



Green Banking Practices and Strategies: A Step Towards Sustainable FinTech

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Abstract

One of the most pressing issues confronting humanity today is environmental deterioration and natural resource scarcity. The adoption of Green Banking practices has been suggested as a solution to the world's increasing environmental issues. Going green has become an essential element of every sector, and sustainability reporting has become a duty of every company. While profit maximisation is the main goal, but many businesses establishment believes in environment-friendly operations. Technology has brought about enormous change, affecting every industry in both good and bad ways, with the banking sector is the most engaged in technical development. In terms of transaction processing and many other internal systems and procedures, information technology is one of the most significant facilitators of change in the Indian banking industry. Green banking is a new idea for environmental sustainability that promotes environmentally friendly methods for long-term development and lowers the financial industry's carbon impact. Green banking is seen as one of the instruments for achieving sustainable development in which economic activity has no negative environmental effect. Though it is widely assumed that the banking industry does not harm the environment, it does have an impact on the environment in the form of

excessive paperwork, energy consumption such as lighting, air conditioning, and so on. Green banking is all about going above and beyond to ensure that the world's eco-environment is not significantly harmed. And this study is an effort to comprehend the idea of green banking as well as a review of previous research in this area and to assess future goal with futuristic roadmap.

Keywords: *Environmental Sustainability, Technology, Green Banking, Indian Banking System*

1. Introduction

Every sector of the economy is accountable for sustainable development by changing its emphasis from the conventional bottom line of profit to the concept of triple bottom reporting, which focuses on people, planet, and profit and safeguards the interests of society, environment, and economy. Banking is the most important sector of any economy because it connects the most with the government and the public at large, and banks play an important role in the growth and development of any nation, a healthy banking system means the path for progress both economically and socially, and banks are also major economic agents influencing the industries for lending and financing, and as society becomes more affluent, banks will become more important. Banks and other financial organisations are working on environmental sustainability in order to fulfil their dual roles. The first is to strive toward ethical and socially responsible banking, while the second is an essential part of their corporate social responsibility. Banks have recognised the significance of the triple bottom line in their day-to-day operations, and as a result, their primary profit motivation has changed to three Ps, which include people, planet, and profit. Furthermore, this topic has served as a catalyst for the idea of "Green Banking." As intermediation in the mobilization of public savings and even in the channelling of the transfer of cash for useful activities, banks play an important economic part in maintaining the country's economic mechanism going. Recognizing the importance of banks' factors in social growth, after the country became independent, the Government of India/Reserve Bank of India undertook multiple key steps to equip the financial sector to support the national objective. Banks in India ought to be largely respected in their day-to-day activities by the confinement of technology. Many successful advances in the Indian banking industry have occurred in the last two decades. Now the common technology used among banks is e-banking. E-Banking implies that to conduct any one of the digital financial institutions, any consumer with such a personal computer as well as a web browser can link to the websites of his account. The product of technical advances and competitiveness is e-banking. In reality, banking has used digital and telecommunications networks to offer a wide variety of products and services with value-added. Customer Automated Teller Machines (ATM) or Cash Dispensers (CD), Phone-, Internet- and Mobile-banking were provided with the following modern distribution platforms as part of their e-banking measures. E-banking was optimistic and pursued the expected course of Technology Adoption Life Cycle methods. Banking utilized e-banking as a strategy to tackle fierce rivalry that occurred earlier and sustain the consumer base; they have consumer feedback to e-banking. Typically, total banks in India are estimated to be pretty mature in terms of availability, range of products, and scope, although the private and financial institutions still face challenges in reaching rural India. Well computerized

international banks are starting actually to compete against nationalized banks. In comparison to nationalized banks, they strive for a lucrative and affluent segment of the economy and do not accept any responsibility to society for small customer accounts or rural and semi-urban clients. Approximately 80% of firms are now owned by banks in the public sector (PSBs). PSBs still dominate the industrial banking sector. The financial system is facing new problems of strong competition and technological development, and the services offered by banks are becoming simpler and more efficient. By promoting the entry of international banks, a successful quality has been encouraged. With international banks with their ATM stations, the nation is overwhelmed. Attempts have been placed in place to provide clients with a favourable outcome.

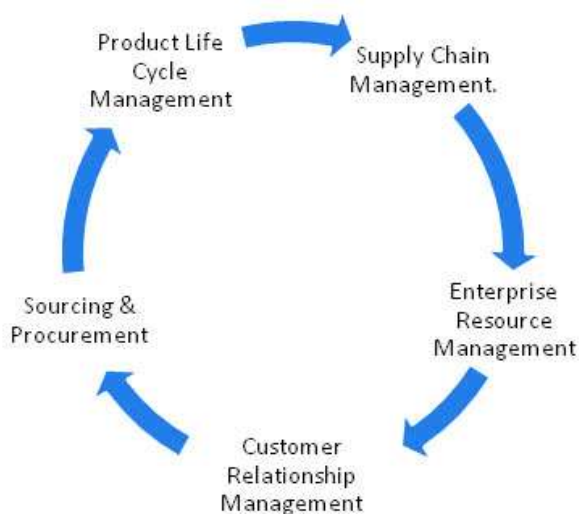


Fig 1. Banking Network

2. Literature Review

Green banking refers to any kind of banking that provides environmental advantages to the country and nation. A traditional bank becomes a green bank by focusing its main activities on environmental improvement. In today's financial industry, green banking has become a buzzword. It entails creating inclusive banking methods that will guarantee significant economic growth while also supporting environmentally friendly practices. This article focuses on the Green Banking operations of commercial banks in Bangladesh and the reasons why this policy was implemented and a comparison of commercial banks' green banking practices. There are many green banking techniques. Using your bank's online services, which may save paper and energy, is one way to be green. Another option is to pay bills on time in order to avoid being disconnected or shut off due to non-payment. Aside from these methods, there are many more that have a beneficial impact on the environment. As a result, green banking is not only good for the environment, but it is also good for you since it saves you money. Another method to practise green banking is to use the ATM outside of your bank's hours, which prevents lights from being left on all night. Another eco-friendly banking method is to use a credit card instead of cash for minor transactions. One advantage of green banking methods and practices is that they may help you save money in a variety of areas, such as energy costs or auto insurance rates. Even when buying online, it is cheaper to

purchase from businesses with recycling programmes, such as Green Peace, than those who send plastic or paper packaging without first recycling it. Indian youth have adapted new technologies and IT-based solutions to their banking needs. Mobile banking may be referred to as an act of doing online financial transactions with a mobile phone, tablet or similar device. It is an application of mobile commerce allowing its users to access bank accounts through mobile devices.

Digital banking service is a computer-based process providing banking services directly to the customer according to their utmost convenience. The digital banking services include online bank services may be in the form of internet banking, mobile software application-based banking, credit cards, travellers' card, ATM services and other innovative banking services. Nowadays, their acceptance of digital banking services is because it includes online banking or mobile-based services and middleware solutions, which is a bridge between other operating systems or database applications. Fintech industries are nowadays coming up with more and more solutions to risk management, product development and marketing of financial products in which bank deals. Nowadays, with the introduction of smartphones, that too at a low cost, it is found that digital banking is very common amongst the students pursuing graduation and above qualification; it provides convince to deal with money with safety and accountability. The student expects to end digital banking services with consistency, convenience and a comfortable experience. Indian Banks quickly adapted mobile banking services as it helped them in providing convenience to customers, cost reduction, and gaining competitive advantages (Kumar et al., 2017). With the help of mobile banking, users can access several banking services such as fund transfer, cheque book request, account information and management, PIN change, balance enquiry, bill payment, etc. (Dahlberg et al., 2008; Shaikh and Karjaluo, 2015). At the same time, banks with technology-induced banking operations and delivery systems became more efficient in providing customer satisfaction, reducing cost and increasing profitability (Kumar et al., 2017). Several scholars (Kumar and Lim, 2008; Wei et al., 2009; Liu et al., 2009) have identified the potential of mobile banking and its benefit to the young population in the beginning years of the new millennium. The launch of Reliance Jio 4G services in 2016 brought a revolution by making high-speed internet data available, affordable, and accessible to the common Indian. This laid a strong foundation for the rapid growth of numerous mobile applications based retailing services, including mobile banking. There are some inherent disadvantages in mobile commerce, and particularly mobile banking (Kim et al., 2010). Users often complain about inconveniences due to the device's small screen size, limited screen resolution, unfriendly keypad/touch screen, etc. The banking industry was a pioneer in identifying, accepting, and responding to these changes and offering banking solutions through tech-based distribution channels such as ATM, online banking, and mobile banking (Kumar et al., 2017). Today, even traditional bank is endorsing their mobile banking services aggressively (Kumar et al., 2017). Due to the huge potential of m-commerce or mobile commerce among young Indian consumers, an adaptation of mobile banking got attention from scholars, researchers, and enthusiasts in the field of banking and consumers.

There is a lot of research done in this area of internet banking services in the last two decades since the introduction of liberation, globalisation and privatisation in our country. Reddy (2015) study was conducted on "Study on Customer Perception and Satisfaction towards

Electronic Banking in Khammam District". The introduction of information and communication technology services, mobile-based banking services, internet services in the distribution channel, and cross-selling has increased the banking business in India. Bhat (2016), In this article, explain the transformation amongst the customers to the adoption of technology-driven services with the combination of parameters like technological advance, liberalisation, deregulation and competition.

3. Green Banking Framework

Engage important stakeholders and raise awareness about environmental problems and their implications for the economy, the environment, and society. Also, explain the economic and environmental benefits and the need to greening the bank's operations, products, and services. Conduct energy audits, as well as a review of equipment purchasing and disposal rules and procedures. Examine the environmental and financial effects of IT and identify areas that should be "greened." Set SMART (Specific, Measurable, Attainable, Realistic, and Timely) green objectives as internal targets with deadlines to minimise your carbon impact. Create criteria for tracking progress toward the objectives. Create and execute a green strategy that seeks to maximise system usage while minimising energy consumption and environmental impact.

Encourage, inspire, and excite employees to become green and to come up with and execute their own ideas. Furthermore, it encourages clients, suppliers, and outsourcers to use green practices. Regularly monitor progress; keep an eye on industry trends and new innovations. Revise your green policy as needed; promote your environmental policy, activities, and accomplishments to get credit and praises from consumers, colleagues, industry organisations, environmental activists, government agencies, and society at large. Banks may develop new financial solutions or modify current ones to include environmental considerations. Banks may offer loans with discounts to corporations or people that pursue environmentally-friendly initiatives, such as those that use solar or wind energy or that produce fuel-efficient cars. Banks may create green funds for clients who want to invest in environmentally beneficial initiatives. Banks may participate in the carbon credit industry by offering all services related to clean development methods and the carbon credit business. Banks can help with anything from neighbourhood clean-ups to national efforts on climate change, water, air, biodiversity, and other issues. Banks must establish near-term and long-term green objectives, build green strategies, and phase their greening efforts based on the principles mentioned above, opportunities, and choices.

Banks are socioeconomic establishments that are responsible for making an impactful outcome-based change if the collaborative strategic effort is to be done. Banks's belief that every little "GREEN" action done today will go a long way toward constructing a greener future and that each of them can contribute to a healthier global environment. The goal is to offer cost-effective automated channels while also raising knowledge and understanding about the environment, country, and society. Green banking is a great method for individuals to become more conscious of global warming; each businessman will contribute significantly to the environment and make this world a better place to live. Until recently, most conventional banks did not engage in green banking or actively seek investment possibilities in environmentally friendly industries or companies. These methods have just lately become

increasingly common among smaller alternative and cooperative banks, as well as diversified financial service providers, asset management businesses, and insurance companies. Along with the bank, the general customer shall need to actively participate in the green drive to make the vision and sustainable goal successful along with; this promotion needs to be done to spread the message to almost every end customer which may involve educating via the intranet and public web pages of the bank, create a website and spread the word, participate in events and use the press to communicate, establishing channels to promote green business, minimizing carbon footprint reduction via mass mobility and energy awareness and popularising E-learning lucrative applications mode.

4. Clients Fulfilment

As a consumer or potential client of payment services, a consumer can be identified. A consumer would include a bank account, a member of the customer, an individual performing casual financial transactions with such a bank, or an individual who might be part of the banking fold on his or her own initiatives [5]. The success of a banking industry relies on how effectively it can provide its target value to a customer. The suppliers of financial products are now expected to continuously enhance the quality of products to thrive in these modest markets and offer consistent consumer gratification. Indeed, the modernization of an Indian economy also required a far stronger commitment by the Indian banking industry to enhance the ultimate level of customer service via the intelligent usage, absorption and acceptance of versatile and suitable information systems. The 5 percent rise in retaining customers can be seen to increase revenue in the banking sector by 35 percent, in insurance and brokerage by 50 percent, and in the retail, commercial banking industry by 125 percent. Banks are, therefore, now placing emphasis on keeping customers and growing market share [8]. For instance, in an employee performance, being observant to clients, talking positively about the company and the programs, a favourable environment for good service exhibits itself. Consumers are increasingly subjected to such good behaviours, which in turn influences customer loyalty with regular employee-customer interaction. In summary, with both the growth of the internet, electronic business, and numerous other banking technologies, the implementation of digital in banks is increasing. The Bank industry is advancing at a huge step, and it was just a matter of time before banking commitment themselves to updating complete-scale infrastructure, helping their expansion and enhancing their competitive features. The machine and the generation of connectivity are starting new a stream of new possibilities to redefine the very definition of conventional banking. It would be for financial institutions to reinvest themselves and reorganize their internal policies and procedures in an ever-competitive world in line with rising consumer expectations. There really is no way, since it is an option of existence or destruction, a bank can maintain lukewarm to modern technological innovations and still expect to expand. Investment banks are compelled to evaluate their efficiency in just such a competitive market since their sustainability in the emerging markets of the near future will rely on the overall efficiencies. In addition, commercial banks have attempted to embrace and adapt to enhance their effectiveness in the changing economic and social climate. The success of a banking industry relies on the optimal way to offer goods to its potential customers or the degree to which consumer requirements are met. The facility provider can distinguish any services to be offered to the consumers from the majority of the internet services if it has a specific value

proposition. The clients equate the expected performance with both the services anticipated. If it is fine for his needs, the consumer recognizes the standard of service to be strong. This impression contributes to customer happiness with both the associated service. Customer satisfaction is a fascinating and complex term at the moment. It's a notion that differs from time to time. Tomorrow could be deemed bad," what's been perceived "excellent customer support nowadays. Therefore, IT approaches must be in proper agreement with the marketing techniques of banks. Customers now expect an individualized approach but are no more able to tolerate transaction delays. A customer's perspective has replaced the previous product-centric perspective. Thus, service providers need to achieve or surpass the happiness of the target market with both the service quality anticipated by them. Therefore, the current study will aim to comprehend the satisfaction of customers of the service quality, both money transfer and IT-enabled, despite their comparative assessment in the public subdivision, in the private industry and in foreign banks. The current analysis also aims to recognize lacunae, if any, that exists that could obstruct great customer service and influence customer loyalty in turn. We will also calculate the scope of internet adoption in nationalized banks in this e-age via the current analysis.

5. Major Practices of Green Banking

* **Green loans-** green lending is the practice of giving money to a project or enterprise that will help the environment. These initiatives are often in the fields of renewable energy, sustainable housing, and recycling.

* **EcoLoans-** this kind of loan provides reduced interest rates to customers with poor credit ratings and requires them to do things like conserve water or reduce their usage of coal.

* **Power Saving Equipment-**Power-saving equipment may include installing solar-powered ATMs and the replacement of General Lamp Shape (GLS) or incandescent bulbs with LED bulbs.

* **Carbon offsetting-** You may decrease your carbon footprint by paying businesses like 'TerraPass' and 'NativeEnergy' to cover the expense of these reductions on your behalf through their 'carbon offsets.' This does not imply that they will eliminate all emissions from a person's life, but rather that they will give certifications equating the number of emissions removed.

* **Green buildings-** in order to be called sustainable buildings, they must satisfy strict energy efficiency, water usage, and waste management requirements.

* **Green banking-** green banks often offer loans for sustainable agricultural or renewable energy projects that would be difficult to qualify for with other kinds of lenders. They also encourage financial literacy among low-income families in order for them to be financially independent, as well as providing credit lines to small companies in order to create a stronger economy while reducing emission.

Apart from this some other significant point has been highlighted. Green Initiatives Green strategy, according to Eric G. Olson, is a blueprint that complements the enterprise's existing business, operations, and asset strategies and has a beneficial effect on the environment. The

use of green credit cards may encourage non-profit NGOs since the bank will donate funds to them in the name of environmental protection. Products and services that are environmentally friendly green products and services for banks are those that assist the bank to achieve resource usage efficiency, which leads to better financial performance.

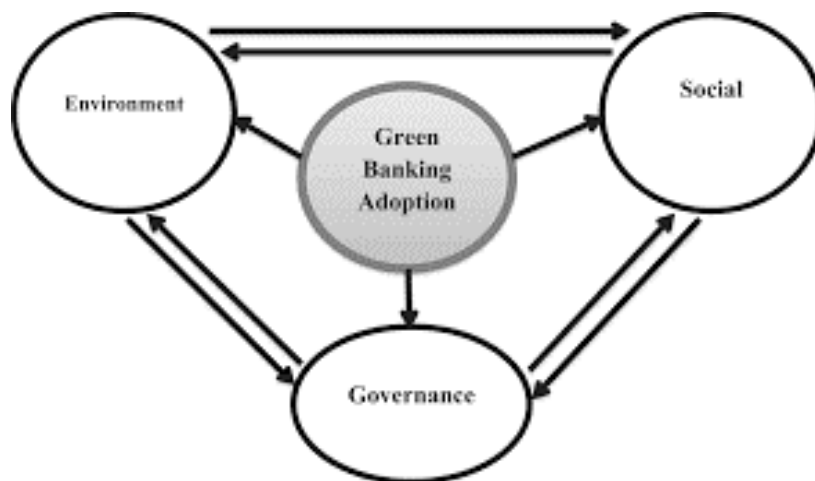


Fig 2. Green Banking Adoption Layout

6. Inclusion of Cutting-Edge Technology

Banking Technology Economic innovations have had an effect on the banks and other financial institutions of India. Fierce rivalry and changes in the regulatory policy have led to ambiguity and danger for the Indian bank sector in a rapid altering financial situation. Recognizing this fact, in their research, academics and practitioners emphasized that the source of information in banking is of crucial significance and look towards information systems as a competitive answer to evolving financial environments/challenges. The first move in this path was the Rangarajan Committee Report, which illustrated that computerization should be seen as a way of facilitating client service, productivity, and the working force of banks must understand the mechanization will result in progress job development. Consequently, although illustrating the challenges caused through the Indian banking segment and also a solution to the existing problems, the Narasimham Committee also emphasized a need for enhanced evaluation of bank computerization. The report observed that if the only approach that guarantees timeliness, reliability and consequent better efficiency alongside improved client facility is traditional banking requiring a huge amount of analysis of a vast amount of information and dedication to technology. Similarly, many academics and practitioners concluded that bank technologies would raise the efficiency and satisfaction of customers. Indian banking would have to capitalize deeply in technologies to ensure rivalry, lower costs, enhance client facility, increase efficiency and deliver innovative brands to face the demands raised by the commercial banks. For performance, technology in service organizations is critical. Some researchers from various backgrounds have researched technology in community groups researched advantageous areas of science and recognized 5 important advantages of technology for a facility association. Next, the services should be used instead of the workers. Such replacement of office equipment and machinery decreases running costs and improves performance. Second, technology implementation will take to facilitate consistency in service quality. Third, through such a fusion of technology, higher

service standards could be achieved. Fourth, by meeting up in the computer network functions, service companies can establish close ties with their consumers'; such techniques enable one business to connect itself to someone else's information system and thus be in contact. Eventually, technology can help direct the actions of workers and improve status and encouragement, recognizing the implementation of IT in banks, emphasized the training requirements of communities who play an important role in transforming hard- and software alongside network-based tools for potent grouping to help the bank enhance the superiority and efficiency of its services has been researching technology reforms throughout the banking area. The importance of technology as the main element in enhancing efficiency and increase in bank efficiency has been very well demonstrated by her. The majority of Indian banking, majorly private individuals, were hurrying to link their divisions across the country. SBI has incorporated Electronic Fund Transfer Systems (EFTS) in 30 subsidiaries in 16 locations in 2 methods, State Bank Instant Remittance (SBIR) and State Bank Rapid Remittance (SBRR), though funds were rendered on a similar day and on the following day. Many scholars have found, so the need for computerization/bank automation has emerged when researching customer support and bank advertising because consumers expect the cheques to be got a chance within a reasonable period, prompt clearance of payments, rapid funds transfer and timely delivery of sensible comments of their funds, etc. If banks were controlled, all of this could be feasible.

A banking system is a complex network and operates in numeric terms. The traditional form of banking needs a lot of paperwork, making the entire system slow and inefficient, where customers are stuck behind the completion of all forms of paper formalities. The recent development of new generation cutting engineering tools has helped to revolutionize the entire banking sector and has given a new rebirth. Authors have attempted to showcase the major successful application of engineering excellence in the banking sector to move towards a paperless, flexible and most efficient time-bounded system. Banks have been hesitant to upgrade their systems for a long time, and for a good reason. The present systems they employ are the result of years of continuous innovation to suit the needs of their customers. However, this has led to the usage of segregated systems for the transaction, savings, investment, and loan accounts. This is unsuitable for the digital era when banks face competition from technology-based FinTech companies. Banks and other conventional financial service providers have reacted by launching a slew of digitalization and innovation projects. These efforts make use of cutting-edge technology to guarantee a customer-centric viewpoint rather than a conventional emphasis on goods, real-time intelligent data integration rather than sluggish analysis after the fact, and an open platform basis. Some of the technologies that are disrupting banking and financial services are described below.

- Augmented/Virtual Reality
- Blockchain technologies
- Robotic Process Automation (RPA)
- Deep Quantum Computing
- Game Theory
- Artificial Intelligence/Machine Learning
- Application programming interface Platforms

- Cyber Workspace Security
- Hybrid Cloud Storage
- Artificial Neural Network (ANN)

1. Artificial Intelligence

AI is essentially a use of Artificial Intelligence procedures to cause the frameworks to learn without help from anyone else. This implies that the framework naturally learns, makes do, and adjusts through the experience without being customised to play out a specific activity. This field manages the coming up of projects that can manage information all alone, which can get to and adjust the given information as per the client's need. AI can be ordered into 3 fundamental classifications: Managed Learning, Unsupervised Learning and Reinforcement Learning [5]. It is the field through which the diverse PC computations are pondered that improves slowly through the experience. Artificial intelligence is orchestrated to oversee Learning, independent Learning, semi-regulated Learning and backing learning [6].

Supervised Learning Administered is an AI task that recognizes a breaking point from the named arranging information. In composing Learning, there is a data variable (P) and yield variable (Q). From the information variable, the constraint of the calculation is to investigate the organizing capacity to the yield variable $Q = f(P)$. The objective of facilitated Learning is to isolate the status information that makes a total breaking point that can be used to plan the new cases. The learning calculation will truly have to part down and sum up the engravings in the class definitely from the covered cases. This part presents the different calculations utilized in coordinated Learning [7]. Whereas Unsupervised Learning is an AI strategy wherein the customers don't need to direct the model. Taking everything into account allows the model to work on its own to discover models and information that was undetected. It generally deals with unlabeled data.

Reinforcement Learning (RL) is the study of dynamics. It is tied in with learning the ideal conduct in a climate to acquire the most extreme prize. This ideal conduct is learned through connections with the climate and perceptions of how it reacts, like kids investigating their general surroundings and learning the activities that assist them with accomplishing an objective. Without a chief, the student should freely find the arrangement of activities that amplify the prize. This disclosure interaction is much the same as an experimentation search. The nature of activities is estimated by the quick award they return, yet in addition to the deferred reward, they may get. As it can become familiar with the activities that outcome in inevitable accomplishment in an inconspicuous climate without the assistance of a chief, support learning is an amazing calculation.

Semi-Supervised Learning Semi-Supervised learning is the social event of named and unlabeled information. The checked information is insufficient, while there is a gigantic extent of unlabeled information. The information is utilized to make a sensible model of the information gathering. The objective of semi-coordinated Learning is to organize the unlabeled information from the named information. This part investigates certainly the most typical assessments utilized in Semi-Supervised Learning [7].

The financial industry, which includes banks, trading firms, and fintech firms, is rapidly adopting machine learning algorithms to automate time-consuming, monotonous tasks and offer a far more streamlined and personalised customer experience. The following are some of the most significant benefits of AI and machine learning.

- Increased productivity and a better user experience
- Customer Data Management with Analytics
- Increased Automation and Productivity
- Improved and Personalized Customer Service
- Advanced Risk Assessment with more precision
- Fraud Detection and Prevention at the Highest Level
- Loan Application Fraud Assessment and Detection

2. Cloud Computing

Cloud computing, often referred to as "cloud storage," is a new method of storing data on the internet. It's a hybrid technology that takes advantage of the internet to run various services, including servers, software, networking, storage, databases, analytics, and so on. Cloud-based software has offered many benefits to companies of all sizes. Even for personal use, platforms like Google Drive and Dropbox have gained in popularity. It is now easy to use software from any device, whether via a native app or a website and from any location. Among all major sectors, cloud technology has helped the banking industry the most. In this article, we'll look at what cloud computing is and the scope and impact of cloud technology on the banking and fintech industries. Cloud computing has developed into a one-stop shop for all problems with the information. Cloud computing has simplified many things in the banking and financial industries, such as interoperability, secure storage, and 24-7 uptime, to name a few. This shift in the IT sector resulted in a slew of significant changes in the way data is handled. Rather than using a traditional way of storing data, new techniques such as big data, machine learning, AI, and IoT have been used to store and operate data directly via the internet. Cloud computing has developed into a one-stop shop for all problems with the information. Cloud computing has simplified many things in the banking and financial industries, such as interoperability, secure storage, and 24-7 uptime, to name a few. This shift in the IT sector resulted in a slew of significant changes in the way data is handled. Rather than using a traditional way of storing data, new techniques such as big data, machine learning, AI, and IoT have been used to store and operate data directly via the internet. Bankers can interact directly with their consumers because of cloud computing. Digital services may maintain client connections everywhere and at any time, thanks to cloud computing. Because of the internet, several services, such as storing, managing, and getting information, have become easier for both bankers and consumers. Cloud computing is an easy way to instal and connect with all of the bank's services, saving time and effort for the user. To comprehend the penetration of cloud computing in remote banking activities, several important advantages have been highlighted.

- Cloud Service for Insurance Data Exchange
- Cloud Revenue Management and Billing Service for Financial Services

- With hybrid cloud computing technology, all data saved is secure.
- Insurance Revenue Management and Billing Cloud Service
- Cloud Service for Financial Services Lending and Leasing
- In banks, cloud computing provides safe transactions and a positive client experience.
- Cloud-Based Value-Based Payment for Health Insurance
- The most common cloud computing software is enterprise resource planning (ERP) and customer relationship management (CRM).
- Among the finest examples of cloud computing services are payment gateways, digital wallets, online money transfers, and secure online payments.

3. Blockchain

Blockchain technology is an open, distributed ledger that records transactions between two parties quickly and permanently. A blockchain is made up of discrete data blocks linked together in a certain order and includes a series of related transactions. All parties involved may exchange a digital ledger via a computer network without the need for a centralised authority or intermediaries. As a consequence, transactions on the blockchain are processed more quickly. The speed of blockchain is one of the many possible benefits of banking. It's not only about more efficiency; it's also about more openness and security. In the next years, blockchain will quickly spread into the banking industry. Furthermore, the industry is examining the exponential growth of Blockchain instances. Blockchain isn't only about Bitcoin; there's a lot more to it than we haven't figured out yet. Blockchain has the potential to have a worldwide effect. It offers the ability to improve trade efficiency by automating and simplifying manual and paper-based processes. A public blockchain may be a great cooperation tool since it is decentralised and cannot be controlled by a single entity. As a consequence, blockchain is more than just the foundation for cryptocurrencies like Bitcoin and Ethereum. Before becoming a mainstream technology in banking, banking professionals think that blockchain must meet a number of criteria. To make use of blockchain, banks must first build the infrastructure necessary to run a worldwide network utilising matching solution. Only if blockchain is widely used will it be able to disrupt the industry.

- Increased payment speed Clearance and settlement systems
- Buying and selling assets via hedge funds
- Credit and loan processing
- Fundraising and trade finance
- Blockchain in banking as digital identity verification
- Blockchain in banking for accounting and auditing

4. Present Status quo of Green Banking

India has been on a greater growth trajectory for the past 15 years, with the industrial sector playing the most important role in the country's development. However, controlling their company's environmental impact, i.e., reducing pollutants and emissions from their consumers, is a challenge for Indian businesses. The responsibility laws are ex-post, and enforcement authorities enforce them by issuing fines, closing down defaulting companies,

and so on. However, no law or regulation in India holds banks responsible for environmental damage caused by their customers or for assessing investment ideas prior to financing. Once India has created a legal framework for environmental pollution norms, polluting companies must either close or spend to fulfil the need. These industries would lose competitiveness in the global market due to this process, which will directly affect the Indian economy and banking sector. As a consequence, banks must be cautious in the present climate to prevent the future conversion of currently performing assets into non-performing assets. When banks become aware of these facts, they will certainly adopt the Green Banking concept soon. Industries that are now ill-equipped to control pollution will almost certainly be future polluters. There may come a day when the law takes a firm stance against these environmental violators and demands the shutdown of these facilities. Due to non-compliance with environmental laws, over 150 SSI facilities in the Agra and Delhi regions were forced to close¹². In such a case, the sectors would be unable to avoid becoming non-performing since financial institutions would continue to disregard these considerations. However, the number of industries that have defaulted and shut down is increasing. In the case of failure and industry closure, banks incur financial losses as a consequence of increasing bad assets and liabilities.

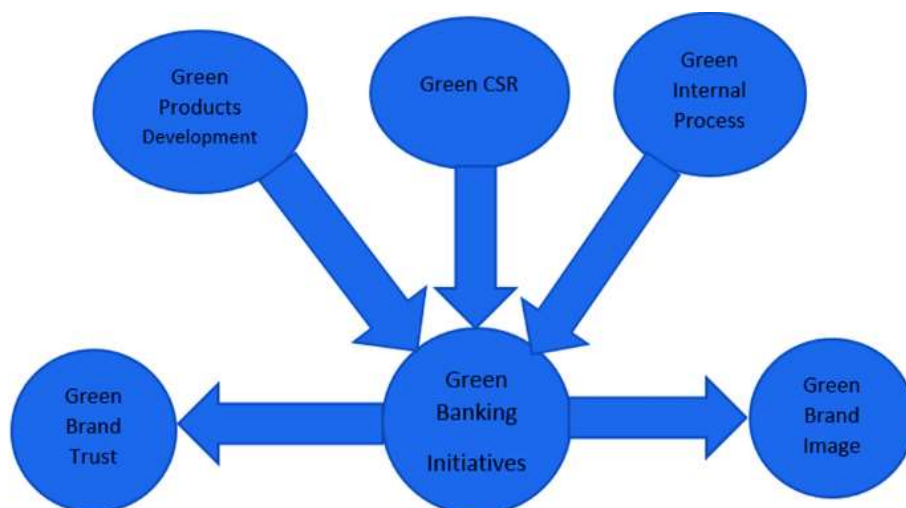


Fig 3. Green Banking Initiatives [3]

The Financial Times and the International Finance Corporation (IFC), a member of the World Bank Group, established the Sustainable Finance Awards to recognise organisations that integrate social, environmental, and corporate governance into their commercial operations. Their awards emphasise the collaboration of financial and non-financial firms in developing economically viable and creative solutions to sustainability problems. According to the Financial Times, the five categories of the Sustainable Finance Awards are as follows: Sustainable Bank of the Year, Sustainable Finance Technology, Sustainable Investment of the Year, Sustainable Investor of the Year, Inclusive Business Achievement.

Table 1. Adoption of Green Banking Strategy

<i>Bank Name</i>	<i>Year of Adoption</i>
Union Bank of India	1996
Citi Group	2003

Yes Bank	2005
Corporation Bank	2005
J P Morgan International Bank	2006
State Bank of India	2007
ICICI	2007
Oriental Bank of Commerce	2007
Bank of Baroda	2008
Karnataka Bank	2008
Industrial Bank	2008
Dena Bank	2008
Industrial Bank	2008
HDFC	2009
Indian Overseas	2009
Indusland Bank	2009
Andhra bank	2009
Punjab National Bank	2009
Axis bank	2010
Kotak Mahndra	2010
Canara Bank	2011
IDBI	2011
IDFC	2013
Jio Payment Bank	2020

5. Government Role & Enforcement of Environmental Management

Financial institutions should also verify that the customer is willing to follow the environmental management plan throughout the construction and operation of the project and that regular reports generated by in-house workers and third-party experts are given. A direct channel of communication should be established between the lenders and the monitoring committee. However, after the transaction phase, environmental risk management gets much less attention. Western financial organisations are increasingly using environmental variables in credit risk management operations rather than in the development of overall lending or investment strategies. Credit officers may now analyse businesses and facilities in terms of environmental management and estimate relative environmental liabilities and risks, thanks to the adoption of ISO 14000 and the expansion of the information network. Despite the fact that commercial banking has traditionally been more concerned with investment banking than with environmental concerns, environmental liabilities will play a larger role in their investment choices in the near future (Schmidheiny and Zorraquin, 1996). Environmental audits are also required to evaluate the environmental state of a facility, property, or company and identify regulatory compliance status, historical and present problems, and potential environmental risks and liabilities associated with the project. A third-party organisation or a team of environmental investigators should do these. However, regulations should be put in place to ensure that all of these things and training and proven abilities are done. Government legislation should be adopted to force banks to consider developing and making public a formal environmental policy statement. Although Schmidheiny and Zorraquin (1996) conclude that banks do not impede the achievement of sustainability, banks may obstruct sustainable development because (1) they prefer short-term payback periods, whereas sustainable development requires long-term investment. (2) Investments with unfavourable environmental consequences often have a lower short-term rate of return (Jeucken and Bouma, 1999). As a result, existing financial markets are unlikely to provide adequate

financing for long-term investments. As a consequence, the government must develop and implement environmental rules for banks. In India, the problem is that the legislation is still being written, and in a few cases, it is not being strictly implemented. However, things may change suddenly, resulting in major compliance problems for the companies involved as well as increased risk for the banks who have lent to them. Stakeholders, employees, customers, governments, and the general public should all be included in continuous environmental debates. The following are the significant advantages of green banking are i.e., green banking eliminates paperwork by using online transactions such as Internet banking, SMS banking, and ATM banking. Paperless banking aids in the reduction of deforestation. Services for Free Electronic Bill Payment. Concessional financing is made available to environmentally friendly goods and enterprises. Banks may educate workers and consumers about the advantages of green banking. Banks all around the globe are turning green by establishing eco-friendly programmes and offering new green goods. By utilising paperless banking, resources may be saved and used more efficiently. E-statements will be produced and sent to consumers. By implementing environmentally-friendly measures, the banking sector can help save the planet. Green banks provide a higher value on environmentally favourable aspects such as ecological benefits; therefore, the interest rate on loans is lower. Create a clean and sanitary atmosphere Environmental conservation and ecological balance protection. To open a green account, use the online account opening form. All new clients who adopt "green accounts" will get cashback. The advantage is not limited to this only. Green banking provides immense opportunities, and the need of the time is to harness best out of it.

6. Conclusion

Sectors and companies are vulnerable to stringent government restrictions, high-profile litigation, and consumer boycotts in a fast-evolving market economy where market globalisation has intensified competitiveness. This would have an effect on banks and financial institutions' capacity to recover their investment profits. As a consequence, banks should be proactive in integrating environmental and ecological aspects into their lending policies, requiring companies to invest in necessary environmental management, appropriate technology, and management systems. Green Banking, if correctly implemented, would act as an effective ex-ante deterrent for polluting companies that are not subject to other institutional regulatory mechanisms. Despite the fact that banks and other financial institutions play a vital role in India's growing economy, little effort has been made in this sector. Long-term development should be encouraged in the banking and financial industries. When it comes to green banking, India's banks and financial institutions are falling behind. Even for record-keeping purposes, none of our banks or financial institutions has adopted the equator idea. They have all refused to sign the UNEP Financial Initiative statement. It is past time for India to take major steps toward gradually complying with the Equator Principles—guidelines that fund projects considering environmental as well as financial factors. The authors in this paper have attempted to highlight and present the growing importance of Green Banking and its importance for the coming future. Several technological tools that can pave the future financial institution path have also been presented, specifically identifying their notable contribution. The present paper aims to fulfil the following objectives: understanding the concept of green banking and its benefits, examining the growing challenge faced by the individual bank by practising green banking, to know and understand

the history of green banking, to study Green Banking and its associated scopes, opportunities significant challenges of green banking. Policy analysis, strategies for green banking approach. This study or exploration shall be beneficial to learners, researchers and professionals interested in this domain.

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