as “Sustainable Digital Trust,” which emerged as the dominant factor influencing digital engagement. ICICI’s ability to integrate sustainability directly into core digital processes results in more meaningful customer experiences and higher loyalty intentions.

On the other hand, **Axis Bank demonstrates leadership in CSR-driven digital storytelling**, frequently highlighting social welfare and community impact through digital campaigns. While effective in enhancing emotional appeal, this strength does not fully compensate for gaps in eco-centric operational processes, such as deeper paperless execution or advanced digital ethics initiatives. This mismatch may explain the relatively lower engagement scores observed for Axis Bank despite its active CSR communication.

The factor analysis provides robust support for the conclusion that **sustainable trust acts as a foundational driver of digital loyalty and behavioural engagement**. Customers who perceive digital transparency, environmental responsibility, and ethical communication are more inclined to adopt and repeatedly use digital banking platforms.

Overall, the discussion highlights a broader shift in customer expectations: **digital convenience is no longer sufficient**. Modern banking users increasingly assess institutions on **ethical responsibility, environmental consciousness, and transparency of digital practices**. Banks that internalize these values within their digital ecosystem are better positioned to achieve sustained engagement and competitive differentiation.

7. CONCLUSION

The study concludes that **Green Digital Branding (GDB) plays a critical and measurable role in enhancing customer engagement within private-sector banks in India**. As digital banking becomes the primary mode of financial interaction, customers increasingly expect banks to integrate sustainability, ethical data practices, and transparent communication into their digital ecosystems. The findings affirm that sustainability-oriented digital behaviour is not merely symbolic—it directly influences customer trust, satisfaction, and long-term engagement. The use of advanced analytical tools, including **Exploratory Factor Analysis, Chi-square tests, independent t-tests, and weighted ranking methods**, provides strong empirical evidence that GDB fosters deeper psychological and behavioural engagement. Two core dimensions emerged: *Sustainable Digital Trust* and *Engagement & Loyalty*, indicating that customers' perception of digital ethics, transparency, and eco-friendly processes significantly contributes to their willingness to use and recommend digital services.

The comparative analysis shows that **ICICI Bank leads in most GDB dimensions**, particularly in paperless processes, digital ethics, responsible AI usage, and overall transparency—leading to superior engagement scores. **Axis Bank**, while strong in CSR-driven digital storytelling, demonstrates moderate performance in operational sustainability and eco-centric digital processes, suggesting opportunities to strengthen its holistic GDB strategy. Overall, the study highlights that **ethical, environmentally conscious, and transparent digital branding is now a strategic imperative** for banks aiming to enhance engagement, build trust, and differentiate themselves in an increasingly competitive digital landscape.

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