



Impact of Green Banking Initiatives on Banks' Profitability A Comparative Study of Public, Private and Foreign Banks

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Abstract

In the present scenario, banking industry is playing a vital role in the sustainable development of the world. In this respect, the RBI has introduced the new concept called "Green Banking". In India, most of the banks implement green banking in their operations. This paper investigates as to how green banking initiatives such as NEFT, RTGS, ECS, ATM, POS and Mobile banking impact the profitability of public sector banks, private sector banks and foreign banks. To achieve this objective, the hypotheses were framed and the study has found that among the three banking sectors, private sector banks deliver good performance in the form of adopting green banking initiatives such as RTGS, ECS, Mobile banking and NEFT transactions as compared to public sector and foreign banks.

Keywords: Green Banking, Mobile Banking, Profitability, Private Sector Banks

1. Introduction

Today, we are facing so many problems relating to the environment. The major problem is climate change. Climate change is occurring due to the effect of greenhouse gas; climate change creates global warming. To avoid such a problem now, most of the industries are taking some green initiatives such as the reduction of carbon footprint and energy consumption, investing in eco-friendly projects, etc. Particularly, banking industry plays an important role in promoting sustainable development of the world. In this respect, the concept of Green banking has emerged as an important subject and is recognized as a tool to address the issues confronting the sustainable development and to create awareness among the people on the environmental responsibility. According to RBI, "Green Banking has two dimensions.

First, the way the banking business is being done i.e., paperless banking and the other dimension is green financing. Green Banking entails banks to encourage environment friendly investments and give lending priority to those industries which have already turned green or are trying to go green and thereby, help to restore the natural environment".

2. Green Banking/Paperless Banking – Products

The information related to various paperless banking products discussed below

2.(A). National Electronic Fund Transfer (NEFT)

According to RBI, NEFT is a nation-wide payment system that facilitates one-to-one funds transfer. Under this system, individuals, firms and corporates can electronically transfer funds from any bank



branch to any individual, firm or corporate having an account with any other bank branch in the country participating in the Scheme.

2. (B). Real Time Gross Settlement (RTGS)

According to RBI, RTGS, is the continuous (real-time) settlement of funds transfers individually on an order by order basis (without netting). 'Real Time' means the processing of instructions at the time they are received rather than at some later time; 'Gross Settlement' means the settlement of funds transfer instructions occurs individually (on an instruction by instruction basis). Considering that the funds settlement takes place in the books of the Reserve Bank of India, the payments are final and irrevocable.

2. (C). Electronic Clearing Services (ECS)

According to RBI, ECS is an electronic mode of payment / receipt for transactions that are repetitive and periodic in nature. ECS is used by institutions for making bulk payment of amounts towards distribution of dividend, interest, salary, pension, etc., or for bulk collection of amounts towards telephone / electricity / water dues, cess / tax collections, loan installment repayments, periodic investments in mutual funds, insurance premium etc. Essentially, ECS facilitates bulk transfer of monies from one bank account to many bank accounts or vice versa.

2.(D). Automatic Teller Machine (ATM)

According to RBI, ATM is a computerized machine that provides the customers of banks the facility of accessing their account for dispensing cash and to carry out other financial & non-financial transactions without the need to actually visit their bank branch. The ATM/ATM cum debit cards, credit cards and open prepaid cards (that permit cash withdrawal) issued by banks can be used at ATMs/WLAs for various transactions such as account information, cash

deposit, mini statement, PIN change, request for cheque book and balance enquiry.

3. (E). Mobile Banking

It is a system where the banking transactions can be done by customers at remote place with help of mobile device itself. For this purpose the customer has to get mobile application from the respective banks for using this facility. Through mobile banking the customer can check their account balance, monitor their term deposit, and access a loan statement, mutual fund or equity statement and insurance policy management.

Mobile banking can be done with the help of mobile application and this service was initially introduced on 1999 by way on SMS banking with the introduction of Smart phone with WAP support but this became famous in 2010 only.

2. (F). Point Of Sale (POS) Terminal

Point of Sale is a time and place where the retail transaction is done. It is the point where the customers makes payment to their merchant for the purchase of goods or services. The transactions can be done through debit card or credit card. At the point of sale, the merchant would prepare invoice for the transactions and it should be duly signed by the customers. Nowadays, this facility is also available in all banks for withdraw, transfer and deposit.

4. Review of Literature

Umrez, Jyothi and Haseena D (2014), documented that the time, convenience and easy to use are the most important factors which made the customers to adopt mobile banking. The authors also found that most of the customers are aware about mobile banking but they did not know the benefits of the term mobile banking; further, they found that the customers are using mobile banking only for bill payments and not for banking transactions. Finally, they concluded that the bankers have to conduct awareness program



on mobile banking among the customers of different age group to enhance its operations.

Namita Rajput, Simple Arora et.al (2013), analyzed the relationship between environmental and financial performance in banking sector in India. The authors found that there is no significant relationship between environmental and financial performance of banking sector in India. It shows that green banking initiatives have not increased the profitability of banks. Finally, they concluded that banks in India are still in initial stage in implementation of green banking; it requires huge capital for initiatives which will reduce the profitability of banks.

Mukesh Kumar Verma (2012), examined that the banks in India are far away in the implementation of green banking practices in banking operations. Banks in India have now started to take some initiatives in adopting green banking practices. The author found that the public and private sector are performing better in providing green finance to customers than the foreign sectors. They concluded that banks have to literate their customers about green banking and adopt all strategies in building bank image.

5. Statement of the Problem

Indian economy faces many constraints in its path towards development. One of the major problems is carbon footprint level which is increasing menacingly every year leading to environmental degradation. Under these circumstances, the green banking concept emerged. Green banking has two dimensions viz paperless banking and the other dimension is green financing. This study considers only one dimension (paperless banking) and an attempt is made to find out as to how it impacts the profitability of the three major sectors of Indian banking viz., public sector banks, private sector banks and foreign banks.

6. Objectives

1. To study the impact of green banking initiatives adopted by public sector banks, private sector banks and foreign banks on their profitability.
2. To compare the green banking initiatives adopted by public sector banks, private sector banks and foreign banks by measuring their impact on the profitability

7. Hypotheses

- Ho1: There exists no impact of green banking initiatives adopted by public sector banks on their profitability
- Ho2: There exists no impact of green banking initiatives adopted by private sector banks on their profitability
- Ho3: There exists no impact of green banking initiatives adopted by foreign banks on their profitability

8. Research Methodology

The study is based on secondary data accessed from the website of RBI. The impact of RTGS, NEFT, ECS, ATM, POS Terminal and Mobile banking transactions on the profitability of public, private and foreign banks is looked into over a period up to last 7 years. The public sector banks such as Allahabad Bank, Andhra Bank, Bank of Baroda, Bank of India, Bank of Maharashtra, Canara Bank, Central Bank of India, Corporation Bank, Dena Bank, IDBI Bank, Indian Bank, Indian Overseas Bank, Oriental Bank of Commerce, Punjab & Sind Bank, Syndicate Bank, UCO Bank, Union Bank of India, United Bank of India and Vijaya Bank are chosen. Private sector banks such as Axis Bank, Bank of Rajasthan Ltd., Catholic Syrian Bank, City Union Bank, Dhanlakshmi Bank Ltd., Development Credit Bank Ltd., HDFC Bank, ICICI Bank, Indusind Bank, ING Vysya Bank Ltd., Federal Bank Ltd,

KarurVysya Bank Ltd., Karnataka Bank Ltd., Kotak Mahindra Bank, Lakshmi Vilas Bank Ltd., Nainital Bank Ltd., Ratnakar Bank Ltd., South Indian Bank Ltd., Tamilnad Mercantile Bank Ltd., The Jammu & Kashmir Bank Ltd., and Yes Bank are chosen and from among the foreign banks Abu Dhabi Commercial Bank, Australia and New Zealand Banking Group Ltd, Bank International Indonesia, Bank of America, Bank of Bahrain and Kuwait, Bank of Ceylon, Bank of Nova Scotia, Bank of Tokyo Mitsubishi UFJ, Barclays Bank, BNP Paribas, Calyon Bank, Chinatrust Commercial Bank, Citibank, Common Wealth Bank of Australia, Credit Suisse, Credit Agricole Corporate and Investment Bank, DBS Bank, Deutsche Bank, First Rand Bank, HSBC, Industrial and Commercial Bank of China, JPMorgan Chase Bank, Mashreq Bank, Mizuho Corporate Bank, National Australia Bank, Oman International Bank, SAOG, Royal Bank of Scotland, Rabo bank International, Shinhan Bank, Societe Generale, Standard Chartered Bank, State Bank of Mauritius, Sber Bank, Sumitomo Mitsui Banking, UBS AG, Woori Bank and Westpac Banking Corporation are chosen.

9. Results and Discussions

In this section, the data were analyzed and interpreted using regression analysis.

Impact of RTGS, NEFT, ECS, and Mobile banking transaction on the profitability of Public Sector Banks

The Regression output consists of model summary to express the amount of variation created by the independent variables followed by analysis of variance to verify the regression fit and coefficients to determine the individual influence of independent variables. The results of these two time-wise Regression Analysis and their results are discussed below.

Table 1: Model Summary

Model	R	R square	Adjusted R Square	Std. Error of the Estimate
1	.952	.906	.528	.36547

Source: Computed data

It is found that the $R = 0.952$, R^2 value is 0.906 and adjusted $R^2 = 0.528$. This shows that the variance ranges from 95.2% to 90.6%. The independent variable namely RTGS, NEFT, ECS and Mobile banking create variance over the profitability of public sector banks (Table 1). Green banking initiatives such as RTGS, NEFT, ECS and Mobile banking adopted by the banker contributed to a great extent on the profitability of public sector banks. This leads to the subsequent verification of regression model fit in the ANOVA table (Table 2). It is found that the test is statistically significant at 5 per cent level (p value 0.000). This shows that the independent variables namely RTGS, NEFT, ECS and Mobile banking contributed significantly to the profitability of public sector banks. This lead to the shaper estimation of individual influences of the green banking products transactions such as RTGS, NEFT, ECS and Mobile banking can be measured through co-efficient table.

Table 2: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.281	4	.320	2.398	.000
Residual	.134	1	.134		
Total	1.415	5			

Source: Computed data

Table 3 confirms that RTGS ($t = 2.516$, $p = 0.005$), Mobile banking ($t = 2.531$, $p = 0.005$), NEFT ($t = 2.953$, $p = 0.042$) and ECS ($t = 4.145$, $p = 0.014$) are statistically significant at 5 per cent level. Since the t value of ECS is more than the RTGS, Mobile banking and NEFT, it can be concluded that ECS impacts profitability of public sector banks more than the other variables.

Table 3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	RTGS	2.069	.823	.783	2.516	.005
	Mobile banking	.428	.169	.785	2.531	.005
	NEFT	-.747	.253	.828	2.953	.042
	ECS	4.298	1.037	.901	4.145	.014

Source: Computed Data

Impact of ATM and POS terminal transactions on the profitability of Public Sector Banks

Table 4: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	.999	.998	.993	.04297

Source: Computed data

From the Table 4, it is found that the R = 0.999, R² value is 0.998 and adjusted R²=0.993. This shows that the variance ranges from 99.9% to 99.8%. The independent variable namely ATM and POS terminal create variance over the profitability of public sector banks. Green banking initiatives such as ATM and POS terminal adopted by the banker contributed to the great extent on the profitability of public sector banks. This leads to the subsequent verification of Regression Model fit in the following ANOVA table (Table 5).

Table 5: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.836	2	.418	226.416	.047
	Residual	.002	1	.002		
	Total	.838	3			

Source: Computed data

Table 5 confirms that the test is statistically significant at 5 per cent level P value (0.047). This shows that the independent variables namely ATM and POS terminal contributed significantly to the profitability of public sector banks. This leads to the shaper estimation of individual influences of the green banking products transactions such as ATM and POS terminal.

Table 6: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	ATM	3.261	.380	.987	8.582	.013
	POS	1.773	.356	.962	4.978	.038

Source: Computed data

Table 6 confirms that ATM (t = 8.582, P = 0.013) and POS terminal (t = 4.978, p = 0.038) are statistically significant at 5 per cent level. Since the t value of ATM is more than the POS terminal transactions, it can be concluded that ATM has more impact on the profitability of public sector banks than POS terminal.

Impact of RTGS, NEFT and Mobile banking transaction on the profitability of Private Sector Banks

Table 7: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	.964	.929	.823	.16187

Source: Computed data

Table 7 depicts R = 0.964, R² = 0.929 and adjusted R² = 0.823. This shows that the independent variable namely RTGS, NEFT and Mobile banking explain 92.5 per cent variance over the profitability of private sector banks. This leads to the subsequent verification of Regression model fit in the following ANOVA table.

Table 8: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.689	3	.230	8.764	.014
	Residual	.052	2	.026		
	Total	.741	5			

Source: Computed data

Table 8 confirms that the Regression model is statistically significant at 5 per cent level (p value 0.014). This shows that the independent variables namely RTGS, NEFT and Mobile banking contributed significantly to the profitability of private sector banks. This further leads to the shaper estimation of individual influences of the green banking products transactions such as RTGS, NEFT

and Mobile banking on profitability of private sector banks.

Table 9: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	RTGS	1.254	.645	.697	1.945	.024
	Mobile banking	.384	.135	.818	2.845	.047
	NEFT	.652	.307	.728	2.123	.001

Source: Computed data

It is found that RTGS ($t = 1.945$, $p = 0.024$), Mobile banking ($t = 2.845$, $p = 0.047$) and NEFT ($t = 2.123$, $p = 0.001$) are statistically significant at 5 per cent level (Table 9). Since the t value of Mobile banking is more than the RTGS and NEFT, it can be concluded that Mobile banking has more impact on the profitability of private sector banks than RTGS and NEFT transactions.

Impact of ATM and POS terminal transactions on the profitability of Private Sector Banks

Table 10: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	.994 ^a	.987	.961	.07963

Source: Computed data

Table 10 shows that $R = 0.994$, R^2 value is 0.987 and adjusted $R^2 = 0.961$. This shows that the independent variable namely ATM and POS terminal explain 98.7 per cent variance over the profitability of private sector banks. Green banking initiatives such as ATM and POS terminal adopted by the banker contributed to a great extent on the profitability of private sector banks. This leads to the subsequent verification of regression model fit.

Table 11: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.488	2	.244	38.457	.013 ^a
	Residual	.006	1	.006		
	Total	.494	3			

Source: Computed data

Table 11 confirms that the Regression model fit is statistically significant at 5 per cent level (p value 0.013). This shows that the independent variables namely ATM and POS terminal contributed significantly to the profitability of private sector banks. This leads to the shaper estimation of individual influences of the green banking products transactions such as ATM and POS terminal on the profitability of private banks.

Table 12: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	ATM	3.208	.741	.951	4.328	.049
	POS	1.423	.637	.845	2.235	.051

Source: Computed data

Table 12 confirms that ATM ($t = 4.328$, $p = 0.049$) and POS terminal ($t = 2.235$, $p = 0.051$) are statistically significant at 5 per cent level. Since the t value of ATM is more than the POS terminal transactions, it can be concluded that ATM has major impact on the profitability of private sector banks.

Impact of RTGS, NEFT and Mobile banking transaction on the profitability of Foreign Sector Banks

Table 13: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	.925	.855	.637	.27097

Source: Computed data

Table 13 shows that $R = 0.925$, $R^2 = 0.855$ and adjusted $R^2 = 0.637$. This confirms that the independent variable namely RTGS, NEFT and Mobile banking explain 85.5 Per cent variance over the profitability of foreign sector banks. This leads to the subsequent verification of Regression model fit in the ANOVA table.

Table 14: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.864	3	.288	3.925	.010
	Residual	.147	2	.073		
	Total	1.011	5			

Source: Computed data

Table 14 confirms that the Regression model is statistically significant at 5 per cent level (0.01). This shows that the independent variables namely RTGS, NEFT and Mobile banking contributed significantly to the profitability of foreign sector banks. This lead to the shaper estimation of individual influences of the green banking products transactions such as RTGS, NEFT and Mobile banking on profitability of foreign banks.

Table 15: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	RTGS	3.252	1.181	.809	2.754	.051
	Mobile banking	.697	.146	.922	4.765	.009
	NEFT	.708	.621	.495	1.140	.003

Source: Computed data

Table 15 confirms that RTGS ($t = 2.754$, $p = 0.051$), Mobile banking ($t = 4.765$, $p = 0.009$) and NEFT ($t = 1.140$, $p = 0.003$) are statistically significant at 5 per cent level. Since the t value of Mobile banking is more than the RTGS and NEFT, it can be concluded that Mobile banking has a more impact of the profitability of foreign banks.

Impact of ATM and POS terminal transactions on the profitability of Foreign Sector Banks

Table 16: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	.992	.985	.954	.09466

Source: Computed data

Table 16 gives $R = 0.992$, $R^2 = 0.985$ and adjusted $R^2 = 0.954$. This shows that the independent variable namely ATM and POS terminal explain 98.5 per cent variance over the profitability of foreign sector banks. Green banking initiatives such as ATM and POS terminal adopted by the banker contributed to a great extent on the profitability of foreign sector banks. This leads to the subsequent verification of Regression model fit in the following ANOVA table.

Table 17: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.575	2	.288	32.112	.024
	Residual	.009	1	.009		
	Total	.584	3			

Source: Computed data

Table 17 confirms that the Regression model is statistically significant at 5 per cent level. This shows that the independent variables namely ATM and POS terminal contributed significantly to the profitability of foreign sector banks. This lead to the shaper estimation of individual influences of the green banking products transactions such as ATM and POS terminal.

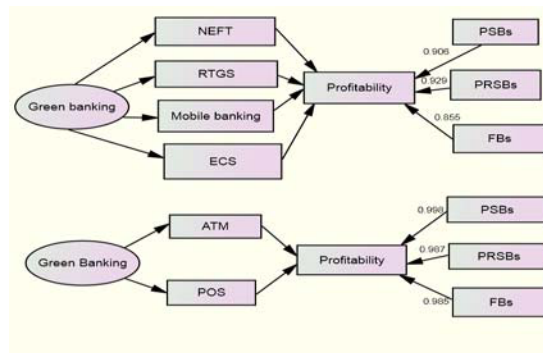
Table 18: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	ATM	3.667	.326	.992	11.259	.008
	POS	2.529	.505	.962	5.011	.038

Source: Computed data

Table 18 confirms that ATM ($t = 11.259$, $p = 0.008$) and POS terminal ($t = 5.011$, $p = 0.038$) are statistically significant at 5 per cent level. Since the t value of ATM is more than the POS terminal transactions, it can be concluded that ATM transactions have more impact of the profitability of foreign sector banks.

10. Impact of Green banking – Path analysis



NEFT : National Electronic Fund Transfer
RTGS : Real Time Gross Settlements
ECS : Electronic Clearing System
ATM : Automatic Teller Machine
POS : Point of Sale
PSBs : Public Sector Banks
PRSBs : Private Sector Banks
FBs : Foreign Banks



11. Conclusion

The analysis presented above shows that the ECS and ATM transactions play a major role in impact on the profitability of public sector banks. For private sector and foreign banks, Mobile banking and ATM transactions create a major impact on their profitability. Private sector banks deliver a good performance in adopting green banking initiatives such as RTGS, ECS, Mobile banking and NEFT transactions as compared to public sector and foreign banks. On the other hand, public sector banks are leading in the usage of ATM and POS terminal transactions as compared to private sector and foreign banks. Public sector banks must take best measures to create awareness among the customers with regard to the usage of green banking initiatives. The study therefore concludes that, the green banking initiatives adopted by the banks especially as related to paperless banking have created a major impact on the profitability.

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