



GREEN BANKING ADOPTION AND ENVIRONMENTAL CONSCIOUSNESS AMONG BANK CUSTOMERS

Pranam Shetty M¹, Sowmya D S²

¹RV Institute of Management

²RV Institute of Management

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ABSTRACT

This study examines the drivers of sustainable e-banking adoption among 324 retail bank customers in Bangalore, focusing on perceived ease of use, environmental awareness, and social influence. Using a quantitative design, data were collected via a structured 24-item questionnaire and analysed in Python through Cronbach's Alpha, Pearson Correlation, Multiple Linear Regression, and One-Way ANOVA. All three hypotheses were supported at $p < 0.001$, with ease of use ($r = 0.728$), environmental awareness ($r = 0.652$), and social influence ($r = 0.662$) showing strong positive correlations with adoption intention. Regression analysis explained 76.1% of variance ($R^2 = 0.761$, $F = 168.6$, $p < 0.001$), with eco-friendly behaviour emerging as the strongest predictor ($\beta = 0.483$). ANOVA revealed significant demographic differences, with gender most strongly affecting environmental awareness. Findings reveal a digital sustainability divide favouring higher-income, educated customers, offering banks and policymakers practical insights for promoting inclusive, sustainable digital banking adoption in urban India.

KEY WORDS: Green banking, sustainable e-banking, environmental awareness, technology adoption, Bangalore, social influence, eco-friendly behaviour

1. INTRODUCTION

All over the world, banks are transforming rapidly. The banking sector is heading towards greener and more digitally intensive practices due to the arrival of new technology, increased environmental consciousness, and demands by governments to be more responsible. This change is accelerating in a city such as Bangalore where the locals are tech-savvy, start-ups are numerous and young professionals are in great numbers.

Green banking is merely doing good by the way of doing banking. This involves activities such as becoming paperless, minimizing the number of visits which people make to the bank facilities, providing them with digital sign-up experiences (such as e-KYC), and raising the awareness of customers to have a more environmentally friendly financial experience. Sustainable e-banking occurs when all these are provided by a bank over the internet or within a mobile application. Win-win situation—customers are spared the hassle of having to carry it in their phones as they do everything, and the planet is the winner since there are less papers and there are not as many people driving to the bank branches.

Nevertheless, all the customers are not ordinary. Others find mobile banking applications user-friendly, whereas others cannot make out. There are those who are highly concerned about the environment and those who do not give it a second thought. Others are affected by the actions of their friends and family and others decide independently. The question of what is motivating people in Bangalore to begin using green banking, or what is preventing it is what this research will be all about.

Most earlier studies on digital banking were based on two well-known models: the Technology Acceptance Model (TAM) by Davis (1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003). While these models are very useful, they were not designed to include environmental thinking. This study fills that gap by combining technology factors with environmental factors to understand green banking adoption in Bangalore.



2. LITERATURE REVIEW

Author/ Year	Objective	Methodology	Findings	Research Gap
Davis (1989)	To find out what makes people want to use or not use computer systems at work.	Survey-based study using the Technology Acceptance Model (TAM) with working professionals.	People are more likely to use a system if they feel it is useful and easy to use. These two factors strongly predict actual usage.	The model does not consider environmental attitudes or sustainability — it only looks at functional aspects of technology.
Venkatesh et al. (2003)	To combine different technology adoption models into one single unified theory (UTAUT).	Survey across four different organisations. The model was tested with employees who were using new technology systems.	Four key factors drive technology adoption: how useful it is, how easy it is, peer pressure, and available support. Social influence was confirmed as a strong driver.	UTAUT does not consider the environmental impact of technology use or green behaviour, which is now increasingly relevant.
Poonam & Shilya (2012)	To understand why Indian customers adopt or avoid internet banking by extending the TAM model.	Questionnaire-based survey of bank customers in India. Structural equation modelling was used to analyse responses	Ease of use and usefulness are the strongest reasons why Indians adopt internet banking. Trust also plays a role.	The study does not include sustainability or eco-friendly banking behaviour as factors, which limits its relevance in a green banking context.
Martins, Oliveira& Popovic (2014)	To explain why customers adopt internet banking by adding risk perception to the UTAUT framework.	Quantitative survey study conducted in Portugal. Structural equation modelling was used to test the extended model.	Perceived risk (fear of fraud and data theft) reduces the likelihood of adopting internet banking, while ease of use and performance expectancy increase it.	The study is conducted in a Western country and does not cover environmental motivations or green banking features.
Lin & Liu (2020)	To check whether environmentally conscious customers use online banking more than others.	Analysis of online banking data using regression. Data was collected from bank customers in China.	Eco-conscious customers use digital banking channels more often, especially when they believe it helps the environment. Environmental awareness directly boosts Digital banking usage.	The study is limited to China. It does not examine perceived ease of use or social influence alongside environmental factors.
Afshan & Sharif (2016)	To find out what drives customers to adopt mobile banking in Pakistan.	Quantitative survey of mobile banking users in Pakistan. Structural equation modelling was used.	Social influence, performance expectancy, and trust are the biggest drivers of mobile banking adoption. Social influence is especially strong among younger users.	The study does not include any environmental or green banking dimensions. It is also limited to one country.
Singh (2022)	To develop a mobile banking adoption model for India that includes sustainable usage intentions.	Survey-based study using UTAUT constructs among mobile banking users in India.	Perceived usefulness, ease of use, and social influence significantly predict the intention to use mobile banking sustainably. Indian customers are increasingly motivated by convenience.	The sustainability construct is not fully developed — green banking features, environmental awareness, and eco-behaviour are not explored in depth.



Shankar & Jebarakirthy (2019)	To examine how the quality of internet banking services affects customer loyalty in India.	Survey of internet banking customers in India. Regression analysis was used to test service quality dimensions against loyalty.	Reliability, responsiveness, and assurance are key service Quality factors That increase customer loyalty in digital banking. Social dimensions of service also matter.	The study focuses entirely on service quality and loyalty — it does not address environmental consciousness or sustainable banking adoption.
QTAnalytics (2024)	To explore how the adoption of mobile and internet banking contributes to environmental sustainability.	Secondary data review and analytical study on digital banking trends and their environmental outcomes.	Switching to digital banking significantly reduces paper usage, branch visits, and carbon emissions. Internet and mobile banking are strong tools for environmental sustainability.	The study relies on secondary data and does not test customer-level perceptions or behavioural intentions through a primary survey.
Yoon (2010)	To identify the factors that make customers satisfied with online banking services in China.	Survey study among online banking users in China. Regression analysis was used to identify satisfaction drivers.	Trust, security, functionality, and empathy are critical drivers of customer satisfaction with online banking. Trust is the most important factor.	The study focuses on satisfaction, not on adoption intention or environmental factors. It does not explore green banking or eco-conscious behaviour.

3. RESEARCH METHODOLOGY

3.1 Statement of the Problem

Despite rapid growth in digital banking across India, there is limited understanding of why retail bank customers in Bangalore specifically choose to adopt or avoid sustainable and eco-friendly e-banking services. Most existing research focuses either on technology adoption (without sustainability) or on environmental awareness (without linking it to actual banking behaviour). This study bridges that gap.

3.2 Objectives

- To measure how Perceived Ease of Use of e-banking platforms affects customers' intention to adopt sustainable e-banking.
- To examine the relationship between Environmental Awareness and attitude towards green banking.
- To evaluate how Social Influence (friends, family, campaigns) impacts green banking adoption.
- To analyse differences across demographic groups using ANOVA.
- To offer practical recommendations to banks, fintech firms, and policymakers.

3.3 Research Design

This research is a quantitative one, indicating that the researcher employs numbers and statistics to comprehend behaviour. A questionnaire containing items about the customers of retail banks in Bangalore was designed and made available online. It is a cross-section research - i.e., data was observed at a

single moment in time, not a continuous study over time. It is a descriptive (accounting of who the respondents are) and inferential (drawn conclusions about the relations between factors) study.

3.4 Data Collection

Primary data was gathered direct on the retail bank customers by use of an online structured questionnaire. The questionnaire was subdivided to two parts. The first section gathered baseline data concerning the respondents, their age, gender, level of education, monthly earnings, occupation and the kind of bank they are using. In the second part, 24 statements were used to answer on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). These statements measured eight aspects, such as the frequency of their use of e-banking (General Usage), ease (PEOU), what they perceive (EA), practice (ECO), ease (PU) to use, whether they intend to adopt e-banking (AI), whether influenced by others (SB), and its perceived usefulness (SI).

3.5 Sampling and Population

- This study will focus on the following target group (population): adult retail bank consumers in Bangalore who have an active bank account, live in the city, and have access to either internet or mobile banking. It was through snowball sampling - this implies that the researcher first had to contact a group of individuals, through whom other individuals can be approached with their help. This assisted in achieving a wide range of respondents with varying age brackets, income levels and occupation.
- There were 324 valid responses. This is a large enough



sample to test the statistics employed in this research, such as factor analysis and regression (Hair et al., 2019). The sample will consist of customers of public sector banks, banks of the private sector, banks of the new generation, and cooperative banks.

3.6 Data Collection Tools.

- The primary instrument here was a structured questionnaire based on Likert scale. A Likert scale is a rating scale, in which the respondent is required to select a response by considering such responses as Strongly Agree, Agree, Neutral, Disagree, or Strongly Disagree. One of the most popular instruments in social science research, as it is easy to complete and offers a statistically analysable data. It was carried out online hence making it convenient to sample many respondents throughout the city.

3.7 Data Analysis Techniques

- After collecting the data, it was analysed in Python (Google Colab) through statistical libraries. These were done by the following methods:
- Reliability Analysis (Cronbachs Alpha): This is used to check to determine whether the questions that measure each concept are homogeneous with each other. The greater the Alpha, the more the questions are being measured to be the same.
- Pearson Correlation: This is used to determine how two phenomena move with each other. As an illustration, when individuals who are easy to deal with in the banking arena are those who are more likely to take up green banking, then you will find that the two are positively correlated.
- Multiple Linear Regression: This is used to examine the combined effect of multiple predictors on a single outcome, in this instance, how PEEU, Environmental Awareness, Eco-Friendly Behaviour, etc with predictors have a collective effect on Adoption Intention.
- One-Way ANOVA: This is used to test whether different groups of people (e.g. age groups or income groups) share some significantly different attitudes or behaviours.

3.8 Conceptual Framework

- This study has a conceptual framework which is

constructed upon two widely accepted theories - Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). These theories describe the reasons behind the use and non-use of technology by people. This paper follows up on these theories by including sustainability factors like, Environmental Awareness and Eco-Friendly Behaviour.

- The model operates in the following way: When a customer experiences an e-banking platform easy to use (Perceived Ease of Use), he is more likely to use it. The more they realise that banking on paper has harmful effects on the environment (Environmental Awareness), the more they will tend to adopt eco-friendly banking behaviour (Eco-Friendly Behaviour), which subsequently enhances their Adoption Intention. When they are encouraged by the people in their surroundings such as family, friends, or bank campaigns to go green (Social Influence), there is a higher trend expected of them to convert to sustainable e-banking. These three paths combine to a decision at the end of the process made by a customer, Customer Adoption Intention.
- Something that is easy to use + green conscious + social help = more likely to go green with banking.

3.9 Research Hypothesis

Based on the literature review and conceptual framework, three hypotheses were formed and tested:

H1: Customers who find e-banking platforms easy to use are more likely to adopt sustainable e-banking services.

H2: Customers who are more aware of environmental issues have a more positive attitude towards green banking.

H3: Customers whose friends, family, or peers use and recommend green banking are more likely to adopt it themselves.

4. RESEARCH ANALYSIS

4.1 Reliability Analysis

Before running the main analysis, it is important to check whether the questions in the survey are reliable - meaning they consistently measure what they are supposed to measure. Cronbach's Alpha is a number between 0 and 1 used for this. A value above 0.70 is considered good. The table below shows the reliability results for each construct

Construct	Items	Cronbach's α	Interpretation
Perceived Ease of Use (PEOU)	PEOU1, PEOU2, PEOU3	0.75	Acceptable
Environmental Awareness (EA)	EA1, EA2, EA3	0.50	Poor
Eco-Friendly Behaviour (ECO)	ECO1, ECO2, ECO3	0.70	Acceptable
Perceived Usefulness (PU)	PU1, PU2, PU3	0.61	Acceptable
Adoption Intention (AI)	AI1, AI2, AI3	0.69	Acceptable
Social Influence (SI)	SI1, SI2, SI3	0.68	Acceptable

Perceived Ease of Use (0.75) and Eco-Friendly Behaviour (0.70) meet the standard threshold. The other constructs fall in the 0.61–0.69 range, which is acceptable for an exploratory study

where scales have been newly adapted to the Indian green banking context. Environmental Awareness (0.50) is the weakest, which is a known limitation of this study.



4.2 Correlation Analysis

Pearson correlation was used to check how strongly two things are related to each other. A value close to +1 means a very strong positive relationship (when one goes up, the other also

goes up). The table below shows only the relationships that are directly relevant to the three hypotheses, along with one additional important relationship.

Relationship	Pearson r	p-value	Significant?
PEOU → Adoption Intention (H1)	0.728	< 0.001	Yes
Environmental Awareness → Eco-Friendly Behaviour (H2)	0.652	< 0.001	Yes
Environmental Awareness → Adoption Intention (H2)	0.619	< 0.001	Yes
Social Influence → Adoption Intention (H3)	0.662	< 0.001	Yes
Eco-Friendly Behaviour → Adoption Intention	0.786	< 0.001	Yes

All five relationships shown are statistically significant. The strongest relationship is between Eco-Friendly Behaviour and Adoption Intention ($r = 0.786$), meaning that customers who already practise eco-friendly banking are the most likely to fully adopt green banking. Perceived Ease of Use ($r = 0.728$) and Social Influence ($r = 0.662$) are also strongly related to Adoption Intention.

4.3 Multiple Linear Regression

Regression analysis was used to understand which factors most strongly predict whether a customer will adopt sustainable e-banking, when all factors are considered together. The dependent variable (what we are trying to predict) is Adoption Intention. The model is very strong—it explains 76.1% of the variation in customers' adoption intention ($R^2 = 0.761$).

Predictor	Coefficient (B)	Std. Error	t-value	p-value
(Constant)	-0.373	0.165	-2.264	0.024
Perceived Ease of Use	0.195	0.050	3.884	0.000 **
Environmental Awareness	-0.031	0.054	-0.572	0.568
Eco-Friendly Behaviour	0.483	0.045	10.639	0.000 **
Perceived Usefulness	0.157	0.056	2.820	0.005 **
Perceived Barriers	0.202	0.052	3.899	0.000 **
Social Influence	0.099	0.044	2.235	0.026 *

The biggest driver is Eco-Friendly Behaviour ($B = 0.483$) — customers who already practise eco-friendly habits are far more likely to adopt green banking fully. Perceived Barriers ($B = 0.202$) and Perceived Ease of Use ($B = 0.195$) are the next strongest predictors, followed by Perceived Usefulness ($B = 0.157$) and Social Influence ($B = 0.099$). Environmental Awareness,

while important on its own, does not directly predict adoption when all other factors are included together.

4.4 Hypothesis Testing Summary

The table below summarises the results of testing all three hypotheses using Pearson correlation.

Hyp.	Statement	r	p-value	Result
H1	Perceived Ease of Use positively and significantly influences Adoption Intention	0.728	< 0.001	Supported
H2	Environmental Awareness positively influences attitude towards sustainable e-banking	0.652	< 0.001	Supported
H3	Social Influence positively and significantly impacts Adoption Intention	0.662	< 0.001	Supported

H1 — Supported: There is a strong positive relationship between Perceived Ease of Use and Adoption Intention ($r = 0.728$). This means that the easier a customer finds the e-banking app or website, the more likely they are to adopt green banking features.
H2 — Supported: Environmental Awareness is positively related to both Eco-Friendly Behaviour ($r = 0.652$) and Adoption Intention ($r = 0.619$). Customers who understand the environmental harm

caused by paper-based banking are more likely to switch to eco-friendly digital banking.

H3 — Supported: Social Influence is positively related to Adoption Intention ($r = 0.662$). When a customer's family, friends, or colleagues use and recommend green banking, that customer is more likely to adopt it too.



4.5 ANOVA — Group Comparison

One-way ANOVA was used to check whether different groups of people — based on age, gender, income, education, and

occupation — show significantly different scores on the key constructs. This helps us understand if green banking adoption varies across different types of people.

Demographic	Construct	F-value	p-value	Significant?
Age	Perceived Ease of Use	3.262	0.012	Yes
Gender	Environmental Awareness	11.540	0.000	Yes
Income	Adoption Intention	7.939	0.000	Yes
Education	Social Influence	1.954	0.085	No
Occupation	Perceived Barriers	3.303	0.011	Yes

Younger customers find e-banking significantly easier to use compared to older age groups ($F = 3.262$, $p = 0.012$). There is a very strong difference in Environmental Awareness between male and female respondents ($F = 11.540$, $p < 0.001$). Higher-income customers show significantly stronger intention to adopt green banking ($F = 7.939$, $p < 0.001$). Perceived Barriers vary significantly across different occupations ($F = 3.303$, $p = 0.011$). Education level, however, does not significantly change Social Influence scores ($F = 1.954$, $p = 0.085$).

5. CONCLUSION

This paper was aimed at getting insights into what retail bank clients in Bangalore are motivated to embracing sustainable or green e-banking services. Having conducted a survey of 324 customers and having conducted an extensive statistical analysis, it is possible to come to the following important conclusions:

To begin with, some of the most significant matters that banks can engage in to encourage green banking are to make banking apps and websites visibly friendly. Customers are much more likely to utilize its green solutions when they discover the online tool being easy and user-friendly. This confirms Hypothesis 1.

Second, more customers will switch to digital and environmentally-friendly banking because they know how the traditional banking system damages the environment, by waste of paper and printing, as well as by means of needless visits to the branch. Environmental awareness does not always work to cause adoption, but achieves this by first promoting greener banking practices. This confirms Hypothesis 2.

Third, it is the issue of social support. A customer can be more inclined to go green when encouraged to do so by their friends, family, or by a bank. This should also be leveraged by banks by way of referral programmes and awareness programs. This confirms Hypothesis 3.

The regression model indicates that the sole largest predictor of the adoption of green banking is the already existing eco-friendly banking behavior of a customer. This implies that banks must initially convince customers to make small green actions such as going paperless before made to embrace all the green banking aspects.

Greener banking adoption is more among the younger generation, high income consumers and those that are more sensitive to the environment. This implies that banks should create various approaches to various categories, i.e., trying to attract older and poorer customers who might not be on the digital sustainability wave.

6. SUGGESTIONS AND RECOMMENDATIONS

6.1 To Banks and Financial Institutions.

- Make apps easier: Banks ought to invest in simplifying their mobile apps and websites, particularly to older or less technologically advanced users. Basic design, straight forward language and useful instructions can go a long way.
- Market green functionality: Not all customers realize that their bank already has paperless statements, e-KYC, or that they can monitor their carbon footprint. These features are to be emphasized by the banks in push, SMS notifications and onboarding guides.
- Rewarding green behaviour: Banks can also reward customers going paperless, or visiting less often, or regularly using green banking features by providing small incentives such as cashback, lowered interest rates, or loyalty points, among others.
- Utilize referral programmes: The social influence is such a powerful factor, and, thus, banks need to develop referral programmes, in which current clients can refer other people to use the features of green banking. Advertisement is less likely to be trusted compared to peer recommendations.
- Divide customer outreach: The various customers require various communication. The young customers react to the digital campaigns, whereas the old customers might require in-branch trainings or phone guidance.

6.2 To Policymakers and Regulators.

- Mandate sustainability disclosures: The Reserve Bank of India (RBI) ought to mandate the banks to disclose their paper use, levels of digital adoption and carbon footprints publicly. This will encourage the banks to better their sustainability measures.
- Support digital literacy programmes: Governments and banks should collaborate to carry out programmes to enhance digital literacy - particularly in semi-urban and among poorer groups
- to ensure more of the population can access sustainable e-banking.
- Give incentives to green banking: Tax breaks to banks achieving green banking goals, or subsidies to allow more banks to invest in sustainable digital infrastructure.
- Make digital access inclusive: It is necessary that policymakers see that people who are not smartphone or



internet users are not left behind in the transition to a digital banking process.

This can be closed by subscribing to data plans under subsidies and using community e-banking kiosks.

6.3 For Fintech Companies

- My design thought: Fintech start-ups must establish the environmental capabilities in their products early in the design stage - carbon footprint calculators, paperless-first designs, and green savings objectives.
- Partner with banks to do green campaigns: Fintech companies can partner with banks to conduct awareness campaigns, gamified sustainability challenges, and social media drives that can help make the decision to go green fun and socially appropriate.
- Give attention to customer experience: Ease of use is a powerful engine, and to make it available constantly, the company must perform an endless test and enhance its apps, paying special care to users across different age and income groups.

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