

Factors Affecting Adoption of Green Banking Practices in Indian Banking Sector and its Impact on Environment

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Abstract

Green Banking, as defined by Institute for Development and Research Technology (IBRDT, 2014), is “an umbrella term referring to practices and guidelines that make banks sustainable in economic, environment, and social dimensions. It aims to make banking processes and the use of IT and physical infrastructure as efficient and effective as possible, with zero or minimal impact on the environment”. The concern for environmental sustainability by the banks has given rise to concept of Green Banking. This concept mutually beneficial to the banks, industries and the economy. It helps promoting environmental friendly practices and reducing carbon footprints from banking activities. Hence the present study is such an attempt to identify the factors affecting intention of banks to adopt green banking practices from the sample size of 100 Customers of City Union Bank in Chennai City and also to analyse the impact on environment of adoption of green banking practices in Indian Banking Sector.

Keywords: Green Banking, Factors, Environmental sustainability, Impact on Environment and Regression

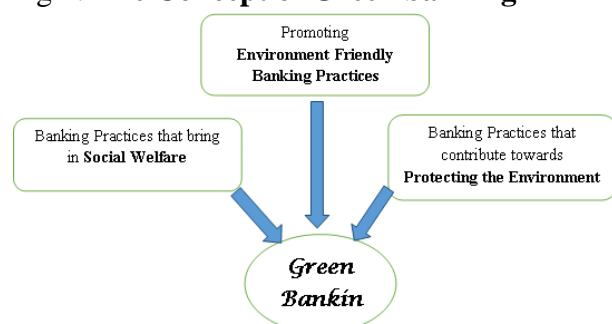
I. Introduction

A devastating division of scientific substantiation evidently specifies that changes in the climate is a critical and imperative matter and also indicated that there is a change in the climate of the earth and it is changing at a very fast pace, mainly because of the increase in the emission of greenhouse gases that has been caused due to human actions and behaviour. There are many evidences which indicated that the climate is changing rapidly, like, increases in sea level, rise in the average temperature globally, rainfall changes and extreme climatic events.

India is a participant in both the frameworks i.e. the Kyoto Protocol and UNFCCC. The CDM i.e. the Clean Development Mechanism has given India a noteworthy prospect for the reduction of carbon emissions at comparatively lower price via energy efficiency projects and

renewable energy projects. This opportunity will provide India the chance to earn money, by creating the carbon credits and marketing the same through legalized carbon exchange schemes. CDM is allowing advanced countries to make investments in carbon reductions, where it is the economical in the world. From the beginning of 2001 to 2016, the CDM is projected to produce emission reductions equivalent to 1.5 billion tons of carbon dioxide.

Fig 1: The Concept of Green banking



II. Review of Literature

A study was conducted in Chinese by **Zhang et al. (2013)**¹, to understand the adoption of sustainable practices. The results of the study showed that, the “Perceived Ease of Use, Perceived Usefulness, self-efficacy, perceived enjoyment, facilities conditions and technical readiness”, have a positive and significant impact on the adoption behaviour. “Privacy Risk, Security Risk and Perceived Risk”, revealed a negative impact on the adoption behaviour, with noteworthy influence for adoption of ATMs by the consumers. The outcomes of this research work indicated that, the “usage context” had an insightful impact on the adoption behaviour of users.

Sharma, Gopal et al. (2014)² attempt to study the level of consumer awareness of Green Banking initiative in India with special reference to Mumbai. From the primary survey they conducted they find that surprisingly even those people who are using online facilities provided by their banks nearly three fourth of them are unaware of the term Green Banking. They find that among those who are aware of Green Banking term consider it mainly related to online bill payment and cash deposit system. Other Green Banking aspects like Green CDs, solar powered ATM, bonds for environment protection are among few of which consumers are not aware of. They also attempt to analyse the gender based difference in awareness of green initiatives by bank especially E-Statements, Net Banking and Green loans. Using Chi-Square test for hypothesis testing they arrive at a result that both males and females have the same level of awareness with respect to Green Banking. The researcher’s state that the major obstacle in Green Banking is the technical issues involved followed by lack of education.

Sudhalakshmi and Chinnadorai (2014)³ present the status of Indian Banks in respect of Green Banking and state that though goes green mantra is essential for emerging economies like

India but significant efforts have not been taken. Banks are required to include their green aspect in the lending principle. Every step taken today will mean a better global environment in future. So a policy measure to promote Green Banking is needed in India. Indian banks are running behind time in adoption of this green phenomenon. Serious steps are required to be taken in this regard.

Ragupathi. M and Sujatha. S (2015)⁴ in their paper entitled Green Banking Initiatives of Commercial Banks in India, studied the way to go green through green banking. According to this paper, earlier bank was not aware about the concept green banking. But now a day’s banks are playing very important role in environment sustainability program. By the green banking practice people is getting more aware about the global warming and each business man's contributing in environment sustainability to make this earth a better place to live in. Green banking is not only greening the industries but it will also facilitate in improving the assets quality of the bank in future.

Sudarshan Giramkar, (2018)⁵ deals with the green initiatives and developments took place in the banking sector in India and sites international developments. It sites opportunities for banks in areas like carbon credit business, green financial products, core banking solutions, integrated IT environment, etc. that can lead to development in green area and overall environment. The Role of the Reserve Bank of India in formulation of policies on green banking has been focused upon for green growth. Thereafter, many initiatives were undertaken viz. use of eco-friendly papers, solar-powered ATMs, green projects, energy efficiency practices, workplace health and safety, organizing awareness campaigns, online banking systems, etc.

Objectives of the Study

1. To identify the factors affecting the adoption of green banking practices in Indian Banking sector.
2. To analyse the impact of adoption of green banking practices in Indian Banking Sector.

Statement of the Problem

Green banking itself insinuates promoting environmental friendly banking practices and reducing carbon food print banking activities. To add simplicity to this term, it is a form of banking which ensures less utilization of natural resources and optimal reduction of wastage of paper/carbon food print. Green banking is being practiced by all banks. Which consider all the social and environmental - technological factor with and aim to protect the environment and conserve the natural resources. Green banking practices are also labelled as ethical banking or sustainable banking. So this is one of the important developments in the banking industry which need to have proper awareness among the customers.

III. Methodology of the Study

The present study is descriptive in nature.

Collection of data

The study is based on primary data. The primary data of this study were collected from the customers of City Union Bank in Chennai City with the help of well-structured questionnaire. This study is developed to understand the factors affecting the adoption of green banking practices in Indian Banking sector.

Sampling method

Purposive sampling method was adopted to analyse factors affecting the adoption of green banking practices in Indian Banking sector. The sample size for this study is 100 Customers of City Union Bank in Chennai City.

Data Analysis

The following statistical tools were used to analyse the data Reliability analysis, Factor analysis and Regression analysis.

Analysis and Interpretation

Factor Analysis

A Factor is basically a linear combination of variables. A predominant and important concept in factor analysis is the rotation of the factors. The concept of varimax rotation has been used to simplify the factor structure. Only the factors having Eigen values greater than unity have considered. An Eigen value is a column sum of the squares of a factor and represents the variance of a factor. Those factor loadings greater than 0.5 have been chosen and loaded on the extracted ones.

Table 1- Reliability Analysis for the variables of Factor Analysis

Cronbach's Alpha	No. of Items
.813	14

Table 2- List of Variables used for Factor Analysis

X1	Adoption of green banking helps in waste management and recycling.
X2	My Bank is determined to use Green Banking soon.
X3	My bank has a clarity regarding the use of Green Banking.
X4	The adoption of Green Banking would help in increasing my bank's revenues or profits.
X5	The adoption of Green Banking would help us to give services to our customers in a much better way.
X6	I see myself using Green Banking practices for handling all my banking activities.
X7	My bank has the necessary managerial and technical skills for implementing Green Banking.

X8	My bank conducts its annual environmental audits on regular basis.
X9	Green Banking services enhance the company's image.
X10	My bank communicates their environmental practices to its customers.
X11	My bank has clear understanding of how Green Banking can be used.
X12	Green Banking activities increase our profitability
X13	Management is supportive toward Green Banking.
X14	We would use Green Banking services for our banking needs.

has been significant or not. Bartlett's Test of Sphericity is used to test whether the data is statistically significant or not. With the value of test statistic and the associated significance level, it shows that there exists a high relationship among the variables (Not >0.05). The value of KMO measure of sampling adequacy is 0.806, which shows that the factor analysis may be considered as an appropriate technique for analysing the data. The value of chi-square = 2791.216, df = 105 is significant (p< 0.002) which further shows the appropriateness of data for factor analysis.

Factor Analysis on Factors Influencing Behavior towards Mutual Funds

Table 3 - KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.806
Approx. Chi-Square	2791.216
Bartlett's Test of Sphericity	Df
	105
	Sig.
	.002

Table 3 reveals the two tests which indicate the suitability of the data for factor analysis. Two tests, namely Kaiser-Meyer-Olkin measures of sampling adequacy (KMO) and Bartlett's Test of Sphericity have been applied to test whether the relationship among the variables

Table 4 - Communalities

	Initial	Extraction
X1	1.000	.798
X2	1.000	.815
X3	1.000	.787
X4	1.000	.554
X5	1.000	.713
X6	1.000	.675
X7	1.000	.885
X8	1.000	.841
X9	1.000	.666
X10	1.000	.647
X11	1.000	.770
X12	1.000	.755
X13	1.000	.543
X14	1.000	.761

Extraction Method: Principal Component Analysis

Table 5 - Total Variance Explained

Component	Initial EigenValues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.957	27.132	27.132	4.957	27.132	27.132
2	3.123	14.500	41.884	3.123	14.500	41.884
3	2.022	13.653	54.537	2.022	13.653	54.537
4	1.403	9.420	63.958	1.403	9.420	64.234
5	1.259	8.394	72.352			
6	.830	5.536	77.888			

7	.785	5.232	83.120		
8	.616	4.105	87.225		
9	.477	3.180	90.406		
10	.433	2.887	93.293		
11	.329	2.193	95.485		
12	.268	1.786	97.271		
13	.203	1.350	98.621		
14	.127	.848	99.469		

Extraction Method: Principal Component Analysis

Table 5 depicts the Principal Component Analysis (PCA) method which provides the relationship between the extracted factors and the variables included in the analysis. It is technically termed as factor loadings. The value of the factor loadings, though indicates the relationships clearly, is unable to group all the variables clearly identified with the factors. Fourth factor consists of higher variance, i.e.64.234. Hence, the researcher is unable to extract the orthogonal factors. By continuing with these extractions, the researcher is not able to fully eliminate the problem. So, the unrotated and rotated matrix is performed.

Table - 6 Rotated Component Matrix

	Component			
	1	2	3	4
X4	.776	-.269	-.018	-.257
X5	.749	-.164	-.386	.067
X9	.689	-.126	.215	-.292
X12	.673	.102	.381	.354
X3	.383	.782	-.315	.330
X7	.488	.759	.160	-.062
X11	-.346	.701	.071	-.396
X13	.281	.679	-.441	.486
X2	.191	.490	.724	.121
X6	-.406	-.050	.695	.440
X14	-.335	.417	.689	.484
X1	.455	.456	-.305	.795
X8	.556	.123	-.439	.741
X10	.166	-.533	.221	.702

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 6 explains the analysis of the principal components and rotated factor loading method is used to identify the factors. From the above table, it is observed that out of 14 variables, 4 factors namely Perceived Usefulness, Management Control and Support, Intention to Adopt Green Banking and Environmental

Sustainability, were identified by the rotation method.

Factor Loadings: Factor loadings are simple correlations between the variables and the factors. Factor loadings $\pm .30$ are considered to meet the minimum level; loadings of $\pm .40$ are considered more important; and if the loadings are $\pm .50$ or

greater, they are considered practically significant. In the present study, items that had loadings of $\pm .50$ or greater were retained. In order to analyse the impact of the listed dimensions on the opinion of the beneficiaries, the first step involved was reducing the numbers of statements to a smaller number of variables which could be then used for factor analysis.

Table 7

Factor 1 - Perceived Usefulness

Label	Statements	Loadings
X4	The adoption of Green Banking would help in increasing my bank's revenues or profits.	.776
X5	The adoption of Green Banking would help us to give services to our customers in a much better way.	.749
X9	Green Banking services enhance the company's image.	.689
X12	Green Banking activities increase our profitability	.673

Table 7 shows the cluster of statements in factor 1. The statements 'The adoption of Green Banking would help in increasing my bank's revenues or profits' with the loadings of .776, 'The adoption of Green Banking would help us to give services to our customers in a much better way' with the loadings of .749, 'Green Banking services enhance the company's image' with the loadings of .689, 'Green Banking activities increase our profitability' with the loadings of .673, were grouped into first factor Perceived Usefulness.

Table 8

Factor 2 -Management Control and Support

Label	Statements	Loadings
X3	My bank has a clarity regarding the use of Green Banking.	.782
X7	My bank has the necessary managerial and technical skills for implementing Green Banking	.759
X11	My bank has clear understanding of how Green Banking can be used	.701
X13	Management is supportive toward Green Banking.	.679

Table 8 indicates the clustered statements of factor 2. 'My bank has a clarity regarding the use of Green Banking' with the loadings of .782, 'My bank has the necessary managerial and technical skills for implementing Green Banking' with the loadings of .759 and 'My bank has clear understanding of how Green Banking can be used' with the loadings of .701 and 'Management is supportive toward Green Banking' with the loadings of .679 were grouped into the second factor Management Control and Support.

Table 9

Factor 3 -Intention to Adopt Green Banking

Label	Statements	Loadings
X2	My Bank is determined to use Green Banking soon	.724
X6	I see myself using Green Banking practices for handling all my banking activities	.695
X14	We would use Green Banking services for our banking needs	.689

Table 9 reveals the clustered statements of factor 3. ‘My Bank is determined to use Green Banking soon’ with the loadings of .724, ‘I see myself using Green Banking practices for handling all my banking activities’ with the loadings of .695 and ‘We would use Green Banking services for our banking needs’ with the loadings of .689 were grouped into the third factor Intention to Adopt Green Banking.

Table 10

FACTOR 4 -ENVIRONMENTAL SUSTAINABILITY

Label	Statements	Loadings
X1	Adoption of green banking helps in waste management and recycling	.795
X8	My bank conducts its annual environmental audits on regular basis	.741
X10	My bank communicates their environmental practices to its customers	.702

Table10 presents the clustered statements of factor 4. ‘Adoption of green banking helps in waste management and recycling’ with the loadings of .795, ‘My bank conducts its annual environmental audits on regular basis’ with the loadings of .741 and ‘My bank communicates their environmental practices to its customers’ with the loadings of .702 were grouped into the fourth factor Environmental Sustainability.

Regression Analysis on the Impact and Factors affecting the adoption of green banking practices in Indian Banking sector

Table 11

Model summary of Impact and Factors affecting the adoption of green banking practices Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin - Watson
1	.720 ^a	.848	.846	.29978	2.433

a. Predictors: (Constant), Tax Savings, Future, Return, Investment

b. Dependent Variable: Attitude

Table 11 depicts model summary of the impact and factors affecting the adoption of green banking practices. When Impact is a dependent variable, R = 0.720 which means that there is a very strong relationship. R-square is 0.848 indicating that 84.8 per cent of performance variation is accounted for the combined linear impact of independent variables. Adjusted R square value is 0.846, implying that the model has accounted for 84.6 per cent of the variance in the criterion variable. The value of Durbin-Watson statistic is 2.433, representing that the model is suffering from auto-correlation.

H₀₁: There is no significant effect of Factors affecting the adoption of green banking practices and its Impact on environment.

Table12 - ANOVA of Factors affecting the adoption of green banking practices and its Impact on environment.

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	74.051	4	15.019	154.118	.000 ^b
1 Residual	26.160	35	.745		
Total	100.211	36			

a. Dependent Variable: Impact on environment

b. Predictors: (Constant)

Table 12 explains the ANOVA for the Factors affecting the adoption of green banking

practices on its Impact. The significant value for the above model is lesser than 0.000, which considers Impact as dependent variable and four factors namely Perceived Usefulness, Management Control and Support, Intention to Adopt Green Banking and Environmental

Sustainability as independent variables. Hence, the null Hypothesis is rejected. It is concluded that there is significant effect of Factors affecting the adoption of green banking practices and its Impact on environment.

Table 13 - Coefficients of Factors affecting the adoption of green banking practices and its Impact on environment
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.621	.019		159.313	.000
	Perceived Usefulness	.154	.019	.212	19.777	.000
	Management Control and Support	.007	.019	.041	.460	.246
	Intention to Adopt Green Banking	-.008	.019	-.026	8.515	.043
	Environmental Sustainability	.379	.019	.713	24.008	.000

a. Dependent Variable: Impact on environment

Table 13 shows the coefficients of the Factors affecting the adoption of green banking practices and its Impact on environment. It implies that Perceived Usefulness, Intention to Adopt Green Banking and Environmental Sustainability are significant at 5 per cent significance level. Beta value shows that Perceived Usefulness and Environmental Sustainability have positive relationship with Impact on environment. Environmental Sustainability has positive influence on Impact on environment which means the Environmental Sustainability causes influence on Impact on environment. Management Control and Support has minimum relationship with Impact on environment which implies that there is low response between the Management Control and Support.

IV. Findings

1. The adoption of Green Banking would help in increasing my bank's revenues or

profits' with the loadings of .776 in the factor Perceived Usefulness.

2. My bank has a clarity regarding the use of Green Banking' with the loadings of .782 in the factor Management Control and Support.
3. My Bank is determined to use Green Banking soon' with the loadings of .724 in the third factor Intention to Adopt Green Banking.
4. Adoption of green banking helps in waste management and recycling' with the loadings of .795 in the fourth factor Environmental Sustainability
5. Beta value shows that Perceived Usefulness and Environmental Sustainability have positive relationship with Impact on environment.

V. Suggestions

1. Banking managers should be aware about the environmental problems and must only give finance to those financing projects

that do not involve any kind of environmental pollution.

2. Banks in the rural areas have to take steps to educate their customers on new banking products and services, like, internet banking, mobile banking, electronic transfers, e-reports and so on.
3. Finally, the green bank is an effort of several parties where banks have to work closely with central bank, business communities, NGOs, consumers, and government to reach the goal.

VI. Conclusion

The Indian banking sector must adopt green practices in their operations and policies will lead to environmental sustainability as there exists a great prospect in clean technologies and renewable energy, reduced carbon transport and reduced emissions, which can be achieved slowly, if the management get the support from all the sectors of the economy and the bank, which is a vital part of our economy must drive the front. RBI plays a very important role in giving a confirmative direction to the banks in this direction. Better and innovative service channels, eco-friendlier banking products, customer education, paperless banking should be promoted so as to gain maximum benefit and to minimize the damage to the environment. This study concludes with a call to the other sectors, other than banking sector, also to pursue eco-friendly initiatives to foster long term growth in the economy

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