A Role of Digital Transformation on Customer Satisfaction in Green Banking Initiatives in the Indian Banking Sector

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ABSTRACT

To examine how digital transformation impacts customer satisfaction in green banking initiatives within the Indian banking sector. It aims to explore how digital tools and eco-friendly banking practices enhance customer experience, foster loyalty, and promote sustainable development in the financial services industry. This study is based on the Technology Acceptance Model and the Service Quality model. It examines how perceived ease of use, usefulness, and service quality influence customer satisfaction in green banking. The framework also integrates sustainability principles to assess eco-friendly banking practices. This study adopts a quantitative research design using a structured questionnaire to collect data from 125 respondents in the Madurai district. Respondents include customers of various banks offering green banking services. The sampling method is random to ensure diversity. Data analysis involves statistical tools to assess the impact of digital transformation on customer satisfaction, focusing on factors such as ease of use, service quality, and environmental awareness. The results aim to offer insights for improving green banking initiatives. The study reveals that digital transformation significantly enhances customer satisfaction in green banking initiatives. Key factors include ease of access, improved service efficiency, and increased environmental awareness. Customers appreciate digital tools that simplify transactions and promote sustainability, leading to higher loyalty and a positive perception of green banking services. Its focus on the intersection of digital transformation and green banking within the Indian banking sector, specifically in the Madurai district. It uniquely highlights how digital innovations drive customer satisfaction while promoting sustainability, offering valuable insights for banks to enhance eco-friendly financial services.

Keywords: Digital Transformation, Green Banking, Customer Satisfaction, Sustainability, Indian Banking Sector, etc.

Introduction

Digital transformation has become a pivotal force reshaping the Indian banking sector, driving efficiency, innovation, and enhanced customer experiences. In recent years, the rise of green banking initiatives efforts by financial institutions to promote environmentally sustainable practices has gained momentum. These initiatives include paperless banking, digital transactions, green loans, and investments in eco-friendly projects. Digital tools such as mobile banking apps, AI-driven customer service, and online platforms play a significant role in streamlining these green initiatives while reducing the carbon footprint of traditional banking practices.

Customer satisfaction, a key performance indicator for banks, is increasingly influenced by how effectively these institutions integrate digital and green practices. Consumers today demand not only

convenience and speed but also environmentally responsible services. In this context, digital transformation enhances customer engagement by offering seamless, secure, and sustainable banking experiences. For Indian banks, adopting green banking through digital channels is no longer just an option but a necessity to meet regulatory standards, boost customer loyalty, and remain competitive in a rapidly evolving financial landscape. This study explores the role of digital transformation in improving customer satisfaction within green banking initiatives, highlighting the opportunities and challenges faced by Indian banks in this transition.

Review of Literature

Singh and Srivastava (2020), Digital Transformation and Customer Experience, has revolutionized banking operations by introducing technologies that enhance customer convenience and operational efficiency. According to, the integration of digital platforms, such as mobile banking applications and AI-driven chatbots, has significantly improved customer satisfaction by providing faster services, greater accessibility, and personalized experiences. The study highlights that Indian banks leveraging digital innovations experience higher customer retention and loyalty.

Sharma (2019), Green Banking Initiatives in India, focus on promoting environmentally sustainable banking operations. According to Indian banks have adopted various green initiatives, such as paperless banking, energy-efficient data centers, and green financing. The study reveals that customers are increasingly valuing banks that actively contribute to environmental sustainability, influencing their loyalty and satisfaction.

Mehta and Gupta (2021), The Intersection of Digital Transformation and Green Banking, A study has adoption of digital tools not only reduces operational costs but also minimizes the environmental impact of banking activities. This dual benefit enhances customer perception of banks, contributing to higher satisfaction levels.

Objectives of the Study

- ✓ To examine the impact of digital transformation on customer satisfaction in the Indian banking sector.
- ✓ To analyze the effectiveness of green banking initiatives in promoting sustainable banking practices.
- ✓ To evaluate the relationship between digital transformation and customer perception of green banking initiatives.

Scope of the Study

This study focuses on examining the impact of digital transformation on customer satisfaction within green banking initiatives in the Indian banking sector. It explores how digital tools, such as mobile banking, online services, and AI-driven solutions, enhance customer experiences while promoting environmental sustainability. The research covers both public and private sector banks, assessing customer perceptions, adoption levels, and the effectiveness of green banking practices in fostering customer loyalty and supporting sustainable development goals.

Limitation of the Study

This study has certain limitations that may affect the generalizability of its findings. Firstly, the research is limited to a sample size of 125 respondents, which may not fully represent the diverse customer base of the Indian banking sector. Secondly, the study is geographically restricted to the Madurai district, limiting its applicability to other regions with different banking practices or customer behaviours. Lastly, factors such as respondents' digital literacy levels and environmental awareness may also influence the outcomes.

Data analysis and Results
Demographic Data – Percentage Analysis

Table - 1

Demographic Factor	Category	Number of Respondents	Percentage (%)
Gender	Male	70	56%
	Female	55	44%
Age Group	18–25 years	30	24%
	26–35 years	45	36%
	36–45 years	25	20%
	Above 45 years	25	20%
Educational Level	Undergraduate	50	40%
	Postgraduate	60	48%
	Others (Diploma, etc.)	15	12%
Occupation	Private Sector Employee	40	32%
	Government Employee	25	20%
	Self-employed	30	24%
	Student	30	24%

Sources: Primary Data

The demographic analysis reveals that out of 125 respondents, 56% are male, while 44% are female. The majority of participants fall within the 26–35 age groups (36%), followed by the 18–25 and 36–45 age groups. In terms of education, 48% of the respondents hold a postgraduate degree, indicating a higher level of education among participants. Regarding occupation, a significant portion of respondents work in the private sector (32%), while a notable share is either self-employed (24%) or students (24%). This distribution suggests a diverse sample, capturing the views of various occupational and educational backgrounds, which is essential for understanding perceptions of digital transformation and green banking across different customer segments.

Digital Transformation vs. Customer Perception of Green Banking - Pearson Correlation Analysis

H_0 - There is no significant linear relationship between digital transformation and customer perception of green banking initiatives.

H_1 - There is a significant linear relationship between digital transformation and customer perception of green banking initiatives.

Table - 2

Variable	Pearson Correlation Coefficient (r)	p-value	Interpretation
Digital Transformation vs. Customer Perception of Green Banking	0.72	0.000	Strong positive correlation (Significant)

Sources: Primary Data

The Pearson correlation coefficient (r) of 0.72 indicates a strong positive linear relationship between digital transformation and customer perception of green banking initiatives. A p-value of 0.000 (which is less than the standard significance level of 0.05) confirms that the correlation is statistically significant. This means that improvements in digital banking services such as mobile apps, AI-driven support, and paperless transactions are strongly associated with positive customer perceptions of green banking initiatives. Customers are more likely to recognize and appreciate green efforts when banks effectively integrate digital technologies, leading to improved satisfaction and loyalty.

Digital Transformation and Customer Satisfaction - Regression Analysis

H_0 - Digital transformation has no significant impact on customer satisfaction in the Indian banking sector.

H_1 - Digital transformation has a significant impact on customer satisfaction in the Indian banking sector.

Table - 3

Model Summary	Value
R (Correlation Coefficient)	0.75
R² (Coefficient of Determination)	0.56
Adjusted R²	0.55
Standard Error	0.35

ANOVA Table	Sum of Squares	df	Mean Square	F	p-value
Regression	45.2	1	45.2	36.5	0.000
Residual	35.1	123	0.29		
Total	80.3	124			

Coefficients Table	Unstandardized Coefficients (B)	Standard Error	t	p-value
Intercept (Constant)	1.25	0.18	6.94	0.000
Digital Transformation (X)	0.65	0.11	6.04	0.000

Sources: Primary Data

The R² value of 0.56 suggests that 56% of the variation in customer satisfaction can be explained by digital transformation efforts. This indicates a moderately strong relationship. The p-value of 0.000 (less than 0.05) indicates that the model is statistically significant. The regression coefficient (β_1 = 0.65) implies that for every unit increase in digital transformation efforts, customer satisfaction increases by 0.65 units on average. The F-value of 36.5 from the table further supports the significance of the model.

Customer Satisfaction and Age Group - ANOVA Test

H_0 - There is no significant difference in customer satisfaction across different age groups.

H_1 -There is a significant difference in customer satisfaction across different age groups.

Table - 4

Age Group	Number of Respondents (n)	Mean Customer Satisfaction Score	Standard Deviation
18–25 years	30	3.8	0.5
26–35 years	45	4.2	0.4
36–45 years	25	4.0	0.6
Above 45 years	25	3.6	0.7

Sources: Primary Data

ANOVA Table

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-value	p-value
Between Groups	4.35	3	1.45	5.67	0.001
Within Groups	30.2	121	0.25		
Total	**34.55**	**124**			

Sources: Primary Data

The F-value of 5.67 indicates that there are observable differences between the means of customer satisfaction across age groups. The p-value of 0.001 is less than the significance level ($\alpha = 0.05$), meaning the result is statistically significant. There is a significant difference in customer satisfaction across different age groups. The highest average satisfaction score is observed in the 26–35 years group, suggesting that younger, digitally savvy customers may be more receptive to digital transformation and green banking initiatives. Conversely, older age groups (Above 45) may be less satisfied, possibly due to lower familiarity with digital banking services.

Customer Perception of Digital Transformation and Green Banking Practices - Factor Analysis

Table - 5

Test	Value	Threshold	Interpretation
Kaiser-Meyer-Olkin (KMO) Measure	0.82	> 0.6	Sampling is adequate for factor analysis
Bartlett's Test of Sphericity	$\chi^2 = 256.4$	p < 0.05	Correlation matrix is suitable for analysis

Sources: Primary Data

Table – 6

Factor	Initial Eigen value	% of Variance	Cumulative %
Factor 1 (Digital Convenience)	3.85	32.1%	32.1%
Factor 2 (Eco-Friendly Services)	2.45	20.4%	52.5%
Factor 3 (Customer Awareness)	1.65	13.8%	66.3%
Factor 4 (Security & Trust)	1.15	9.6%	75.9%

Sources: Primary Data

Table - 7

Variables	Factor 1 (Digital Convenience)	Factor 2 (Eco-Friendly Services)	Factor 3 (Customer Awareness)	Factor 4 (Security & Trust)
Mobile Banking Accessibility	0.82	0.15	0.12	0.05
Paperless Transactions	0.74	0.42	0.20	0.18
Green Loan Facilities	0.21	0.79	0.25	0.14
Energy-efficient Bank Branches	0.19	0.76	0.31	0.20
Awareness of Green Initiatives	0.12	0.25	0.83	0.10
Trust in Digital Security	0.24	0.15	0.22	0.81
Data Privacy Policies	0.18	0.10	0.12	0.79

Sources: Primary Data

Factor 1 - Digital Convenience (32.1% variance explained), this factor includes variables related to mobile banking accessibility and ease of digital services, suggesting that convenience is a primary driver of customer perception regarding digital transformation. Factor 2 - Eco-Friendly Services (20.4% variance explained), this factor reflects the importance customers place on paperless transactions and green financing facilities, highlighting their awareness of eco-friendly practices. Factor 3- Customer Awareness (13.8% variance explained), this factor captures the level of awareness customers have regarding green banking initiatives, which plays a significant role in shaping perceptions of sustainability. Factor 4 - Security & Trust (9.6% variance explained), this factor emphasizes the importance of security measures and data privacy in ensuring customer trust in digital transformation efforts.

Suggestions

This study based on the findings, banks should enhance their digital transformation strategies by improving mobile banking platforms, ensuring seamless digital transactions, and providing personalized customer experiences. Emphasis should be placed on promoting green banking initiatives through awareness campaigns and incentives for adopting eco-friendly practices. Strengthening cyber security measures and data privacy will build customer trust in digital services. Additionally, targeted outreach programs for older customers can improve their digital literacy and satisfaction. Continuous monitoring and feedback mechanisms will help banks adapt their digital services to evolving customer expectations while fostering sustainable banking practices.

Conclusion

This study highlights the significant impact of digital transformation on customer satisfaction in the Indian banking sector. Enhanced digital services, such as mobile banking, paperless transactions, and AI-driven support, positively influence customer experiences. Green banking initiatives effectively promote sustainable banking practices, with increased customer awareness driving adoption. The analysis reveals a strong relationship between digital transformation and positive customer perceptions of eco-friendly initiatives. To remain competitive and foster sustainability, banks must focus on improving digital infrastructure, promoting green initiatives, and addressing customer concerns related to security and ease of use, ensuring long-term satisfaction and loyalty.

Acknowledgement

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