CHAPTER 1
INTRODUCTION

This chapter deals with the overview of the sustainability, concept and evolution of green banking, and green banking practices. This chapter also covers the adoption of green practices in Indian banking sector.

1.1 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 behavior. 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.

The devastating impact of recent storms, droughts, floods and extreme heat, around the globe, prompts all of us, to think acutely and do our best in solving the ever-increasing problem of global warming (IRDBT, 2014). Artificial gases such as, methane, nitrogen oxide, hydrocarbon carbon, and carbon dioxide are responsible for climate distortion. It has a noteworthy impact on agriculture, biodiversity, water resources, forestry, and human health.

A study conducted by Hayward (2013), disclosed that out of 1,000 directors surveyed across the globe, 67% believe that the global economy is not the right way to meet the growing population needs and respond to the global challenges of sustainability. The United Nations Environment Program (UNEP, 2014), defines the green environment, as, "One that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities". In other words, green economy can be briefly expressed as resource efficient, low carbon and socially, environmentally, economically inclusive.

Since the early 1990s, international efforts have been made to reach a consensus on how to tackle climate change? The organization which originated the Kyoto Protocol in 1997, i.e. UNFCCC ("United Nations Framework Convention on Climate Change"), is central element of this situation. India has no legal compulsion to reduce the emissions of greenhouse gases (GHG), as part of the UNFCCC Annex 1 and the Protocol, but still India has proclaimed a volunteer plan, in which, it will reduce the amount of emission of greenhouse gases by 20-25% by 2020 (Biennial Update Report, 2016).

The targets are backed by legislation, that will prescribe compulsory standards of efficiency in fuels for all types of vehicles, announce special codes for green building and few alterations in the Energy Conservation Act, to require an initial group of 714 high-intensity energy companies, to participate in a plan, to cover the use of energy and then, to market certificates of energy efficiency. India wants to willingly take part in the solution and also wants to actively participate in the discussions leading to post-Kyoto scheme, addressing the concerned problem (Ministry of Power, 2016).

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 (UNFCC, 1997).

India has established a "National Action Plan on Climatic Changes", that sets out a series of measures to move ahead simultaneously with development of India and climate change mitigation and mitigation objectives. One of the important division of "National Action Plan on Climatic Changes" described in the national plan missions if Finance (NEPA, 2014).

The "National Energy Efficiency Improvement Mission", focuses on creating mechanisms to support the financing of energy demand management programs, which aims at

gaining the benefits in terms of finance for future energy savings. "The Partial Guarantee Fund" has been established to support risk exposure for loans given for green projects by commercial banks. This fund is charging a very small fee on all the projects that actually seek to guarantee the environmental risk (Bureau of Energy Efficiency, 2016).

1.2 Sustainability as a Concept

Sustainability can be defined in many ways in prior studies, some of the authors have also defined it as, "the capability of man to preserve the existing natural resources and not to exploit resources in a way that will be inadequate in the future", while other researchers have also described it, in the context of formulation of policies (Jeuken, 2001). In 1987, "World Commission on Environment and Development" (United Nations, 1987) in their "Brundtland report, titled, Our Common Future" defined sustainability as, "that which meets the needs of the present without compromising the ability of the future generations to meet their own goals". This definition is generally acceptable by Adams (2001) and Dale (2001) as, they believe it covers most of the characteristics of sustainability in its application, yet some authors had found this as problematic (Taylor, 2002; Jabareen, 2008; Lele, 1991).

In the criticism of WCED definition, Taylor (2002) contended that, determining the upcoming needs of future is difficult, as it is dissimilar from current needs of the people. Researcher also discussed that the concept of needs in advanced countries is different from emerging countries. Despite of many arguments by the authors, the definition deals with two important issues, first the issue of degradation of the environment, resulting from growth in the economy and, second the need for such growth for the development of the society. During industrialization in developing countries, the rate of environmental degradation and soil conversion is increasing vary rapidly. According to Wackernagel and Rees (1996), the consumption of natural resources and basins of waste material is also increasing at a faster rate. It has become considerable target for government, communities and business organizations, to make the people aware about the concept of "sustainable development" and, to sustain an

equilibrium in-between the three interconnected sectors that is society, economy and environment. Also, there must be interaction between developed and developing economies to work together to achieve sustainable development. Du Plessis (2000) and Barton (2000) determined sustainable development as, interconnectedness of three sectors in the model (Figure 1.1) that is, environment, economy and society. According to the authors, to achieve sustainability, there must be reasonable interactions between these sectors.
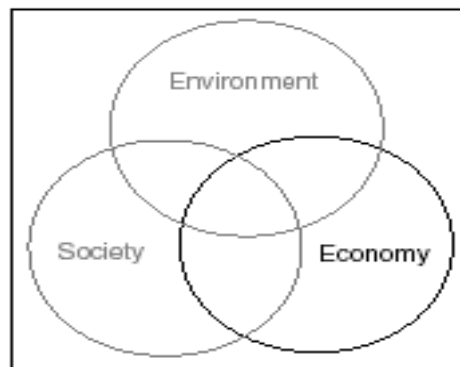
Source: Elkington (1997)

Figure 1.1: "Interactions between the main sectors of Sustainable Development"

This notion has been expanded for companies to develop sustainable strategies in the Triple Bottom Line (TBL) model. This model identifies the importance of providing sustainable value to shareholders, by focusing on the ultimate benefit that is generated. It also considers that, if a company is to be sustainable in the long term, it must consider its performance in terms of "environmental, social and economic bottom lines". The adoption of green business models requires companies to move away from investment decision only, with metrics of financial value. Instead, they must focus on generating long-term value for their key stakeholders, such as, consumers, employees, and investors, including, consideration of social and environmental impacts in combination with traditional economic measures. It is the acceptance of this triple bottom line approach that characterizes the development of a sustainable society. This triple bottom line is often synthesized as a coordinated corporate strategy that ensures that the company aligns its goals with positive results for profit (economic), for people (social), and for the planet (environmental).

1.3 Historical Review of Sustainability

"Sustainable" term was pioneered for the first time by "club of Rome", a global alliance of scientists, academic officials and public. In 1972, it was published in the report of "The limits to growth". This report discussed the concept of growth that distinct the current-day with the previous and, gazes into the future as a continual opportunity for improvement and growth, since that concept did not identify the limitations of the resources, so growth that is based on the limited resources, cannot be unlimited.

In 1980, the "International Union for Conservation of Nature (IUCN), in collaboration with the United Nations Environment Program (UNEP), the World Wildlife Fund (WWF), United Nations Educational, Scientific and Cultural Education (UNESCO), circulated a report named, The World Conservation Strategy", which was addressed to practitioners, conservatives and policy makers of development.

In the "World Conservation Strategy Report", "conservation" has been described as "the management of human use of the biosphere, so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations". IUCN (1980), has also defined development as, "the modification of the biosphere and the application of human, financial, living and non-living resources, to satisfy human needs and improve the quality of human life. For development to be sustainable, it must take account of social and ecological factors as well as the short-term advantages of alternative actions".

The Brundtland Commission, in the year 1987, that led to a "Rio Summit" has described sustainability, but "sustainable development" has ultimately penetrated the global phase during the "1992 Earth Summit in Rio de Janeiro". The core of this summit was to put all efforts in the direction of the new equilibrium between the conservation of resources of nature and its use. The message of the summit mainly mirrored the complexities of the world's problems that has underlined poverty and over-consumption by the wealthy population, causing extreme destruction to the surroundings. This message has given rise to an international acknowledgement of the need for the governments to re-establish the national and international guidelines, to guarantee that, all the economic decisions takes full account of any kind of environmental impact.

Before "Brundtland Report of 1987" and "Earth Summit Report of 1992 in Rio de Janeiro", there were intense discussions among the activists, who supported sustainable environment in relation to greater economic growth. A group of activists have contended that, if sustainability has meant a drastic reduction in natural resource consumption and industrial activity, then this could decelerate the economic development. Most of these types of regulated growth groups come from advanced countries, which claimed that the natural resources of the earth were being exhausted at an alarming rate and, if it is not controlled, then it will lead to disaster in the near future. The two reports i.e. Brundtland's Report of 1987 and the Summit Report of 1992 were measured by United Nations, to create a political cooperation amongst these two groups. This has given a certain level of contentment to both the groups and an agreement on worldwide efforts to achieve a vigorous and healthy environment was initiated. At that time, four most important agreements and contracts were implemented: "Convention on Climate Change, Forest Principles, Rio Declaration and Agenda 21". The "Agenda 21", was the crucial outcome of the "Earth Summit of 1992", which had provided strong guiding principle on how the policymakers can attain development in the most sustainable way in the succeeding centuries? But unfortunately, this mutual understanding between the groups could not last for long.

Another effort was made to create another global partnership for the agenda of sustainable development in the year, 1997, during Kyoto Protocol. Kyoto Protocol is a global treaty which was related to "United Nations Framework Convention on Climate Change (UNFCCC)". The foremost objective of this Protocol was, to set a required aim for developed countries and also the "European community", to lessen the emissions of GHG. This has been identified that, most of the advanced countries are predominantly accountable for the existing extreme high levels of carbon emissions in the environment owing to their previous activities due to industrialization. This protocol has placed a greater load on these advanced countries under the norm of "common but differentiated responsibilities".

In 2002, another "World Summit on Sustainable Development" was held in Johannesburg, South Africa. Several key areas that was agreed at the "Johannesburg Summit" were, "to increase access to clean water for more people, energy efficiency, increase access to energy

services, and the use of renewable energy to reduce the loss of biodiversity, and to promote the execution of national policies for sustainable development."

The "Kyoto Protocol" entered into force in the year 2005, although it was implemented in "Kyoto, Japan on 11 December 1997". All the member countries were divided into three; "countries listed in Annex I, include, industrialized countries, countries listed in Annexure II countries include developed countries and, finally, developing countries. 55 industrialized countries are expected to reduce their greenhouse gases by an average of 5.2%, compared to 1990 levels for the five-year period, 2008-2012".

However, even with disputes of the agreement to reduce carbon emissions from countries, many NGO's and private organizations have taken tactical steps to promote the concept of sustainable development. Much attention is needed in the area of environmental and social dimensions of all the kinds of business, that are persistently connected to the economic impact of firms on the concept of sustainability (Elkington, 1997). Executives were focusing their consideration at the same time on the triple P; "People (social), Planet (environmental) and Profit (economic)", as shown in Figure 1.2. Organizations were increasing their responsibility towards environmental and social factors (Baskin, 2006; ACCA, 2004).

Source: http://www.sellingsustainabilitysolutions.com
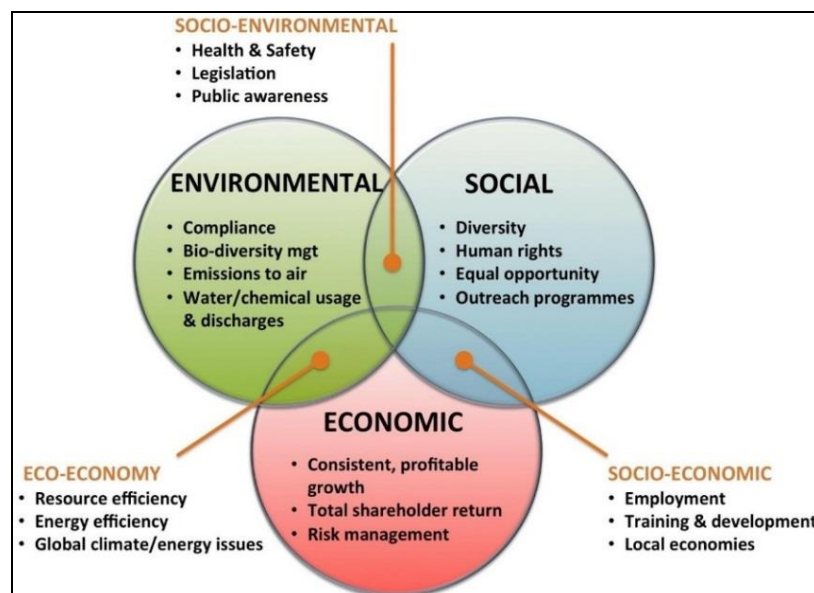
Figure 1.2: A Triple Bottom Line (TBL) Model Showing the Interdependency of Sustainability Pillars

1.4 Traditional Banking Sector

According to Indian Banks Association (IBA, 2014) a bank is a financial institution that delivers banking services and other financial services to its customers. A bank is generally understood as an institution, providing basic banking services, such as, the acceptance of deposits and the granting of loans. There are also some non-banking institutions that provide some banking services without agreeing to the legal definition of a bank. Banks are a subdivision of the financial services industry. A banking system is also defined, as a system, providing cash management services to customers, informing their accounts transactions and portfolios throughout the day. Over the last three decades, the Indian banking system has several extraordinary results to its credit. They are the main participants in the financial system of India. They offer various services and opportunities to their customers, such as, the safeguarding of money and valuables and the provision of loans, credit and payment services, such as, checking accounts, cash orders, and cash checks. They also offer investment products and insurance to their customers. As various models of cooperation and integration between financial industries have emerged, some of the traditional distinctions between banks, securities companies and insurance companies have declined. Despite these changes, banks continue to maintain their primary function of holding deposits and loans from these deposits.

India, is considered to be one of the growing economies, has a key role to play in ensuring that growth and development are sustainable in nature and that any negative impact of the industry on ecology should be avoided. The country emits 6% of global CO_2 emissions, with metropolitan cities that contribute maximum to greenhouse gas emissions (EPA, 2017). The various polluting industries in India are metallurgical industries, i.e. copper, steel, zinc etc., fertilizers, tanneries, paper, pesticides/insecticides, textiles, chemicals, sugar and pharmaceuticals. Therefore, banking operations should ensure that, the company's environment and ecology are funded to maintain balance in nature.

1.5 Sustainability and the Banking Sector

According to Lynch (1994) and Jeucken (2001), "The banking sector has been slow to address sustainable development". Although, banking operations are reasonably clean as compared to other sectors, and also their products and services does not create any kind of pollution, but, this approach is relevant, when only direct impact of banking operations and consumption of energy and materials are considered. It is easier to disclose the direct impact of banking sector to their stakeholders, as recognizing such impacts is not a large burden on society (Bouton et al., 2001; Cowton and Thompson, 2000). It is more important to clarify the relationship between banking functions and sustainable development. Jeucken (2001), states that, banks play an intermediary role by transforming money by "location (for example, a bank can allocate money from a lender to a borrower in a different location), term plans (brokerage up to maturity - creditors usually only have short-term liquidity surpluses, while debtors often have long-term capital requirements) and risk (banks are generally in a better position to assess individuals' risks)", which influences the direction and development of the economy. So, banks can design their financial policies in such a way that they create opportunities for sustainable development, thereby providing advise to their clients for green investments and providing information on market sectors, market development and legislation. For many years, investments in transport, communication and infrastructure sector have limited the development path of the economy. Therefore, it is important, to allocate the financial capital properly (Bourma et al., 2001). Banks through their sustainable lending and investment activities, can invest in sustainable development directly. They can do environmental impact assessment and environmental risk analysis before investing or lending funds in any projects.

In Dec 2007, RBI issued a circular, pointing out the important role played by banks to establish institutional mechanisms, to comprehend sustainability and, to act responsibly. One of the major lending institutions in the SME sector, SIDBI (Small Industrial Development Bank of India), had incorporated social and environmental aspects into their lending and investment strategies that is, an organization must acquire NOC from their pollution control committee of respective state before getting any loan. This is a precondition before sanctioning any credit.

Traditional banks in India, do not have formal framework and policies which encourage them to adopt green practices. Though some banks have adopted green initiatives independently, like, SBI (State Bank of India), which had introduced, "Green House loan" with distinctive allowances on interest on loan, and processing fees being zero for building environmental responsive projects. SIDBI had also promoted innovative technology green projects by providing financial assistance to micro, small and medium enterprises. Some international agencies, "JICA (Japan International Cooperation Agency), AFD (Alliance Francaise de Delhi), KFW (Kreditanstalt fur Wiederaufbau)" associated with SIDBI have provided credit to them, so that, they can promote more environmental friendly projects.

The "Japan International Cooperation Agency" has lengthened the third Line of Credit to "Small Industries Development Bank of India (SIDBI)", under the Phase III of the "Micro, Small and Medium Enterprises (MSMEs) Energy Saving Project, for financing Energy Efficiency (EE)" opportunities in MSMEs. The Scheme is expected to inspire MSME units to undertake environmentally friendly investments like energy saving investments to reduce energy consumption in plant and machinery, to reduce CO2 emissions, enhance energy efficiency and this will help in improving the overall profitability of the firms in the future.

The AFD had provided a 50 million-Euro loan to "Small Industries Development Board of India (SIDBI)", to promote such investments which leads to saving in energy and increase their energy efficiency in small industrial firms. The financing was aimed to promote energy saving investments within "medium, small and medium enterprises (MSME)", to improve their efficiency, reduce their energy bills, and enhance their competitiveness. "German development bank Kreditanstalt fur Wiederaufbau (KfW)" in association with SIDBI, allocated over INR 100 crore, to such startups, which are focusing on clean technology as both of the agencies look to ramp up their support for early-stage ventures, operating in this sector.

Till date, SIDBI had helped about 6,000 units of SMEs for environmentally friendly and high energy efficiency projects (MMR Foundry Review Online, 2012), with an

approximate value of INR 3,000 crore (about $ 500 million). The only Indian bank, IDFC (Infrastructure Development Finance Company) had adopted "International Credit Risk Management Framework, Equator Principles", for evaluating, determining and administering the social risk and environmental risk in funding the project.

Monetary policy of India is developed and controlled by Central Bank of India. The RBI is in authority to supervise and regulate the monetary system and issue the guidelines within which, financial sector and banking system of the country operates. Commercial banks, must execute the instructions provided by RBI in their daily activities and operations. They also provide framework for lending and investment strategies to commercial banks based on legal and statutory restrictions (IBRDT, 2014). Some legal and statutory restrictions were:

- Regulatory restrictions
- Transfer from one bank to another
- Statutory restrictions
- Restrictions on loans and advances
- Guidelines on recovery agents
- Guidelines for lenders on Fair Practices Code

The RBI guidelines for loans and advances, interest payments, non-performing assets, know your customer (KYC), capital adequacy, prudential rules were highly structured and established in accordance with international standards. According to RBI (2015), they had revised its industry loan priority standards in April 2015 and has granted energy loans for renewable sector. Banks can sanction up to 15 crore rupees to borrowers for purposes, such as, solar generators, biomass-based energy generators, windmills, micro-hydroelectric power plants, and unconventional public energy utilities, such as, street lighting and remote electrification of villages. The loan limit will be INR 10 lakh per borrower for individual households. But there were very few banking instruments, which allows people to invest in low carbon economy and also there was lack of green credit guidelines for loans and advances, to incorporate social and environmental management system in banking sector.

A study conducted by Hart & Ahuja (1996), study demonstrated a positive association amongst financial performance and environmental performance. In the initial stage, most of the banks were analyzing their financial performance, but now it is the time to make a social performance analysis as well as environment related performance analysis. Green Banking is not just an organization's CSR activity, but it's also making the organization habitable without damaging it.

Several guiding principles for the classification, management and evaluation of environmental risks in the financing of projects have been set up at international and national level, such as, "the Equator Principles, CERCLA, World Bank Environmental & Social norms, ISO 14000, National Environmental Policy Act (NEPA), BSE Greenex", etc.

The "International Finance Corporation (IFC) and the Financial Times, a member of the World Bank Group", had launched "sustainable finance awards" for those institutions that incorporate environmental policies and are concerned about corporate governance in their business activities. Awards highlighted the partnership between financial and non-financial companies, that are finding innovative and commercially viable solutions for sustainability challenges. The five categories of Financial Times awards for sustainable finances (FTIFC Awards, 2014) are:

- Technology in Sustainable Finance
- Achievement in Inclusive Business
- Sustainable Investment of the Year
- Sustainable Bank of the Year
- Sustainable Investor of the Year

Almost all the Indian financial institutions, including banks, have put forward "green energy financing commitments", to finance up to 2021-2022 in RE-INVEST 2015. The subscription amount for this totals to INR 352,640 (approximately $ 58.8 billion), as shown in Table 1.1.

Table 1.1: Details of the Indian financial institutions and banks which had submitted "Green Energy Financing Commitments" for financing up to 2021-22

S.No.	Name of the Bank	Capacity (in MW)	Amount (in INR/Crore)
1	SBI	15000	75000
2	ICICI Bank	7500	37500
3	L&T Finance Holdings Limited	6500	32500
4	Indian Renewable Energy Development Agency Ltd.	6000	30000
5	PTC India Financial Services Ltd.	6000	30000
6	Yes Bank Pvt. Ltd.	5000	25000
7	Indian Infrastructure Finance Co. Ltd.	4000	20000
8	IDBI Bank Ltd.	3000	14700
9	Power Finance Corporation	3000	15000
10	Bank of Baroda	2500	12500
11	Axis Bank	2000	10000
12	Bank of India	2000	10000
13	Union Bank of India	1500	7500
14	Bank of Maharashtra	1500	7500
15	Andhra Bank	1000	5000
16	South Indian Bank Ltd.	600	3000
17	HDFC Bank	400	2000
18	Indian Overseas Bank	400	2000
19	Punjab National Bank	500	2500
20	Canara Bank	320	1600
21	State Bank of Mysore	285	2000
22	State Bank of Travancore	250	1250
23	Indian Bank	220	1100
24	Dena Bank	200	1000
25	United Bank of India	200	1000
26	Vijaya Bank	200	1000
27	Lakshmi Vilas Bank	200	1000
28	State Bank of Patiala	100	500
29	Oriental Bank of Commerce	80	240
30	Bhartiya Mahila Bank	50	250
	Total	**70505**	**352640**

Source: MNRE (2015)

1.5.1 History of Sustainable Development in the Banking Sector

Several national and international guidelines or principles were established and adopted by financial institutions which are discussed below in detail.

1.5.1.1 Superfund Established by CERCLA

In 1980, CERCLA "Comprehensive Environmental Response Compensation and Liability Act" in the United States strengthened the efforts of the "Environmental Protection Agency" to clean unhygienic sites. This is referred to as "Superfund", in which liability of the owners is created to clean up their polluted sites. Although the law exempts lenders from a status of ownership, but there were few banks which were forced into court proceedings and some had incurred huge financial losses as well.

1.5.1.2 Directive on Civil Liability

In 1989, "The European Commission issued an instruction for charges or fine for damage caused by waste": The European lender community had become gradually more worried about the environment related issues when the EC had circulated its proposal for a "Directive on civil liability" for the damage caused due to waste. The banking community has found that the term "real control" is potentially dangerous, as the phrase could be interpreted to lead to the lender's liability in some cases. The "Federation of Banks' contacted the EC to express their concerns.

1.5.1.3 Fleet Factor Case

In 1990, The "case of Fleet Factors Corporation" was one of the first in a series of US court minutes that emboweled banks exclusion from Superfund's liability. The judges in this case decided that "a secured lender could be considered liable for the environmental damage on a borrower's property, if the lender as much as held the capacity to influence the borrower's waste management decisions, even if it actually did not do so". This decision battered some of the CERCLA defense which was offered to all the creditors. Though the EPA, afterward circulated few supplementary rules to explain the conditions that could determine the lender's liability, the "case of fleet factors" had a insightful influence on the financial community. Following the decision

of the fleet factor, American Bankers Association (ABA) had conducted a survey and found that out of all 63% of the commercial banks of the United States, refused loan applications since they all were having potential environmental liability of the lender. Consequently, more than 46% of banks belonging to this group suspended the financing of sectors that are believed to be risky for the environment, like chemical plants etc.

1.5.1.4 Development of UNEP Financial Institution Initiative

In 1992, the "UNEP Financial Institution (UNEP FI)" Initiative was developed "to promote the integration of environmental considerations into all aspects of the financial sectors' operations and services ". An ancillary aim of "UNEP FI" was, to encourage investments of private sector in those technologies and services which doesn't harm the environment. This ascendency has been addressed to a wide range of financial institutions like many of the investment banks and venture capitalists, asset management and multilateral development agencies etc.

1.5.1.5 Banking Declaration on Sustainable Development and Environment

In 1992, "United Nations Environmental Program (UNEP) and five associates of the Advisory Committee (Royal Bank of Canada, Deutsche Bank, NatWest Bank, Westpac Banking Corporation and Hong Kong & Shanghai Banking Corporation)", all were included in the preparation of "Statement by Banks on Environment and Sustainable Development". All the five associated members of this committee were the signatories of the statement. Towards the end of 1992, out of all commercial banks only 23 worlds' chief commercial banks, signed the UNEP agreement.

The signatories to the statement declared that they:

- Support the incorporation of considerations regarding environment into business strategies and electronic banking operations in order to improve sustainable development;
- Support the cautionary approach for managing the environment, that seeks to antedate and avoid possible degradation of environment;

- Assist their clienteles to obey with all national and international regulations of environment as a part of their regular business practices. In addition to compliance, they consider that good environment related practices are one of the important aspects that demonstrate effective business management practices;

- Diagnose the risks related to the environment to be included in the standard risk valuation procedure and risk management list. As part of "credit risk assessment process", they also suggest where "environmental impact assessments (EIA)" are to be in included in the process;

- Develop and support banking services and products, intended to encourage protection of environment, where there is a good business case.

Till now, 91 commercial banks form 34 countries have already signed the UNEP statement.

1.5.1.6 The Green Paper

One of the fundamental objectives of "European Commission's (EC's) fifth Environmental Action Program" is, to build up an incorporated way to deal with ecological risk. Working toward this path, in 1993, the EC distributed a dialog paper, intended to welcome the suppositions of every single invested individual about the issues identified with obligation in curing natural harm. The Commission seemed to support an arrangement of severe risk that backs the "polluter pays' approach". The "Green Paper" illustrated that, the severe risk framework, ought to be upheld by joint remuneration stores that are financed by the industry, to meet the expenses of ecological reclamation, where a polluter couldn't be found, or was not able to pay, or where obligation couldn't be set up. "The Green Paper" analyzed a few key inquiries, which includes the favorable circumstances and drawbacks of blame based and severe risk, and the issues of insurability and causativeness. The banking group asked against "CERCLA-sort enactment in Europe", while ecological gatherings communicated their help for more prominent moneylender's responsibility.

1.5.1.7 First Universal Round Table Meeting on Banks and the Environment

In September 1994, UNEP facilitated the global round table meeting on the environment related issues and business banks, with the motivation of simplifying an

exchange of experiences and perspectives on ecological administration. Issues that were raised in the conference include:

- Risk assessment related to environment in connection to credit management;
- Leveraging opportunities of private and public-sector in financing related to environment; and
- Impact of internal operations of the businesses on environmental performance.

1.5.1.8 International Survey of Financial Sector on the Environmental Practices

In 1995, Salomon Brothers and UNEP published the results of their "Global Survey on the Environmental Policies and Practices of the Financial Services Sector ", involving 90 investment and commercial banks. The findings of the study revealed that:

- Out of all 70% of the respondents accepted that issues related to environmental sustainability materially affect their businesses;
- Out of all 80% were adopted some type of "environmental risk management strategies" associated to debt financing;
- Many of the banks throughout the world, involve regularity in environmental lending and investment, which is projected to threefold throughout the following 15 years.

1.5.1.9 The World Bank's Environmental Loan

The strong support was being shown by World Bank for sustainable development. In 1996, they became the main source of funding for environmental projects and programs for the society. Their environmental loan cap reached to $11500 billion. As the principal "global development finance agency, the World Bank" plays an important role in managing resources related to sustainability. Its support that sustainability stays to influence and impact the investment and trade strategy of banking sector across the world.

1.5.1.10 Bank of America Corporation Implemented CERES's Principles

In 1997, Bank of America Corporation had become the Fortune 500's first US bank to implement the CERES principles, an ethical code that defines business environmental

responsible economies. These principles had been developed by an alliance of companies, environmental groups and investors, called, "the Coalition for Environmental Economies (CERES)". Companies that have supported the principles of CERES or similar standards had usually been in the manufacturing and energy industries. "The Bank of Boston", the oldest commercial bank in the United States, followed the example of Bank of America shortly afterwards. By adopting the codes established by non-profit organizations, these financial institutions and banks have clearly shown greater concern in sustainable development related issues. "We hope that our action today is another demonstration of our belief that what is good for the environment can also contribute to our bottom line", said David Coulter, the Chairman and CEO of Bank of America.

1.5.1.11 IFC Policies and Procedures for Environmental Protection

IFC has strengthened its approach of "making the environment as its priorities". In January 1998, they drafted a document on policies and procedures for environmental protection. This included, pest management, natural habitats, involuntary resettlement, environmental assessment, dams, forestry and projects on international waterways. The policy has been designed to improve environmental and social performance and thus enhance the company's effectiveness in promoting the sustainable development of the private sector.

1.5.1.12 Sustainability Group Indices of Dow Jones

In September 1999, the Sustainability Group Indexes of Dow Jones, announced the introduction of the first international indexes for leading companies to track their performance in relation to sustainability.

1.5.1.13 Finance Report of EPI

EPI-Finance 2000 report was initiated by group of 11 commercial banks, which shows the challenges faced by banks in reporting and measuring their environmental performance from its operations. The group prepared the report as a way to help "build a full picture of a company's sustainability performance, which allows for effective

management decision-making and stakeholder interaction, as well as meaningful benchmarking". "EPI-Finance 2000" was a key point in the changing respect of financial institutions for the environment and clear the measurable concepts of sustainable development. These are applied through the construction of environmental indicators of performance, which are significant tools for efficient decision-making and also acts as a means to enable businesses to measure sustainability (Kolk and Mauser, 2002). As stated by Searcy, et al. (2007), environmental indicators help businesses in measuring their performance against goals and state their development to shareholders. In other words, environmental indicators can provide an internal guidance, in order to measure the progress of ecological management and superficially to assist as, reliable environment related announcement to shareholders (Isaksson and Garvare, 2003). This was the leading true collaboration amongst "United Nations agencies" and the banking sector, to refurbish into a Corporation that take into account environmental management. Indicators are planned for financial institutions, which helps develop a standard environmental management services (EMS).

1.5.1.14 London Principles

In 2002, London Principles were the outcome of a research that was propelled by the "City of London Corporation", which signified the financial sector of UK in the British government's reply to the "Johannesburg Earth Summit 2000". "London Principles" inspire consideration on the cost of social risks and environmental related risks in the estimation of "financial and risk management products, exercise equity ownership to promote efficient and sustainable asset use and risk management, and provide access to finance for the development of environmentally beneficial technologies". "The London environmental principles", despite this interest, found to be ignorant on the part of the role of managers in setting up policies and other management tasks related to environment, such as auditing and training, which was successfully covered by "EPI-Finance 2000". Also, these principles are nothing but repetition of those policies of "EPI-Finance 2000", in regard to "environmental procedures and investment in environmental technologies". However, the principles related to environment represents an amplified awareness of the menace posed to the financial institutions and environment alike. The foremost force of the principles was "environmental risks and environmental

risk management, ownership rights and the financing of green technologies".

1.5.1.15 Equators Principles

Other initiative taken by many financial institutions (FIs) that seek to handle environmental risk related issues is the "Equator Principles (EPs)". These Principles were recognized in the year 2003 by ten major banks, including, "Westpac Group, in co-operation with International Finance Corporation (IFC)". The group of banks was inspired by their own occurrences and experiences – "financial loss, increased awareness of the environmental risks, public pressure and damage to reputation". Collectively, they examined ways to develop a communal and comprehensible set of social and environmental related guidelines and policies that could be directed across the all the banks in the financial sector, with the purpose of evaluating and handling the environmental risks and social risks in funding the projects. In agreement with the EPs, banks have decided not to finance any project unless it is complied with the rules and regulations related to environmental risk assessment. By June 2011, out of all, 72% of the financial institutions had implemented the EPs. There are major two hurdles that make the EP's less effective. First, "the EPs can be interpreted in multiple ways. On the one hand, banks that adopt the EPs are able to implement its principles to the extent that they fit within their policies and operations, since they are voluntary agreements, acknowledging that the IFC has no authority to supervise or review the bank's compliance. Second, the principles have no formal mechanism for ensuring accountability (Ibars, 2004; Macve and Chen, 2010)".

1.6 Evolution of Green Banking

"Green" is becoming a representation of "Eco consciousness" throughout the world. As per "Indian Banks Association (IBA, 2014) Green Bank is like a normal bank, which considers all the social and environmental / ecological factors with an aim to protect the environment and conserve natural resources". Their purpose is to execute almost all the banking activities by taking care of natural environment, biodiversity and ecology.

According to "Institute of Development and Research in Banking Technology" (IDRBT,

2014) "Green Banking 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. It is making technological improvements, operational improvements and changing client habits in the banking sector. It means to promote environmental friendly practices and to reduce the carbon footprint from banking operations. It is a smart and proactive way of thinking with a vision of future sustainability".

A conventional bank converts into a sustainable or green bank by controlling its fundamental operations concerning about the improvement of environment. Although banking activities are not substantially in relation with the environment, but the peripheral effect of their customer's activities are significant.

In the year 2009, "Chris Van Hollen (from Congress) of USA commenced a Green Bank Act" with the intention to establish a sustainable or green bank that was under the possession of the US government. After introducing the concept of Green Banking, primary decision taken was, to reduce the use of paper in the day to day work of banking, since, it is leading to cutting down of trees, as it is acting as a raw material for paper manufacturing companies. It is leading to decrease in the "green forestation" and this is becoming the main reason, for increase in carbon di oxide and decrease the level of oxygen around the globe. According to the researcher there are mainly two ways in which green banking can be practiced, "one is in-house green banking; another is, practice by the bankers in their business area". Changing the environment of the bank from traditional way to more clean and hygienic, reducing sound pollution, reforestation, green building, using webcam for video conferencing, instead of physical meetings, waste management, online banking, installation of solar panel on the rooftop of the bank, and using high mileage vehicles, e-statements, emailing documents are also incorporated in the in-house Green Banking practices. Funding and supporting the green projects, like, Solar/Renewable Energy Plant, Bio-gas Plant, Bio-fertilizer Plant, Effluent Treatment Plant (ETP), etc. working on exclusive green or environmentally friendly projects, voluntary undertakings of banks are chief practices by the banking managers in their business areas. The concept of Green banking undertakes pre-emptive

measures to safeguard the environment and to tackle the change in the climate which is challenges, while sponsoring along with efficient use of non-renewable, renewable, human and natural resources.

India is a signatory to "UNFCCC and the Kyoto Protocol". "Clean Development Mechanism (CDM) of Kyoto Protocol", has provided India with a significant opportunity for reducing carbon emissions at a relatively low price through renewable energy projects and energy efficiency projects. India gets an opportunity to make money in trading in carbon credits via regulated carbon emission trading schemes. Such kind of projects can earn commercial "certified emission reduction (CER) credits", each credit is equivalent to one tone of Carbon Di Oxide, which can be calculated concerning about meeting the targets of Kyoto.

1.7 Green Banking Practices

The green banking practices includes Green Products and Services, Green Processes, Green Strategies and Green Infrastructure (Green IT and Green Building) which have been discussed below in detail.

1.7.1 Green Products and Services

Banks day by day are evolving innovative services and products that answer to the customer demand for green alternatives. Subsequent points are some of the alternative choices that all the banks ought to offer to their customer base, if till date they are not proposing to their customers (IBDRT, 2013): -

- Electronic banking and telephone banking are some of the facilities that will facilitate the consumers to accomplish maximum of their banking requirements anywhere and anytime.
- Automatic system of making payments that would reduce the need of the banks to write the mails or send the cheques via mail.
- Electronic or paperless account statements, information about the products or annual reports to all the stakeholders' specially; Customers.

- Promoting and offering of mutual funds of those companies, which are focusing on "green environment".

- Offering credit to the homeowners, who desires to spend in modernization and renovations, which is energy-efficiency, their home.

1.7.2 Green Process

A basic requirement of all the banks to make its units and activities to be environmentally friendly, i.e., a move towards green banking, and also towards Environmental Sustainability. Numerous prospects are available for the banks, to make a move towards greening their functional units and many of the activities. Important amongst them are:

- Supply Chain Management i.e. adoption of methods or process, which plans to minimize wasted freight, inventory and networked design.

- Resource Management i.e. to promote paperless transactions within the organization, and the adoption of processes to optimize workforce and parts, and intellectual device management.

- Relationship management with customers, i.e., using online services to maintain the relationship with existing and potential customers and thereby, reducing paper transactions.

- Sourcing and Procurement i.e. to select the vendors on the basis of sustainability ratings of their services, products and operations.

- Product Life Cycle (PLC) i.e. designing the environmental friendly banking products and services, which reduces the carbon footprint and have minimum environmental impact.

1.7.3 Green Strategies

The efficient environmental management system (EMS) can only be achieved by incorporating the environmental and social strategies in the primary goals of banks. RBI (IBDRT, 2013) had suggested some strategies, to adopt green practices in banking operations:

- Create awareness among the key stakeholders about environmental issues and its impact on society, and also making them understand the necessity of greening the banking products and services.

- Reviewing equipment purchases, conducting environmental audits, assessing its environmental cost impact, and revising disposal practices and policies.

- Set "Specific, Measurable, Attainable, Realistic, and Timely" (SMART) targets to reduce carbon footprints within the organization and, also setting the criteria to measure the performance against the goals.

- Development and implementation of green policy, which aims at effective utilization of resources and lessening the environmental impact of banking operations.

- Energize, encourage and motivate the bank employees to follow the green path and policies and suggest some innovative ideas, which promote the Environmental Sustainability. Also, motivate the suppliers and other interested parties to adopt sustainable practices.

- Publicize the environmental policies, achievements and actions, and thereby, getting the accolades and credits from peers, customers, government agencies, industry groups, environmental advocates and, society at large.

- Incorporate the environmental perspective, by formulating the innovative financial solutions and redesigning the existing one.

- Providing concessional loans to individuals and corporates for using environmental friendly products and services, like, using solar energy equipment, fuel efficient automobiles etc.

- Introducing Green funds, which promotes investment in environmental friendly projects.

- Providing services in clean development mechanism, and also connecting themselves with carbon credit business.

- Supporting projects for national initiatives for cleaning up the biodiversity, water, and air.

1.7.4 Green Infrastructure

Developing the environmental friendly banking infrastructure (Physical and IT) is not just a social incentive, but, it also reduces cost significantly (IBDRT, 2013). Several investments banks and financial services providers around the world are considering environmental sustainability factors in their business operations, with a pledge to make them completely carbon neutral, starting from 2013. As banks are becoming "climate ambassador", green IT employing green data center and green building infrastructure will be of great importance.

1.7.4.1 Green IT Infrastructure

According to IBDRT (2013), green IT infrastructure includes green desktop computers and laptops and green data center which is explained below.

- **Use of Green Desktop Computers and Laptops:** In the globalized economy, banks are increasingly using internet for their internal and external operations. As per several researches, lot of energy is wasted, whenever any kind of charger is joined to electric socket regardless of any electronic device is connected to the charger or not, this ends up in the wastage of energy, as charger turn down voltage and transform AC to DC. Therefore, to save energy it becomes foremost important to switch off the charger whenever it is not in use. Similarly, for desktop computers, by reducing brightness to appropriate level, and switching off the screen, in spite of using screen savers when not in use, will save the power consumption.

- **Green Data Center:** While implementing and designing the IT data center, many parameters needs to be considered, like, availability, reliability, scalability, service ability, flexibility, modularity and security. Various innovative eco-friendly practices ensure optimum utilization of space, power and cooling requirements. A green data center can be designed by virtualization and consolidation of optimum utilization of energy in infrastructure including storage devices and servers.

1.7.4.2 Green Building

According Priya (2012), green building is defined as "a building which is resource efficient, energy efficient and environmental responsible and also which incorporates

external construction and interior design, in such a way, which significantly reduces its impact on environment, is considered as green building". It is a prospect, to make efficient use of resources and creating a healthier and productive environment, to make the place much better to live and work. This incorporates use of material, technology and design, in order to reduce energy consumption and thereby improve the natural environment. It includes reducing heat loads, fresh air circulation and proper ventilation, natural light maximization, using energy efficient lighting and air-conditioning, waste reduction, using non-toxic materials, recycled materials, water efficiency and harvesting, using renewable energy resources etc.

It is the one, which provides healthier spaces for occupants, generates less waste, conserves natural resources, optimize energy efficiency, and uses less water, as compared to the conventional building. RBI (IBRDT, 2013), suggested some ways to create green buildings:

- Designing the building in such a way, so as to reduce deforestation for preserving more trees.
- Well day-light penetration for interior design of the building.
- Cross ventilation across the building.
- Efficient use of heating systems and air conditioning.
- Appropriate use of water.
- During construction, it is important to protect and preserve the landscape.
- Preserve and Protect landscape during construction
- Green housekeeping process and green cleaning products to be used
- Self-energy generation techniques to be used, like, "installing roof top solar panels or collectors, façade of photovoltaic film or panels".

1.8 History of Green Banking in India

According to the definition by RBI (IRDBT, 2014), "green banking" is to "make internal bank processes, physical infrastructure and IT infrastructure as effective and efficient as possible, with zero or minimal impact on the environment". They had

introduced "green rating standards for Indian banks, which are termed as Green Coin Ratings". According to this rating system, banks are judged as per their carbon emissions from their internal as well as external operations, and also on the amount of refurbishment, reuse and recycling of material in their building development, and in their systems, like, printers, computers, servers, networks, etc. Number of green projects undertaken by banks, are also counted in the rating system.

To highlight the CSR activities of most of the banks, a notice was circulated by RBI, on December 20, 2007 to all the scheduled commercial banks titled, "Corporate Social Responsibility, Sustainable Development and Non-Financial Reporting- Role of Banks". RBI also issued a letter to all "Non-Banking Financial Corporations i.e. NBFCs", on October 28, 2011, titled, "Implementation of Green Initiative of the Government". So, banks have to take care regarding the better utilization of their resources and improvement in the service delivery system. This can be achieved by increase in the use of electronic mode of payment, eliminating the system of post-dated cheques and slowly and gradually phase-out cheques in day to day transactions.

1.8.1 Green Initiatives by Banks in India

Several initiatives are taken by Indian banks to promote sustainability. They have not only incorporated green practices in their operations, but also in their financial and investment decisions.

India's largest bank, "State Bank of India (SBI)" had initiated "GCC (Green Channel Counter)" which is related to facilitating various branches, of the banks regarding promotion of paperless transactions or banking (SBI, 2014). Many of the banks had also collaborated with "Suzlon Energy for generation of wind power", by setting up of windmills in Maharashtra, Tamil Nadu and Gujrat (Business Standard, 2014). They are also the member of carbon disclosure project (CDP) through which they perform various activities to promote Environmental Sustainability (WWF-INDIA, 2014). For developing solar energy generation plants in India, SBI entered into an agreement with EXIM bank, to grant the loans up to 14 years to Spain based company "Aston field Renewable Resources and Grupo T-Solar Global SA" (Yadav and Pathak, 2014).

Punjab National Bank (PNB) had introduced several green initiatives to reduce energy consumption, like, electricity audit of their branches and corporate offices, organized many trees plantation drives for their employees etc. The bank had also emphasized on building green offices by installing LED lighting system, good cross ventilation, switching censors for lights and fans, prevention of water, using recyclable material etc. They had also taken a Green Pledge with "MNRE (Ministry of New and Renewable Energy)", to develop butterfly park in Guruvayur temple, where more than 18 medicinal plants were grown. As a part of their green financial strategy, they laid down some conditions before sanctioning of loans like, getting NOC from pollution control board, resettlement and rehabilitation of people or employees who are affected in development of project etc (PNB, 2011). They have also invested INR185 crore in generation of wind energy generation projects. The had received a national award by MNRE for becoming a top performer under the category of "Banks/Financial Institutes" in the First National Workshop on Roof Top Solar Power at Vigyan Bhavan. They had sanctioned the credit facility to M/s. Radha Soami Satsang Beas Educational and Environmental Society for installation of 18.50 MW Roof Top Solar Power Systems, which is the world's largest single campus rooftop solar power unit in Amrtisar, Punjab.

Bank of Baroda (BOB, 2013) had adopted several green practices in their operations, policies and practices. In commercial finance, the bank was giving preferences to environmental friendly projects, which can earn carbon credits for them like, solar energy, biomass, windmills etc. They had made compulsory for borrowing industries to obtain NOC from state or central pollution board, and they were not extending any credit to industries, using hazardous substances which leads to ozone depletion, such as, foam products, aerosol products and solvents. They were giving internet banking and mobile banking facilities to their customers to reduce the use of paper. They had also installed ATMs in several uncovered areas, so that, customers need not to commute from one place to another. The bank had started using green servers, backup consolidation and desktop virtualization, in order to improve the operational efficiency of data centers.

As a part of green initiatives, Canara Bank (Canara Bank, 2013) had also started environmental friendly practices, such as, internet banking, mobile banking, solar

biometric systems in operations etc. For high tech banking facilities, they had set up e-lounges for cash acceptor, pass book printing, online trading, ATM and cheque acceptor. They had also implemented e-governance in HRM and other administrative functions, in order to reduce the paper transactions. As a part of their lending policies, they are also giving preferences and weightage to such projects which helps in gaining carbon credits, and, they were restricting those industries, which produces ozone depletion substances such as, aerosol products, carbon tetrachloride, choloro fluoro carbon, solvents etc. Like other public-sector banks, they have also insisted their borrowers to install water treatment plant, if they were emitting or producing toxic substances.

Go Green initiatives had been adopted by ICICI bank which includes, green communication, green engagement with customers, green products and services etc. (ICICI, 2014).

(a) **Green Products and Services:** Banks had started offering green services and products to their customers like:

    i. Insta-Banking: It is doing banking transactions conveniently anywhere and anytime through internet banking, mobile banking and IVR by their customers. It promotes paperless transactions as, customers need not to have physical statements and also it reduces physical travel to bank branches.

    ii. Vehicle Finance: Bank was giving processing fee waiver on loans for vehicles which uses sustainable sources of energy like, "Civic Hybrid of Honda, Tata Indica CNG, Reva electric cars, Mahindra Logan CNG versions, and Maruti's LPG version of Maruti 800, Omni and Versa".

    iii. Home Finance: Bank was giving concessional loans for LEED certified building for homes and offices.

(b) **Green Engagements:** In 2013, bank had organized an environment awareness programmes where they were giving money plants to their employees and customers, as a token to protect the environment and ecology. ICICI also became partner to CNBC green theme auto awards overdrive. On June 5 every year, they were also celebrating, "World Environment Day" where several activities were

performed, such as, sapling distribution, tree plantation and green pledge by signatures. In March every year, they switch off the lights of every ATM, branch and head office between 8:30-9:30 pm to celebrate the Earth Day.

(c) Green Communications: ICICI had started giving facilities to their customers for electronic transfers, e-statements, online bill payment, annual statements or reports on email, to promote paperless banking and commuting free banking transactions.

(d) Green Partners: ICICI were started entering into partnership with various international and national NGOs and green organization to promote environmental sustainability. With BHNS, they were started giving "Green Governance Awards" to their organizations who are putting their efforts beyond the needed statutory compliance to protect the environment.

HDFC bank had adopted several measures to protect the environment and to reduce carbon footprint in the area of energy efficiency, paperless transactions and waste management (HDFC Bank, 2013). They were assisting their employees to minimize the wastage of resources and greenhouse gas emissions. They were promoting paperless transactions through providing e-transaction advises to their retail and corporate customers, electronic communication with the clients, such as, e-statements and annual reports through email. For energy conservation, they were also replacing conventional lighting with CFL, switching off all the lights in ATM's, branches and head office after 11 P.M., and installing data centers with green technologies. They had set up 20 solar ATM's all over the country for promoting renewable energy (first solar ATM was set up in Bihar) and they had replaced the ATM batteries with Lithium-ion. They were entering into the contracts with their vendors for recycling of waste material. The bank was procuring only those products, which are rated by energy stars and compliant to the norms of Central Pollution Control Board.

Axis bank was stated a unique project of collecting all the dry waste from their branches and head office in Mumbai and recycle it to envelops, notebooks and notepads. In one year, they were approximately collected 1,00,000 kgs. of waste paper and converted it to envelops, notebooks and notepads which they were using in their branches and

corporate offices (Axis Bank, 2013). They were also constructed their green corporate office building in Mumbai as per platinum LEED certification. Employees of the bank were stated coming in car pools to reduce the pollution. The bank was promoting electronic transactions and communication with the customers and employees to reduce consumption of paper. They were started sending the annual reports through emails to their customers. In Coimbatore, Independent ATM Deployment model had been initiated by bank in which, 10 solar ATMs have been set up in the city circle.

"Kotak Mahindra Bank had also initiated Think Green project", in which, bank had launched the "Social, Environmental Management System Plan (SEMSP)". In this plan banks need to evaluate the different kind of environment and social related risk of borrowers, which is completely based on the policy of "IFC sustainable framework and performance standards". Moreover, for reducing the consumption of paper, banks are persuading their clienteles to sign for electronic mode of statements and also, they are becoming partners with "Grow-Trees.com to plant one sapling for every e-statement on behalf of its customers". According to guiding principles of "Ministry of Corporate Affairs (MCA)", the bank had already conveyed to their stakeholders, to adopt electronic form of copies of annual report instead of paper or physical copies. In the year 2009, they tried to consolidate their data centers into a sole facility to enhance their efficiencies in power usage. The "rain water harvesting tank" has also been mounted in the buildings of the banks and also used oil generated from a diesel generator, is disposed-off via dealers which are approved by "Pollution Control Board".

1.8.2 Innovation in Financial Products

There are two major indices in "The Bombay Stock Exchange" (BSE), which promotes investments related to climate change considerations and Environmental Sustainability; these are, "S&P BSE Greenex and the S&P BSE Carbonex". The "S&P BSE Greenex" was launched on 22nd February 2012, "is an index, which is licensed for the development of green financial products including, mutual funds, exchange-traded funds (ETF) and structured products. It calculates the energy intensity of a company (total emissions upon total revenue) and publicly disseminates it on a real-time basis". "S&P BSE Carbonex" started on 30th November 2012, includes, "the areas in which

the companies are assessed, include, reporting and disclosure, strategy and governance, performance and achievement, and ecosystem action".

The S&P BSE Greenex is "designed to measure the performance of the top 25 "green" companies in terms of greenhouse gas (GHG) emissions, market cap and liquidity" (as shown in table 1.2).

Table 1.2: "S&P BSE GREENEX" Sector Wise Market Capitalization

S.No.	Index/Sectors	Free Float Market Capitalization %
	S&P BSE GREENEX	100
1	Finance	23.8
2	Transport Equipment	20.97
3	Healthcare	14.81
4	Information Technology	12
5	Capital Goods	6
6	FMCG	5.93
7	Power	3.9
8	Mining & Metal Products	3.58
9	Telecom	3.54
10	Agriculture	1.99
11	Gas & Oil	1.5
12	Durable products of consumers	1.42
13	Housing Related	0.56

Source: BSEINDIA (2016)

The "S&P BSE CARBONEX", the first index of its kind in India, tracks the performance of the companies within the S&P BSE 100 index, based on their commitment to mitigating risks arising from climate change as shown in table 1.3. The index was created to address market demand for a sophisticated approach to portfolio management incorporating, climate change risk and opportunity.

Table 1.3: "Sector Wise Market Capitalization S&P BSE CARBONEX"

S.No	Sectors	Free Float Marketplace Capitalization %
	S&P BSE CARBONEX	100
1	Finance	31.16
2	Information Technology	11.42
3	Transport Equipment	11.3
4	FMCG	10.87
5	Oil & Gas	9.15
6	Healthcare Industry	6.7
7	Industry of Capital Goods	4.67
8	Mining & Metal Products	3.97
9	Housing Related	2.66
10	Power	2.39
11	Telecom Industry	2.11
12	Petrochemical & Chemical Industry	1.29
13	Textile	0.59
14	Media & Publishing	0.54
15	Transport Services	0.42
16	Consumer Durables	0.38
17	Agriculture Goods	0.36

Source: BSEINDIA (2016)

1.8.3 Green Bonds

Green bonds are advanced mechanism of financing which helps in raising of low cost and long-term loans for funding of sustainable projects, which leads to production of renewable energy and emission reduction through energy efficiencies. According to MNRE (2015), these bonds are also helpful in achieving the country's (India) target of generating 175 GW of renewable energy by 2022. As per Ministry of Finance (MOF, 2015), these bonds are likely to create business opportunities in renewable energy sector that amount to USD $160 billion in next five years.

Even though, the "Green Bond Principles (GBPs) – voluntary process guidelines, that recommend transparency and disclosure, and promote integrity in the development of the Green Bond market by clarifying the issuance process – do mention the broad categories wherein, the proceeds from the sale of the green bonds should be allocated, determination of projects under 'green' category remains ambiguous, because of the lack of a standard definition of green bonds".

Several banks in India, launched green bonds such as, IRDEA issued green bonds in February 2014, with a purpose to fund renewable energy projects. It is issued to both public and private sector at the rate of INR 1000 each, amounting to INR 500 crore. It has received AAA rating form Brickworks and CARE (Indian rating agencies) (Upadhyay, 2014). Yes Bank issued Green Infrastructure bond in February 2015 with a green shoe option amounting to INR 1000 crores, with a goal to invest in green energy and infrastructure projects, including small hydel projects, biomass projects, wind power projects and solar energy projects (Yes Bank, 2015). EXIM Bank issued Eurodollar Reg S Green Bond in March 2015, which was distributed to 60% to Asian countries, 30% to European and Middle East countries, and rest 10% to US countries. "EXIM Bank's bond issue was India's first USD denominated green bond, while, Asia's first benchmark-sized green bond in 2015, also third ever green bond outside Asia". This fund was used in green projects in several countries, including, Sri Lanka and Bangladesh. (EXIM Bank of India, 2015) (refer table 1.4).

Table 1.4: Green Bonds Issued in India

Name	Date issued	Amount raised	Maturity	Rating
IREDA Green Bond	17th February–10th March 2014	INR 500 crore total (with the option to extend to INR 1,000 crore)	10, 15, and 20-year terms	AAA rating from Indian rating agencies: CARE and Brickworks
Yes Bank Green Infrastructure Bond	16th-24th February 2015	INR 1000 crore	10 years	AA+ (Indian credit rating)
EXIM Bank 5 year Eurodollar Reg S Green Bond	24th March 2015	USD 500 million	5 years	Rated as 'BBB-' by Standard and Poor's and 'Baa3' by Moody's, same as the rating of Govt. of India.

Source: Yes Bank (2015), EXIM Bank of India (2015) and Upadhyay (2014)

1.9 Need for Promoting Green Banking in India

Banks like any other businesses in India, is directly interacting with the internal and external environment as users of natural resources. Banks are also contributing heavily in the carbon emission during its day to day activities in terms of paper usage, use of electricity, lighting etc. Even though the emission is not much, when compared to other industries, which are carbon sensitive, like, oil and gas industries, steel industries etc., it is due to the development and advancement in the banking sector, which is leading to the increase in the direct interface with the external environment.

Banks are indirectly affected by giving finance to those industries which are having direct influence on the external environment. Banks are acting as a major source of finance to many industries like, fertilizers, steel, cement, gas and oil, paper, etc., which heavily pollute the economy and environment. Indian banking sector plays a very important role in promoting socially responsible investment (SRI) products, which ensure environmental sustainability in the economy. Banks, being a key source of money provider, play a vital role in ensuring overall sustainability. So, to fulfill the social responsibility towards the environment pollution, they must try to do reduction in the carbon footprint activities caused by their direct operations, and their indirect activities, and should play a vigorous role in preserving the overall sustainable development in the economy.

In supplement to this, if the decisions regarding the lending money are not done carefully by keeping in mind the environmental criteria, then it may direct the bank to different types of risks like, legal risk, reputation risk, and credit risk. It should be at the interest of the banking sector, to follow green banking practices to avoid these risks involved in their operations.

After introducing the green banking and its various concepts, the next chapter covers the literature that has been reviewed by the researcher to gain in depth knowledge of related issues.

CHAPTER 2
REVIEW OF LITERATURE

In the previous chapter, elaborate attempts were made to describe broad concepts related to sustainability and green banking. In this chapter, the literature review is done and it started with the adoption of green banking practices in India. The researcher has also studied the technology adoption in service sector, particularly in the banking sector. This chapter also helps in describing the past studies related to various technological models, but for this research work, researcher has studied in detail, about Technology Acceptance Model (TAM) literature carried out in the historical and recent years. The researcher has also studied the factors, determining the adoption of green banking practices and its impact on Environmental Sustainability. This chapter serves as a framework for this thesis.

2.1 Introduction

Green banking is the path for reducing pollution and saving environment, which leads to sustainable growth in the economy. Banking sector is the main source of funding the commercial projects, which is the indicator of growth in the economy. To ensure the security of future generations, developed countries are taking various initiatives to promote environmental sustainability. Banks are playing vital role in economic development, and they should be well acquainted to adopt green banking practices. They should lend money only to those sectors, which promote ecofriendly and sustainable environment. Green Banking is the effort of multiple stakeholders where banks have to work closely with business communities, consumers, NGOs, government and IFIs to attain the goal of sustainable environment. It includes product ecology, internal and external environmental management, environmental disclosure, environmental financing and adoption and reporting of environmental principles (Priya, 2012).

The "concept of Green Banking" is attached to "Triodos Bank, which was established in 1980, from Dutch origin", which had actually started the concept of Environmental Sustainability in the banking sector. In 1990, the bank launched "Green fund" for

financing those projects which are environment friendly and all other banking projects trail later (Dash, 2008). Taking example from this bank, the banks all over the world started taking green initiatives in the banking sector.

Voluntary supports from business communities, enforcement of regulatory principles by the government, civil society pressure is required to create a pleasant atmosphere in the economy. Sharma, Sarika and Gopal (2014) found that the green banking concept is new to the banking industry; the level of awareness among the customers is low. They identified that most of the customers are using green banking products without being aware of the 'Green Banking'. They suggested that banks in India should adopt **Equator Principles** in their policies. Finally, the authors concluded that reduction of carbon can be achieved only when all the sectors cooperate for sustainable development of the economy.

Prasad (2002) had studied the impact of Economic Reforms in the Indian banking sector, and suggested how banking sector will face the changes and challenges. The researcher highlighted that there is a need for change, it has been argued that revolution in the sustainable development model is essential for understanding the development of the banking sector in the direction of sustainability. For the development of green banking, a framework is required where incentives are given to responsible customers and disincentives are there for pollutants. To avoid reputation, credit and legal risk, financial institutions must adopt some principles where they can finance and lend money only to environmental friendly projects. Several banks in the developed countries have already started assessing their environmental risk, while selecting any projects. Banks can also conduct several activities to promote sustainable environment like, climate risk funds, in-house environmental management, internet banking, mobile banking, in order to provide alternative delivery channels to their clients, and organize workshops and training programmes for awareness and capacity building.

IFC (2007) found that: "(a) individual banks had to devise their own business case for sustainable banking, (b) reputation and branding had become the top reason for many banks to integrate sustainability, (c) the benefits outweighed the social costs and environmental risk management improved the quality of a bank's portfolio and lowered insurance liabilities and compensation claims".

It is the need of the hour that, RBI has to play a pre-emptive role in guiding "green banking initiatives". The commercial banks might work collectively and make a move forward by commencing voluntary initiatives. RBI (IRDBT, 2014) therefore suggested the establishment of standard rating system for banks which are green efficient and Green banking practices among banks of India. According to this rating system, both the operations and infrastructure of the banks are being considered. They have invented the term of "Green Rating Standard as —Green Coin Rating" as described in figure 2.1. The primary business of the banks must not only be making money but it has to keep in mind; the issues related to social and environment to its day to day activities. "Green coin rating will be in line, as energy star rating given for appliances". As per this system, the Banks will be evaluated based on the emission of carbon out of their day to day operations, the amount of refurbish, reuse and recycling concept that are being used in their building furnishings, and in the operating systems used by the banks, like, computers, networks, servers, printers etc. Banks are also evaluated on the basis of projects being funded by them, which are environment friendly and also the recognition and rewards businesses are being paid for turning their businesses green. The nominal amount of paperwork can also help the banks in gaining some points in this respect. Finally, this will help in conserving the forestry by the banking sector.
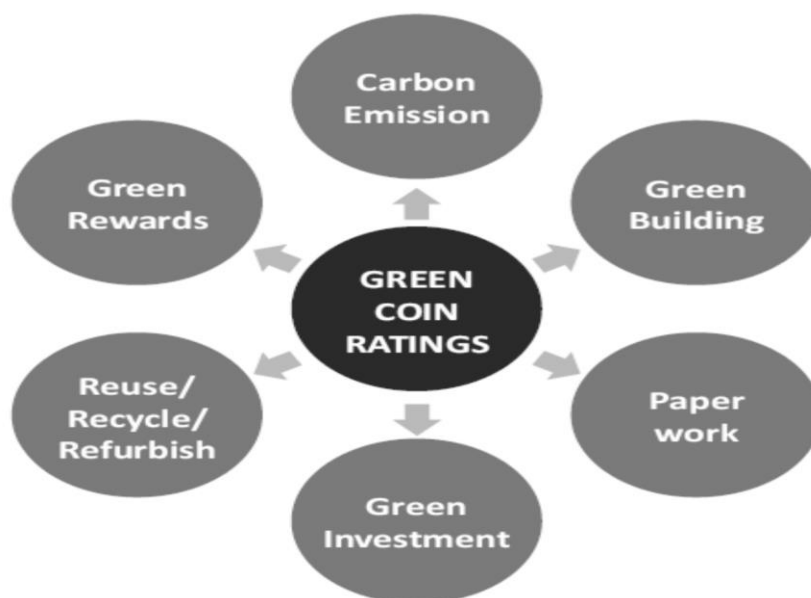
Source: IDRBT, 2013

Figure 2.1: Green Coin Ratings

The main objective behind "Green Coin Rating" is to Improve the energy and carbon efficiency of banks, and to estimate energy usage and wastage. It also helps in comparative assessment of bank and its products efficiency to the customers and other stakeholders. GRISIL ("Green Rating and Information Services of India Ltd" - Green rating agencies) in lines of CRISIL i.e. can be set up to provide green analysis of lenders and users of green loans via different ratings. It also leads to effective asset and liability management of banks. Banks in India had started entering into carbon credit business where, they were providing advisory services, intermediary to buy certified emission reductions(CERs) or carbon funds on behalf of end users, lending money for green projects and other banking related activities. Banks had developed dedicated cells for carbon credit business. The Reserve Bank of India or regulatory authority, should also recognize and reward the environment conscious providers of green loans on an annual basis. By doing this, environmentally irresponsible firms may run the risk of hurting their bottom-line as well as their image in the market.

According to Green (1989), bank is responsible to all its stakeholders i.e. customers, employees, government, shareholders, and the society. On the other hand, stakeholders do have ethical responsibility to protect the environment from their operations but they are not supervised by limited liability act. Banks perception and their efforts towards sustainable environment effects its reputation and success or failure in the long run. It was concluded by the researcher; ethical behavior of the stakeholders should be tested as economy was facing complex issues towards the environment. In today's world, sustainable banking is gaining importance and acceptance form the customers, who not only wants to save or invest their funds at a safe place but, also wants that their money will be channelized in the projects that improves the environment and standard of living of the society (Muhamat, Nizam, and Azizan 2011). According to Bihari (2011), banks following ethical practices can lend money only to those organizations, who are following environmental standards of safety and security. As banks are the major source of raising funds for industries, they can play an important role in controlling damage to the environment by scrutinizing their investment and lending policies. Dogarawa (2006) stated that banks should follow the principles of impartiality, social responsibility, integrity, reliability, money laundering control and transparency for ethical banking to protect the rights of stakeholders.

Marcel (2001) compared three regions of the world i.e. "Europe, North America and Oceania for the period 1998-2000", on the basis of environmental and annual reports of banks. Researcher had analyzed some vital alterations between the banks, regions and countries, with respect to sustainable banking. The results also revealed that a self-protective position regarding the issues concerning environmental factors is accepted by 53% of the banks, and a large number of banks are ignorant of the role that they can play for "sustainable development".

Hoepner (2010) gave an overview of "Social, Environmental, Ethical and Trust (SEET)" issues in banking. According to many researchers, interest in the SEET issues in the banking sector, has witnessed a spontaneous rise over the last decade via certain international initiatives, like, "the United Nations Environmental Programme Finance Initiative; the Equator Principles; and the United Nations Principles for Responsible Investment" etc. But not even a single bank in India have adopted "equator principle", and neither of them is signatory to "UNEP financial initiative statement".

Banks in India are far away in the implementation of green banking practices in banking operations. They have now started to take some initiatives in adopting green banking practices. Firstly, there is a need to literate their bank's customers about green banking concept and adopt all strategies in building bank image. The green banking concept is new to the Indian banking industry, and the level of awareness among the customers is also low (Sharma, Sarika and Gopal, 2014; Yadav and Pathak, 2014; Verma, 2012; Sahoo and Nayak, 2008).

Biswas, (2011); Chaursi, (2014); Sudhalakshmi and Chinnadorai, (2014); Verma, (2012) also highlighted the status of all banks of India towards the adoption of green banking and researchers have also found that there has not been much initiative taken by the Indian banks in this regard. Bank should go "green" and also play a proactive role to take environment and ecological aspects as part of their internal operations, investment policies and lending principles.

2.2 Adoption of Green Banking

A general scanning of various published sources, available for literature review indicates that, very few researches have been done in the field of Green Banking in

India. Internationally, several studies have been conducted in this field but they are not very relevant in Indian context. This section shows empirical literature conducted in the field of Green Banking in the country.

Chandra (2011) emphasized on green banking initiatives that has been taken by the Indian banks, such as, IndusInd Bank, SBI, Union Bank of India, IDBI Bank, ICICI Banks, YES Bank and ABN Amor Bank etc. According to the author, Mumbai, Delhi and Chennai are among the ten most polluted cities in the world, and the major industries which causes pollution are, fertilizers, paper and pulp, pesticides/insecticides, chemicals pharmaceuticals, metallurgical and textiles. SIDBI had made significant changes in their lending principles and implemented a precondition for sanctioning of credit. They had made it compulsory for a company to obtain "No Objection Certificate" (NOC) from the state pollution control board before establishing the enterprise. Yadav and Pathak (2014) studied the various green banking approach adopted by Private and Public-Sector Banks in India for Environmental Sustainability, and different phases of initiatives in the area of green marketing of banks using Case Study Approach. They found that except ICICI Bank, most of the banks in the public sector have taken more green initiatives as compared to private sector banks.

Chaursi (2014) in the research work also discussed the status of most of the banks in Indian towards the adoption of green banking. The researcher in the study also found that there has not been much initiative taken by the Indian banks in this regard. Sudhalakshmi and Chinnadorai (2014), also showed that, not many initiatives have been taken by banks in India, as far as green banking is concerned. Verma (2012) concluded that, only few banks in India adopted green banking and there is lack of awareness of green banking context among different stakeholders in Indian banking sector.

Green (1989) concluded that, banks should play a responsible role to their different stakeholders. The long-term success and reputation of the firm is affected by the company's record and its perception of its ethics. Many banks are offering green product, like, ATM, Green credit cards, Green CDs, electronic fund transfer, use of solar and wind energy etc. but, still it's not completed.

Bihari and Pradhan (2011) and Sharma (2009) have attempted to study the CSR practices of major banks, operating in the Indian Banking Sector and established that, CSR has positive impact on the performance and image of the bank. They have found that, due to absence of stringent compliance and rules, banks operating in Indian banking sector have yet not adopted the green banking in full sprit. Although, some of the banks have adopted CSR as tool to enhance customers' loyalty, yet they are not able to achieve the true essence of green banking.

2.3 Theoretical Framework

Theoretical framework includes the different theories which were used by the researcher to develop the research model. Theories have been explained in detail below.

2.3.1 Adoption of Technology

Kotler (2003) had defined adoption as, "an individual's decision to become a regular user of a product or a service". This section highlighted the various studies done on adoption of technology in service context, and also, it emphasized on some important factors affecting the adoption of technology.

2.3.1.1 Technology Adoption in Service Context

Zeithaml and Gilly (1987), conducted the study to understand the acceptance and adoption of technologies by elderly (age more than or equal to 65) and non-elderly (age between 18-64) consumers in the United States. The technologies covered in the study are, electronic funds transfer (EFT), electronic scanners equipped departmental stores and ATMs. The researcher concluded that, elderly consumers were giving more importance to both convenience and safety and they were more enthusiastic in using EFTs and electronic scanners than the use of ATMs. But non-elderly consumers were giving more importance to convenience rather than safety, while, resistors were technological skeptics and, they wanted the usual transactions.

Research conducted by Walker et al. (2002), sought to identify the causes for the adoption and rejection of the technologies in service delivery. The researcher

hypothesized that, willingness and capacity of individual will influence the technical reliability, perceived risk, needs fulfillment, perceived relative advantage, and desire to control, thereby moderating the willingness to adopt. The study concluded that, willingness and adoption are high when supported by satisfactory technology reliability, perceived higher capacity, perceived higher relative advantage, need for personal contact and low level of perceived risk.

Lin and Hsieh (2007) highlighted the influence of TR (technology readiness) on adoption of SST (smart & sustainable technology) and customers perception. SST can be used in cinema services, government organizations, financial sector, transportation sector etc. The researcher also discovered the relationship between Perceived service quality, behavioral intention towards adoption of SST. They had found that, "increased customer TR, leads to higher perceived service quality, and favorable behavior intentions when using SSTs. Higher perceived service quality also leads to satisfied customers, who have favorable behavioral intentions regarding, SSTs." However, result of the study did not support the hypothesized positive association between SST adoption and TR.

Ponder et al (2006) identified two different styles of decision making in convenience stores i.e. self-service assisted counters and sales person assisted counters. They found biggest motivating factor to adopt self-service is, convenience and then, the confidence in making purchase without being pressurized by sales person. The researcher concluded other self-service benefits i.e. less time consuming, easy to use, no waiting time in lines, ability to explore more products before purchasing, and no hassles from salesperson.

The study by Chen et al. (2009), attempted to explain the continued use and assessment of sustainable technologies by an individual, based on "TPB (Theory of Planned Behavior), TAM (Technological Acceptance Model) and TR (Technological Readiness)". The study was done on various sustainable services, like, mobile banking, internet banking, ATM, kiosks, e-reservation etc.

In the research conducted by Chen et al. (2009), researcher has tried to forecast and explicate an individual's continuous use and evaluation of sustainable technologies,

which was based on the ideas of "technology acceptance model (TAM), Technology Readiness (TR), and Theory of Planned Behavior (TPB)". The research work by Chen et al. (2009), covered a variety of sustainable technologies providers, including kiosks, e-reservation, internet ATM, or mobile banking. Through Structure Equation Modelling (SEM) technique, the author characterized that, "consumers satisfaction significantly influences continuance intention (CI) and that, TAM variables, Perceived Usefulness (PU), Perceived Ease of Use (PEOU), as well as subjective norm (SN), and perceived behavioral control (PBC) from TPB model, significantly influences satisfaction. The TPB variables, subjective norm (SN) was a stronger indicator of PU and, perceived behavior control (PBC) has a significant influence on CI. Optimism and innovativeness are also the significant motivators of satisfaction. However, TR's inhibitors (discomfort and insecurity), did not have any significant negative influence on CI towards adopting sustainable technologies".

A study was conducted in Chinese by Zhang et al. (2013), 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 behavior. "Privacy Risk, Security Risk and Perceived Risk", revealed a negative impact on the adoption behavior, 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 behavior of users.

2.3.1.2 Technology Adoption in Banking

Marr and Prendergast (1993) have studied the adoption of sustainable practices by the clienteles of retail banking in New Zealand. The researchers had discovered three important factors that encourage the adoption, "time convenience (the ability to perform banking transactions at a time, which suits the customer), place convenience (the ability to perform banking transactions in a location, which suits the customer) and simplicity of use". "Preference for human interactions and privacy Risk", were quoted as those variables which discourage the acceptance of technology by the consumers.

In the study conducted by Curran et al. (2003), researcher had attempted to identify the impact of attitude of customers towards the intention to use sustainable technologies in the perspective of three types of banking technologies - bank by phone, ATM, and online banking. Attitude of the customers in relation to interpersonal service delivery ("attitudes towards staff and a global attitude toward the service firm"), and also the attitude of the customers in relation to technology ("attitudes towards a specific sustainable technology and a global attitude toward the sustainable technologies"), were measured for the research study conducted by Curran et al. (2003).

Eun-Ju Lee et al. (2003), research model was based on "Roger's theory of diffusion of innovation(DIT)" and, researcher proposed that, adoption of technology is influenced by innovations primarily, and then, by the perception of the customers towards characteristics of the innovations, which are relevant to the technology based service innovation ("perceived benefits of technology, reliability, trialability, complexity, security, complexity and need for human interaction") and, socio economic characteristics ("age, education, income and PC at home").

Mattila et al. (2003) in the research work had discovered the causes for the adoption or non-adoption of I-banking in Finland. Majority of the clienteles, who are matured, belong to the late adopter group. Still there were more than 45 per cent of the samples, who perceived themselves as younger, were willing to try new products, but they have their own reasons to try the innovation. For the non-adopters, the explanations were lack of personal interaction, security issues and technology anxiety.

Kolodinsky et al. (2004) in the research examined the association between the traits that explain the adoption of innovations based on "Diffusion Innovation model (DIT) and TAM) and behavior intention" of the users towards three types of electronic banking technologies: phone banking, automatic bill payment, and electronic banking in USA. The result of the study was that, "relative advantage and compatibility" were statistically significant for different types of e-banking products. "Trialability" was not substantial for any of the three technologies. "Simplicity" was statistically significant, only for electronic banking. "Observability" was found to be statistically significant, only for phone banking. Further, other variables, like, age and education were found to be significant for both e-banking and phone banking.

A research was conducted by Curran and Meuter (2005), researchers equated three self-service technologies: "automated teller machine (ATM), telephone banking/banking by phone (BBP), and online banking (OLB)", for evaluating those variables, which contribute to customer acceptance towards sustainable technologies. Researchers used the TAM model by adding two additional factors – "Perceived Risk and need for interaction" and proposed that, attitude of the users towards sustainable technology would influence the consumer intention to use the sustainable technology. The study found out that, "Perceived Ease of Use (EOU)" was an important predictor of user's attitude towards ATM, but not for OLB and BBP. "Perceived Usefulness" was also a noteworthy predictor for attitude of the user towards both BBP and ATM, but the result is not same for online banking. For online banking, all the antecedents, except "Perceived Risk", were not significant in influencing the attitude of the consumers.

As investigated by Lee et al. (2005), the assorted nature of the consumers belonging to the category of non-adopters (persistent non-adopter and prospective adopter) in the perspective of internet banking. As per the findings regarding this the important attributes that impact the internet banking adoption by the current adopters, include, Perceive Convenience and Quick Service, while persistent non-adopters rate security risk and size of bank, to be the importance factors influencing adoption decision. The consumers belong to prospective adopters' category tend to be the substantial users of phone banking, ATM, computers for work, and those users also value convenience, than the users belongs to the category, of persistent non-adopters. However, the researcher found no noteworthy difference in the perception of different types of risks between the two categories.

Gerrard et al. (2006) also conducted an exploratory research in Singapore. The study was based on the investigation of factors that influence the non-adoption of internet banking amongst the banking consumers, researcher found that adopters of internet banking saw green innovative practices usage to be more convenient and, it also exhibited innovation characteristics as expounded by Roger's theory of Diffusion of Innovation. Researcher through Content analysis distinguished, "lack of perceived need, perceived risk, lack of knowledge about the service, inertia, inaccessibility; lack of

human touch, pricing concerns and IT fatigue", as factors influencing non-adoption of internet banking services.

Curran and Meuter (2007) conducted research on identifying the factors influencing the decision of the consumers regarding the adoption of sustainable practices in banking sector. The researcher advised different attitudes for the research "attitude towards specific targets and staff and generalized attitudes – overall attitudes toward the service provider and the overall attitude towards green practices". Researchers also studied the association between "attitudes, anticipated outcomes to behavioral intention (BI) for changing existing behavior". Three outcomes were discussed from the research study were, "utility (potential rewards or punishment resulting from performing the behavior), social acceptance (approval or disapproval of others to adopt and use product and service by an individual) and enjoyment". The research work proposed that, user's attitude was not significantly influencing the behavior intention of the users.

Ding et al. (2007) conducted research study, based on online financial services. Researcher also investigated the factors, influencing the adoption of green practices. Users preferring self-service, in online medium, as well as with a high-involvement service prefer "personal control, time and cost saving and avoidance of personal contact in service". Users belong to the category of professional service consumers and self-service users were found to be price sensitive and were not interested in promotional offers. Researchers also found that self-service users were belonging to the category of early thirties to late forties.

Berger (2009), also tried to explore and identify the attributes that influence the adoption of green and sustainable practices for pro-active sales in European retail banking sector with prominence on special effects of "personality traits, relationship characteristics and previous online banking usage". In this research work, researchers had extended the TAM model by integrating few moderating effects of "technology readiness dimensions i.e. optimism and innovativeness, need for interaction and customer relationship characteristics (scope- number of products purchased, scale – total sum of assets)". The TAM model was used by the researcher, basically, to clarify the link between attitude and behavioral intention. The moderating effect of "optimism

(strengthening effect) on Perceived Ease of Use (PEOU)–attitude" association was not significant in this research work, while the moderating effect of "innovativeness" (strengthening effect) was found to be significant. The moderating effect of "need for interaction (attenuating effect) on Perceived Usefulness and attitude" was also found to be significant. The moderating effect of "innovativeness" remains strong and significant.

Sripalawat et al. (2011) conducted the research work on the adoption and acceptance of mobile banking by bring together the effects of negative and positive factors which were expected to establish the adoption and acceptance of sustainable technology. For the research model, researcher had used extended TAM, which included constructs, like, "device barrier, perceived risk and perceived financial cost". The crucial variables for adoption of mobile banking included in the research work, were found to be, "Perceived Usefulness (as a positive factor) and, lack of information (as a negative factor)".

Yu (2012) conducted the research work on the adoption and acceptance of m-banking through an "extended unified theory of acceptance and use of technology (UTAUT)" framework. "Intention to use and facilitating conditions" were found to be the significant variables, impacting the usage behavior of users while gender and age were found to have significant moderating effects.

Yousafzai and Yani-de-Soriano (2012), in the research study, used an integrated model of TAM and TRA, to find out the actual internet banking behavior of British customers. The link between "Perceived Usefulness and intention to use", was found to be significant for young males, while "Perceived Ease of Use–intention" link was more significant for older females.

2.3.1.3 Theory of Reasoned Action

This TRA theory was propounded by Ajzen and Fishbein in the year 1975. This model is very widely studied and proved beneficial in the field of social psychology. It is related to various consciously intended behavior variables, such as, Social Influence, Attitudinal, and Intention to use, to envisage the behavior of individuals. The

relationships among concepts in TRA are represented in Figure 2.2. It is also postulated by this theory that, the user's Behavioral Intention (BI) to act upon, is mutually influenced by the Attitude of the user towards performing a particular Behavior i.e. Subjective Norm (SN) and ATB; SN is defined as, "the general perception of what significant others think the individual should or should not do." The importance of Attitude of the individual towards enacting the Behavior and Subjective Norm to predict Behavioral Intention will differ from behavioral domain.

This theory also postulates that AB i.e. Actual Behavioral is the direct precursor of Behavioral Intention (BI). As stated by Fishbein and Ajzen (1975), Behavioral Intention will predict AB precisely only if, it holds the below mentioned three conditions:

"(a) the degree to which the extent of intention and the behavioral condition correspond with respect to their levels of specificity of target, action, context, and time frame; (b) the reliability of intentions between performance of the behavior and time of measurement; and (c) the level to which bringing out the intention is under the volitional control of the individual."

Furthermore, TRA has not included beliefs that are important and operative for a specific type of behavior. Academicians and Researchers using this theory, must foremost distinguish the beliefs, which are noticeable for all the subjects with respect to the behavior under study.
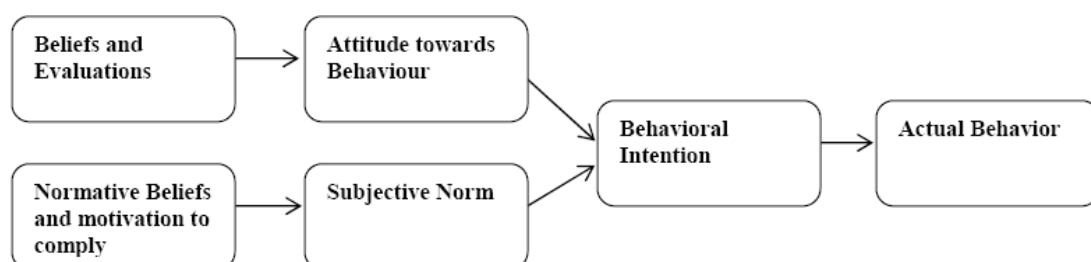
Source: Fishbein & Ajzen (1975)

Figure 2.2: Theory of Reasoned Action

To investigate the performance of an individual's behavior and their intention, this model of TRA has been widely used and applied to various situations. Such as, TRA prophesied education (Fredricks and Dossett, 1983); examination of breast cancer

(Timko, 1987) and turnover (Prestholdt, 1987). Sheppard (1988) deduced that in a meta-analysis of research on TRA, it was predicted that the utility of this model was resilient across many situations and conditions.

2.3.1.4 Theory of Planned Behavior (TPB)

In spite of the obviousness of the Theory of Reasoned Action is persuasive across studies, it will become challenging if the individual's behavior under examination is not under full volitional constraint.

As pointed out by Sheppard (1988), there are two problems with this theory. Primarily, the researcher must be able to distinguish between the individual's intentions with behaviors. This kind of differentiation could be challenging for the researchers as there are many other features in addition to the individual's intentions to use what will be able, to determine how the AB is executed? Secondly, it is very difficult to judge, whether the chance of failing to execute an action is merely due to individuals' own intentions or due to individuals' own behavior, there is no scope of the model for considering this problem. To deal with these stated problems, Ajzen (1985) included one more factor in the TRA model that is "Perceived Behavioral Control (PBC)", which prophesies "Behavioral Intentions (BI) and Behavior". This new extended model is known as TPB i.e. Theory of Planned Behavior.

These two models, i.e. TRA and TPB have many likenesses for example, in prediction of AB, BI is still the principal factor. Both the theories assume that individuals are fundamentally rational and while making any decision they use information in a systematic manner.

This extended model has added PBC as the chief determining factor of BI as well as Control Beliefs (CB), that influence PBC; this is the main difference between these two theories. However, it might be very challenging for the researcher to evaluate actual control of individual before executing a behavior. Theory of Planned Behavior, emphasizes that, it is viable to compute Perceived Behavioral Control - "people's perception of the ease or difficulty in performing the behavior of interest" (Ajzen, 1991). According to the researcher, PBC is a function of Perceived facilitation and CB.

Perceived facilitation is "one's judgment about the significance of those resources to the accomplishment of the outcomes". Control belief is "the perception of the existence or absenteeism of essential resources and prospects needed to carry out the behavior" (Ajzen and Madden, 1986).

As discussed by Bandura (1977), there is an empirical support which states that individual's confidence in their own capability to carry out behavior influences the individual's behavior. There exists a fundamental link from PBC to BI, that indicates the motivational influence of control on AB via individual's intentions.

To foretell the execution of an individual's behavior and intentions, TPB model has been widely used by many researchers, for example, predicting the individual's user intentions, to avoid caffeine (Madden, 1992), performance of unethical behavior (Man, 1998), intention to use an innovative software (Mathieson, 1991), performing the self-examination of breast (Young, 1991), and to understand wastepaper recycling (Cheung, 1999). Madden (1992), Man (1998), and Cheung (1999), found that, the Theory of Planned Behavior has a better explanatory and predictive power of individual's behavior than TRA.
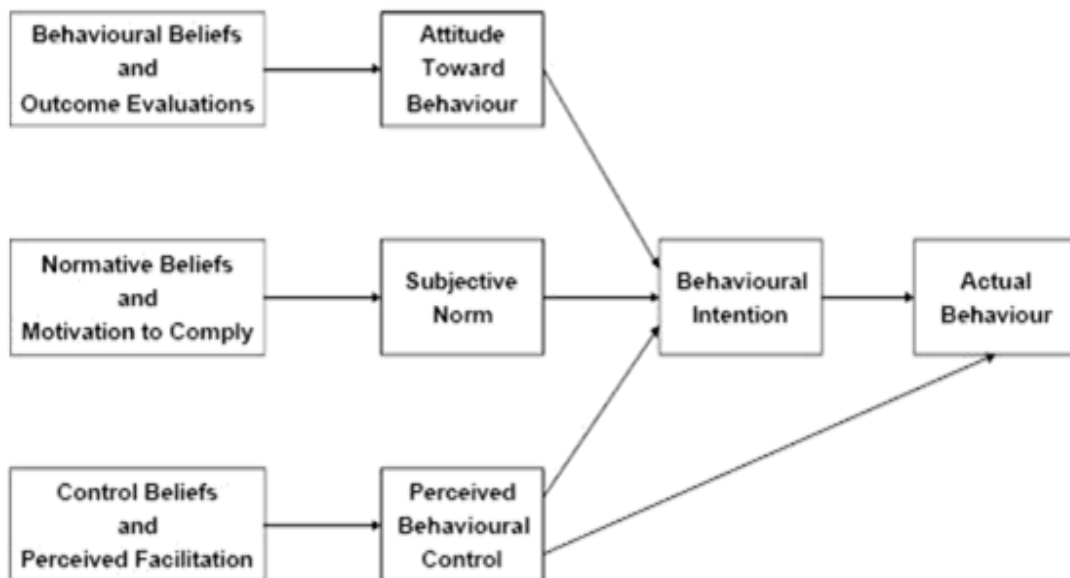
Source: Ajzen (1991)

Figure 2.3: The Theory of Planned Behavior

2.3.1.5 Decomposed Model of Theory of Planned Behavior

As stated by Taylor and Todd (1995), attitudinal beliefs need further decomposition into variables to get a better understanding of the association between two important variables of this model i.e. belief structures and precursors of intention. The researcher also stated that, based on the Roger's (1983) theory i.e. IDT (diffusion of innovation theory), there are three attitudinal beliefs characteristics of an innovation, that has an impact on the individual's attitude towards adoption of any innovative technology. These are "relative advantage, compatibility, and complexity". Shimp and Kavas (1984), claimed that, it is very difficult to systematize all the cognitive elements of belief into one unit. Taylor and Todd (1995), confirmed that, this model i.e. decomposed model of TPB has better explicatory potential as compared to original models and theories of TPB and TRA models. In this way, the contention of this research work is that, M-banking is a high-tech invention and hence, this model of TPB gives a more reasonable clarification of intention of the user towards adopting M-banking services.

According to Rogers (1983), the innovation's rate of adoption is supportively associated with Relative Advantage. Innovative and advanced technologies that user perceives as easy to use (opposite of complexity), have a greater prospect of adoption and intention to use by the prospective consumers. Therefore, Davis (1989), stated that, complexity is anticipated to have a negative association with user's attitude towards the innovation. In the decision of acceptance and adoption of any innovative technology, this element i.e. Complexity is found to be the significant factor.

Tornatzkey and Klein (1982), also claimed that, the compatibility is supportively related to the adoption of innovation by the individual, as any innovation in the technology is more likely to be accepted and adopted by the individual only, when it is in line with the value system and job responsibilities of the user.

Likewise, Ajzen (1985, 1991) also argued that, PBC reveals a belief that involves access to the opportunities and resources that are expected to impact individual's behavior. Bandura (1977), stated that PBC seems to incorporate two main constituents

i.e. facilitating conditions and self-efficacy. The first element, i.e. "Facilitating conditions" as explained by Triandis (1979), is "which reflect the availability of resources expected to perform a specific behavior." This includes, access to money, time and other resources. In reality, internet commerce banking applications i.e. banking services on mobile phones are becoming easily and readily available to the users, this is all possible due to the supporting high-tech infrastructures, which are readily available. According to this, to increase the adoption rate of this innovation in mobile telecommunications, government can play a leadership and major role. The second constituent, i.e. self-efficacy, as described by Ajzen, (1991) is, "being assured of the capability to behave successfully in the situation."

All the individuals, who have the skills and expertise to use to use a computer and the Internet, are the ones, who are likely to adopt this technological advancement of M-banking.
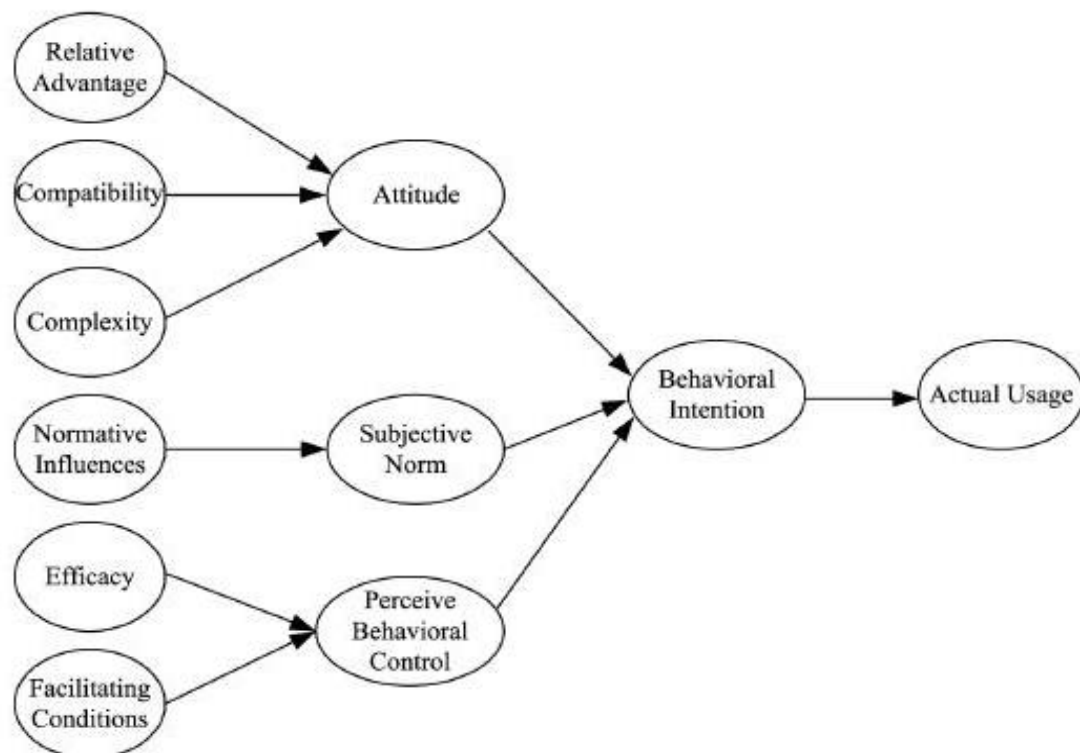
Source: Shih and Fang, 2004

Figure 2.4: Decomposed Model of Theory of Planned Behavior

2.3.1.6 Technology Acceptance Model (TAM)

Davis (1989), introduced this model, which is a variation in the previous theory i.e. TRA (Theory of Reasoned Action). It is specially customized for demonstrating an individual's attitude towards adopting information systems i.e. ISs. The main objective of TAM is to give a justification of the elements of computer acceptance, which can explain the individual. The main objective of this model is, to present the foundation for drawing the influence of the external factors of internal beliefs, intentions, and a user's attitude. This model was framed in an attempt to accomplish these objectives by categorizing a few fundamental factors recommended by prior studies dealing with cognitive and affective components of computer acceptance, and utilizing TRA as an imaginary background for demonstrating the theoretic relations amongst these factors.

Figure 2.5 demonstrates that, for computer acceptance behavior, there exists basically two specific beliefs i.e. "Perceived Ease of Use (EOU) and Perceived Usefulness (PU)", as postulated in TAM. PU refers to "the extent to which a prospective user believes that by using a specific system would improve his or her job performance. Within a managerial context, individuals are usually boosted by good performances by raises, bonuses, promotions, and other rewards" (Pfeffer, 1982).

EOU is clearly described as "the extent to which a potential user believes that using a specific kind of system would be free from any effort." For predicting the users' acceptance, this model has gained recognition as a vigorous, parsimonious and influential model.

2.3.1.6.1 Perceived Usefulness

As described by Davis (1986), Perceived Usefulness is well-defined as "the degree to which an individual believes subjectively that using a particular IT would enhance his or her job performance". "Perceived Usefulness" suggests "a user believes that using a particular IT will be beneficial". Several conditions have to be fulfilled before holding such belief. First, "the user must have prior experience with the particular problem suggesting at least some understanding of the nature of the problem, even if the problem is not yet understood sufficiently to derive a solution. Generally, the user must

also have experience with information technologies. This experience gives the user a basis for evaluating the capabilities of information technologies and how and in what circumstances they may be useful. In the formation of initial opinions, the user will not have much hands-on experience, but may know of the capabilities of information technologies through the media like, television and newspaper or other communication channels like friends" (Jihyune, 2003).

2.3.1.6.2 Perceived Ease of Use

"Perceived Ease of Use" imitates "the degree to which an individual believes that using a particular IT would be free of effort, both physical and mental". Davis (1986) argued that, "all other things being equal, IT perceived to be easier to use than another is more likely to be accepted by the individual. Perceived Ease of Use has both a direct effect and an indirect effect on attitude toward using". "Perceived Ease of Use" is determined, at least in part, by former experience in the field of IT as well as it is also affected by the training received by the user. "Previous experience and training" increase an individual's ability to use IT. This is the direct effect of EOU on attitude towards use. Davis (1986), also suggests a relationship between "Perceived Ease of Use and Perceived Usefulness". An increase in EOU may contribute to improved performance. The constructs, "Perceived Usefulness and Perceived Ease of Use", have been comprehensively examined by researchers. These studies generally confirmed that "Perceived Usefulness and Perceived Ease of Use" are significant elements in affecting IT use.

2.3.1.6.3 Attitude

According to Schiffman and Kanuk (1997), attitude is "a learned predisposition to behave in a consistently favorable or unfavorable way with respect to a given object". Moreover, Attitude can be "learned through purchasing behavior, direct experience with the product, information acquired from others, and exposure to mass media advertising. In addition, attitudes are relatively consistent with the associated consumer behavior (Jihyune, 2003)".

In the framework of TAM, Davis (1986) described Attitude as, "an individual's degree of evaluative affect toward the usage behavior." Attitude toward using is jointly determined by two beliefs "(Perceived Usefulness and ease of use)".

2.3.1.6.4 Behavioral Intention to Use

As per Davis (1986), Behavioral Intention reflects, "the strength of the prospective user's intention to make or to support the usage decision in their mind". Behavioral intention is jointly determined by "attitudes and Perceived Usefulness". The relationship between "Attitudes and Behavioral Intention" implies that, all factors being equal, users with favorable attitudes expect to perform the behavior in a better way. In addition, "Perceived Usefulness directly influences behavioral intention".
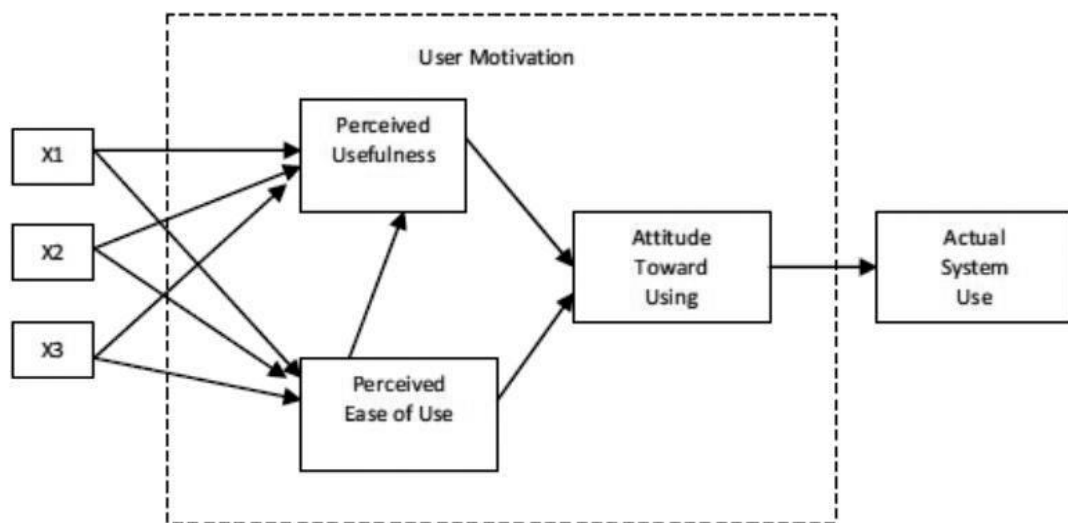
Source: Davis (1986)

Figure 2.5: Original TAM Proposed by Fred Davis

To summarize, as shown in figure 2.5, using an IS was directly determined by the "Behavioral Intention to Use" it, which is in turn affected by the users' "attitudes toward using the system and the Perceived Usefulness of the system". "Attitude and Perceived Usefulness" are also affected by the "Perceived Ease of Use". According to TAM, greater "Perceived Usefulness and the Perceived Ease of Use" of an IS, will favorably impact the attitude toward this system. The attitude, in turn, leads to a greater "intention to use" the system, which favorably impacts one's actual use of the system.

2.3.1.7 Adapting and Extended TAM

Later development of TAM would include behavioral intention as a new variable that would be directly influenced by the Perceived Usefulness of a system (Davis, Bagozzi

and Warshaw,1989). Davis et al. (1989), suggested that there would be cases when, given a system which was perceived useful, an individual might form strong behavioral intention to use a system without forming any attitude, thus giving rise to a modified version of TAM model as illustrated in below figure 2.6.
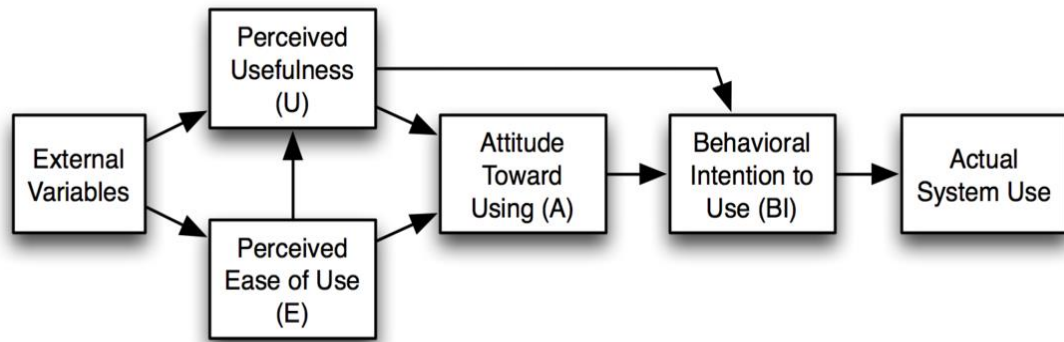

Source: Davis, Bagozzi, and Warshaw (1989)

Figure 2.6: First Modified version of TAM

Hu (1999), has found that, TAM has a comparatively low explanatory power of an individual's Attitude and Intention in the research work of the individual's adoption of telemedicine technology by the physician. The researchers also proposed, that to develop the better explanatory efficacy in a specific area, by incorporating Technology Acceptance Model with other Information Technology acceptance models.

Many researchers have started to use the Technology Acceptance Model to assess the prospective precursors of PU and EOU, concerning the usage of microcomputers (Iivari, Igbaria and Maragahh, 1995; Igbaria, Guimaraes, and Davis, 1995)**.** Still, as stated by Gefen and Keil (1998), there is one disparagement of the present TAM researches is that, there are few types of research that focus on the investigation of the external factors that affect both PU and EOU. Venkatesh and Davis (1996) used three experimentations to deal this issue, and to examine the elements of the EOU. The outcomes revealed that, general EOU is significantly affected by "Computer Self-Efficacy", whereas, "Objective Usability" in the technological system, influences individual's opinion after they encounter the system directly.
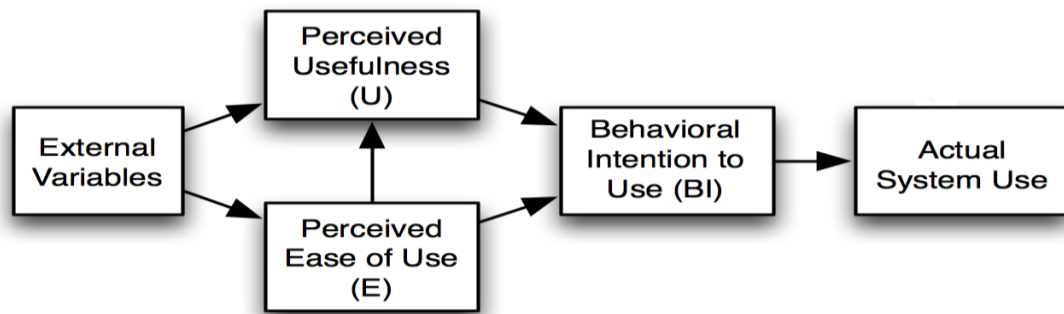
Source: Venketesh and Davis (1996)

Figure 2.7: Final Version of TAM

Moreover, by including a few elements in Perceived Usefulness in the new model, Venkatesh and Davis (2000) established and confirmed a new model i.e. TAM 2 (Figure 2.7). This model is a hypothetical extension of the basic TAM, which explicates PU and Usage Intentions of the individual, in terms of "cognitive instrumental processes" (Result Demonstrability, Job Relevance, Output Quality and EOU) and "social influence processes" (Voluntariness, Subjective Norm, and Image).

2.3.2 Drivers to adopt Green Banking Practices

This section reviews the important variables that has been identified as determinants of Green Banking in the literature. The intention of the researcher was not to be conclusive about the significance of each factor, rather, to summarize the evidences associated with the factors and to provide a basic list of variables that should be taken in account for explaining and contextualizing the green activities. The review shows that some studies have considered and analyzed the specific factors, external to the organization, such as, regulatory and competitive forces, that drive firms to adopt environmental practices (Hart, 1995; Aragon-Correa, 1998; Christmann, 2000; Delmas, 2003; Delmas and Toffel, 2004; Potoski and Prakash, 2005; Arimura et al., 2008).

Lawrence and Morell (1995), investigated the influence of non-government organizations on firm's environmental practices. Besides external factors, other studies have looked at the role of the firm's characteristics to explain proactive environmental behavior, which includes the influence of the organizational context and design and organizational learning (Sharma et al., 1999; Marcus and Nichols, 1999; Ramus and Steger, 2000;

Seroa da Motta, 2006; Darnall et al., 2010). Other researchers have focused on the individual or managerial level, examine the role of leadership values and managerial attitudes (Sharma et al., 1999; Egri and Herman, 2000; Cordano and Frieze, 2000; Vazquez-Burst and Liston-Heyes, 2010). Review of these studies shows that; the drivers of green banking are mixed and the extent to which these drivers affect the organization to adopt environmental practices also varies. This review therefore, distinguishes these drivers into three main categories: "(i) Management commitment and support, (ii) Competitive Pressure, and (iii) Customer Pressure".

2.3.2.1 Management Commitment and Support

Several researches in the past depicted favorable response towards innovations in technology in various organizations by the management, including, small and medium sector enterprises (e.g., Iacovou et al., 1995; Premkumar & Roberts, 1999; Beatty et al., 2001; Chwelos et al., 2001; Grandon & Pearson, 2004; Al-Qirim, 2007). Top executives of the organization act as an agent to change the existing process and adopt new innovations in technology (Thong et al., 1996). Technology adoption tend to suffer when such management support and commitment is missing (Igbaria et al., 1997; Ifinedo, 2011).

Many researches on small and medium enterprises disclosed that the top management support is the primary focus in the organizations for adoption of new technology (Premkumar, 2003; Guinea et al., 2005). Jeyaraj et al. (2006) described that management commitment is required to create a linkage between organization and its employees to promote adoption of innovative information system. Organizations are considering this variable as best predictor in adoption of IT innovation. Management can bring this change through communication to employees or through including this in the articulated mission & vision of the organization (Thong, 1999). They can also support by providing adequate resources and manpower for adoption of innovative technologies (Rai and Patnayakuni, 1996). Management commitment and support is critical variable which creates supportive climate in adoption of new technologies (Grover and Goslar, 1993; Premkumar and Roberts, 1999). It is more critical in communication technologies, as it requires cooperation of stakeholders as well (Premkumar and Ramamurthy, 1995). In

small and medium enterprises, all the decisions are generally taken by the top executives therefore, their support and commitment is very much required to adopt innovations (Premkumar and Roberts, 1999).

2.3.2.2 Competitors Pressure

Jeyaraj et al. (2006), identified competitors' pressure as one of the predictors for adoption of innovative technologies in the organizations. Pressure from competitors positively influences the information system adoption which leads to development of innovative products and services (Gatignon and Robertson, 1989). It becomes more obvious, when some researches showed that, the competition directly effects the innovation adoption (Premkumar and Roberts, 1999; Kuan and Chau, 2001). In order to compete in the market place, adoption of innovative techniques for development of new ways of working are now become strategic necessity for the organizations (Premkumar and Ramamurthy, 1995). Small firms are generally economically dependent on large organizations for their survival therefore they are pressurized to adopt innovative systems. They need to reduce their cost of operations and create a link with their stakeholders to become competitive in their respective sector (Premkumar and Roberts, 1999).

It is an important factor, that drives banks to adopt green practices. Many of today's energy and material intensive industries may soon become unnecessary due to the emerging technologies that may provide potent, disruptive solutions (Hart, 2007). These include; genomics, bio mimicry, nanotechnology, information technology, and renewable energy, which all have the potential to reduce the human footprint on earth (Hart, 2007). According to the IISD (2007), in the banking sector, the traditional approach to sustainability is often regarded as reactive and defensive.

Firms adopt green activities to present a green image to consumers to have competitive advantage (Henriques and Sadorsky, 1996; Christmann and Taylor, 2001; Khanna and Anton, 2002). Thus, market pressure presents significant positive effect on the overall environmental performance of the firms. Darnall et al. (2010) suggested that, the firms are required to develop capabilities essential to address environmental issues in multiple jurisdiction, and to adopt more comprehensive environmental practice to address the needs of diverse customers in foreign markets.

According to Nidumolu, Prahalad and Rangaswami (2009), many companies are convinced that being environmentally friendly, erodes their competitiveness through increased costs and non-delivery of immediate financial benefits. However, Nidumolu et al. (2009), argue that, the journey for sustainability has already been started to alter the competitive landscape, which will certainly influence the companies to change the way they think about technologies, products, business models and processes because, sustainability will always remain to be an essential part of development. Furthermore, early movers who treat sustainability as a goal, develop competencies, that rivals will find difficulty in matching with (Nidumolu et al, 2009).

According to Porritt (2003), companies that were previously oblivious to sustainability realize huge savings, when implementing relatively simple eco-efficiency programmes like, "controlling inputs (energy and raw materials), designing more efficient processes, waste minimization and recycling", referred to as the eco-efficiency stage. These practices obtain approval in companies, because of the business case that shows cost savings whilst supporting sustainable development.

According to IISD (2007), numerous international banks have recently adopted proactive and innovative strategies to capture the prospects that has been associated with sustainability. These banks have developed innovative products, such as, ethical funds or loans, precisely created for environmental businesses to tap new market opportunities connected with sustainability. In the near future also, only those companies which rely on sustainability as their main strategic objective, will manage to develop a conclusive competitive advantage (Kmen, 2010).

2.3.2.3 Customer Pressure

Globalization has led to the eroding of national government power, resulting in the emergence of global trade regimes, "non-governmental organizations" (NGOs) and other civil society groups, who have stepped in play the role of monitor and, in some cases, enforcer of social and environmental standards (Hart, 2007). The internet and information technology has led to rise of internet-connected coalitions of NGOs, making it increasingly difficult for governments, corporations or any large institutions to operate in secrecy. According to Harvey (2005), "Increasingly, environmental groups,

hoping to expose those responsible for catastrophes, and prevent them happening again, are working up the chain of financial responsibility. Not content with holding up to public scrutiny the companies directly involved, they are seeking out the organizations that provided finance for projects that end in such disasters".

These trends have led to strict international regulations and conventions of environmental protection along with the rise of consumer environmentalism in response to climate change (Chen, Shyh-Bao and Chao-Tung, 2006).

It is important to note that on the external side, customer risks are also bank risks and can affect their own continuity. This applies particularly forcefully in the case of environmental issues. A customer's continuity may deteriorate significantly because of new environmental regulations. There is an important distinction to be drawn between new and existing customers, as well as between retail and business markets, in this respect. Differing groups of customers may have conflicting interests. The bank is confronted with the problem of satisfying both sides. In the same way that customer risks are also bank risks, customer opportunities are also opportunities for banks. The attention being paid to sustainable development is opening entirely new markets. An example is the market for wind energy, in which large financial institutions, such as, ABN AMRO and UBS, see increasing potential. Traditional forms of finance may be sufficient, but banks are also being challenged to develop new products which fulfil customer needs.

Many of the researchers in their studies have found that organizations that adopted green or environmental practices were motivated by customer concerns (Henriques and Sadorsky, 1996; Khanna and Anton, 2002). Henriques and Sadorsky (1996) also concluded that, "Customer Pressure" was the most influential factor and source that develop a pressure to the organizations for adopting environmental management plan, after regulatory pressure.

2.3.3 Environmental Sustainability

The concept of "Environmental Sustainability" which had started in the year 1969, with the formation of the "National Environmental Policy Act (NEPA, 2014) in the United States, whose purpose is, to promote the general welfare, to maintain balance between

man and nature and, to fulfill the economic and social welfare of the present and future generations". After that, one more agency was started in 1970, "Environmental Protection Agency" (EPA), with the aim "to protect the natural resources, human health and, to preserve the quality of the environment". Since then, several international and domestic organizations are formed which are working towards management of the environment, like, "IFC, UNFCC, UNEP FI, Bank Tract, USGBC, Indian Green Banking Council, CERES, CERE, CEE, etc".

Environmental Sustainability involves, "making decisions and taking action that are in the interests of protecting the natural world, with emphasis on preserving the capability of the environment to support human life". It is an important topic now, as people are realizing the impact and influence of businesses that individuals can have on the environment. Environmental Sustainability is about, "making responsible decisions that will reduce your business' negative impact on the environment. It is not simply about reducing the amount of waste you produce or using less energy, but is concerned with developing processes that will lead to businesses becoming completely sustainable in the future". Environmental Sustainability is, "the ability to maintain the things that are valued in the physical environment (natural and biological environments)". Environmental Sustainability could be defined as, "a condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems, to continue to regenerate the services necessary to meet those needs, nor by our actions diminishing biological diversity" (Morelli, 2011). Environmental system seeks to sustain the global life support system indefinitely (Goodland, 1995). In the industrialized nation of most of the developing countries, the environmental problems have become very serious and their dependency on the renewable and natural resources for the growth and development of the nation underline the need of implementing policies and plans for sustainable resource use (Stockholm Environment Institute Report, 2013). In India, environmental problems are increasing due to globalization, industrialization, large population and poor environmental management (Bowonder, 1986). Overreliance on country's resources for development of nation is causing resource depletion. This has created the need to use the resources in a sustainable way to preserve the environment for future generation. The basic need to adopt

environmental sustainability is to strike a balance between production level of resources and consumption level of population in the economy. in developing countries like India, the cost of adapting sustainable practices as a percentage of total GDP, are expected to be increased in coming years (Yadav and Pathak, 2014).

Bina (2013) surveys the results of international events focusing on sustainability, such as, 2012 Rio UN Conference on Sustainable Development (UNCSD), and concludes that, the outcome was a compromise which failed to address the real issues needed to achieve sustainable development. Linner and Selin (2013) conducted an empirical study of the effectiveness of sustainable development conferences in the last 40 years, from the 1972 Stockholm "UN Conference on the Human Environment (UNCHE)" to the 2012 Rio UNCSD. The assessment is that, little has been done to achieve much in "greening" the agenda of states or international economic organizations, such as, the "IMF, the World Trade Organization and World Bank". Status quo rules, because of conflicts between countries, in particular, the North-South politics between industrialized and developing countries.

It was found empirically from Costa Rica that, sustainable development capabilities are impeded by the financial markets and financial institutions, such as, large banks (Goldstein, 2001). The reason identified is that, lenders prefer to provide loans for high-end consumption and real estate investments. There is not much interest in either the capital markets or among banks in funding green practices and technologies. It is therefore argued that, suitable reforms should lead to funding projects that reduce negative environmental impact, allow the private sector to benefit from such reductions, and build long-term organizational capabilities that render the economic activity complementary, rather than opposed to environmental goals. Four specific policies are proposed for Costa Rica: "Green Banking, Green Group Lending, a Green Bond Market, and a Conservation Lending Certification Body".

Many key sectors of the economy like transport, agriculture, energy, tourism etc. was impacted due to change in environmental conditions, which leads to migration of people, economic slowdown, inflation in commodity prices, unemployment, unstable share prices etc. The considerable efforts of all the sectors including financial sector

will be required to mitigate the impact of climate change (National Climate Change Action Plan, 2012). Banks were changing their investment and lending policies to mitigate their direct and indirect impact of their activities. Banks must consider some of the issues in the environment such as "compliance with environmental legislation, air emissions and responses to climate change, energy and resource consumption, ecological footprint, and environmental impacts associated with products and services". Also, banks must consider and review the activities of their customers, suppliers and other stakeholders and must develop environmental friendly products to promote environmental sustainability (UNEP, 2007). To adopt environmental management in their internal operations, they can go for green building design for their offices and branches, promoting paperless transactions, recycling of paper, water conservation, energy conservation, internet banking, mobile banking etc. For external environmental management, they need to revise their investment and lending policies or they can adopt internationally accepted principles (like equator principles) to minimize the impact of climate change on the economy (Hoijtink, 2005). UNEP FI and the large number of international climate funds under the "United Nations Framework Convention on Climate Change (UNFCCC)" and "the Kyoto Protocol" are granting incentives for adoption of green practices in financial sector.

According to the study done by Hopwood (2005), there is a need for change in the present scenario, it was also realized that, revolution in the traditional model of sustainable development is crucial. Jeucken (2001), had identified four stages i.e. "defensive, preventive, offensive and sustainable banking", for better understanding of the banks regarding sustainability. Thompson (2004) established that banks plays a crucial informational position role, they can prove to be very supportive in postponements in environmental disclosure practice, whether it is mandatory by law or voluntarily. According to Branco (2006), HRM assistances resulting from corporate social responsibility (CSR) are a significant approach that may lead to enriched financial performance. IFC (2007) found that, "(a) individual banks had to devise their own business case for sustainable banking, (b) reputation and branding had become the top reason for many banks to integrate sustainability, (c) the benefits outweighed the costs, and social and environmental risk management improved the quality of a bank's

portfolio and lowered insurance liabilities and compensation claims". Douglas (2008) found four key findings from the research conducted, "(a) banks are increasingly discussing climate change business opportunities in their annual reports, (b) twenty eight of the forty banks have calculated and disclosed their greenhouse gas emissions from operations, (c) growing demand for climate friendly financial products and services is leading banks into new markets and, (d) investment banks have taken a leading role in supporting emissions trading mechanisms, and introducing new risk management products". According to Seuren (2009), contribution of Equator Principles is long term in respect to sustainable investment. Hoepner (2010), emphasized on the importance of environmental, social and ethical issues for the management of risk, performance of the banks and reputation of banks and other financial institutions.

The study conducted by Ji-Ming (2007) in China revealed that, CSR of banking companies in China those listed in Shanghai and Shenzhen Stock Exchange, are positively associated with their competitive advantage. However, the association was not very robust. According to Narwal (2007), Indian banking sector has an incorporated approach by linking CSR with the satisfaction of the customers. In Bangladesh, the findings of the research conducted by Khan (2009), were "(a) the selected banking companies did some CSR reporting on a voluntary basis and, (b) the user groups were in favor of CSR reporting, and would like to see more disclosure".

Lin (2008), pointed out some important points of improvement in the growing economy of Brazil, "(a) to reinforce the awareness of employees and other stakeholders about sustainability, (b) to upgrade the tools used by institutions, (c) to improve the transparency in disclosing socio-environmental information".

2.4 Conclusion

Notwithstanding the limited sample of studies surveyed, the following tentative conclusions can be drawn for working purposes of the thesis:

1. It is revealed that; few empirical studies were conducted in the area of Green banking all over the world. But, very limited studies have been conducted in India.

2. In India, not much research has been conducted on factors leading to the Intention to adopt Green Banking Practices.

3. Many authors have incorporated TAM model in internet banking, mobile banking, and e-banking but, TAM model with green banking is not studied so far.

4. Many researchers have given future direction of research that the researchers should examine the impact of green banking practices on Environmental Sustainability.

This research studies the impact of green banking on Environmental Sustainability. This research work aims to examine the adoption intention of green banking by integrating TAM with management commitment and support, Customer Pressure and Competitor's Pressure and its impact on Environmental Sustainability. Since, much of literatures are not found related to green banking in India, this paper is an endeavor to fill the research gap in this regard.

Overall, the Indian research literature suffers from a distinct and a big gap related to a lack of in-depth studies on green banking. This gap justifies the need to investigate the problem stated in the next chapter.

CHAPTER 3
RESEARCH METHODOLOGY

In the present section of thesis. manner of course of action followed and techniques selected for research problem assessment are presented. The main intend is to simplify the comprehension of the methodology undertaken to attain the research objectives.

3.1. The Problem

This chapter explicates the research methodology that has been used for conducting the research and its application in seeking answers to the research questions that has been raised by the researcher. In this chapter, an attempt has been made to outline the research problem, the nature of the research problem, demographic profile of the population and the sample taken for this study. Especially, efforts have been made to frame the general and specific problems, state the objectives and the purposes, and indicate the theoretical and practical significance of the problem and specify delimitations.

3.2. Statement of the Problem

Previous two chapters were a methodical attempt to provide an inclusive backdrop for the study. This section is mainly devoted to the statement of the problem. Along with objectives, indicating the importance of the problem, various theoretical, as well as practical concerns, have also been covered.

The study seeks to answer the following questions:

1.   What are the green practices adopted by various banks in India?
2.   What is the intention level of banks to adopt green practices?
3.   What is the relationship between adoption of green banking practices and Environmental Sustainability?
4.   What are the problems faced by banks while adopting green practices?

In the light of the problem stated above, the topic of the study may be broadly entitled as follows:

"A Study of Green Banking Practices of Indian Banks to Promote Sustainable Banking"

3.3 Objectives of the Study

There are variables, like, Intention to adopt Green Banking Practices and Environmental Sustainability, which have not been studied in detail as an attribute in the research papers in the Indian context. Hence, by taking this as a gap, various objectives were framed:

1. To identify the factors affecting the adoption of green banking practices in Indian Banking sector.
2. To examine the relationship between various factors to adopt green banking practices and Environmental Sustainability.
3. To develop a model based on these factors and test the same.

3.4 Significance of the Study

This present research work seeks to determine the bank's attitude towards adopting green banking practices in India and, the extent to which it is being accepted by Indian banks. This study is of utmost importance for the following theoretical and practical concerns:

3.4.1 Theoretical Concerns

The study is of theoretical importance for the following reasons:

1. This research has several important implications. The study shows an empirical analysis of the impact of Intention to adopt Green Banking Practices on Environmental Sustainability. This focus evidently differentiates this study from past researches that were concerned with more generalized examination of green banking practices in Indian context

2. By doing the in-depth review of the existing literature, the present research work has applied many proven theories and variables in the conventional way of banking, online banking, internet banking, green banking research. It has also verified the association amongst the various factors used in this research work's proposed model. In specific, this research model has explained the impact of Intention to adopt Green Banking Practices on Environmental Sustainability.

3. The research work has also helped in the extension of the existing research work in various fields via the measurement of the proposed research model in association with SEM, by conceptualizing the relationship between the various factors. In establishing the suitable associations amongst the factors and their measuring items, the conceptual research model has characterized all the important factors. In addition, SEM has enabled simultaneous checking and testing of the factors, including Perceived Ease of Use, Perceived Usefulness, Management Commitment and Support, Customer Pressure, Competitors Pressure, Intention to adopt Green Banking Practices, and Environmental Sustainability, as well as their measuring items.

4. In addition, this research work makes a strong contribution to the current green banking literature by extending TAM in the research Model and test the same in Indian context.

5. In investigating the simultaneous associations between the factors in the proposed research model, a more precise demonstration of the subject being examined has been attained. Furthermore, this research work has postulated a further validation of the relationships that has been argued in earlier green banking and online banking literature through an investigation within this context. Such associations incorporate a positive relation between Perceived Usefulness and Intention (Al-Samadi, 2012; Aboelmaged and Gebba, 2013), a negative relation between Perceived Ease of Use and Intention (Aboelmaged and Gebba, 2013; Khanifar et al., 2012), a positive relation between Management Commitment and Support and Intention (Chatterjee et al., 2002;Ramdani et al., 2009 and Ifinedo, 2011)., a negative relation between Competitors Pressure and Intention (Martin, 2012), and a positive relation between Customer Pressure and Intention (Ifineo, 2011; Pavlou and Sawy, 2006 and Riemenschneider et al., 2003). Moreover, this research work makes a robust support and contribution in the present

review of the literature on Green Banking, by including Environmental Sustainability in the model. The researcher has also established a positive association between Intention to adopt Green Banking Practices and Environmental Sustainability. This relationship is not being studied earlier.

3.4.2 Practical Concerns

The study is of practical importance for the following reasons:

1. Practically, this research work will be of much importance to the banks that are planning to implement the environmental friendly products and services related to banking. This study will also be valuable for bank employees, as they can realize the importance of numerous features of adopting green banking practices.

2. The results of this research work will enable the banking managers to focus their apprehension on numerous internal and external factors, influencing the adoption of green banking.

3. It will help the banking managers to formulate a more pragmatic managerial policy regarding adoption of green banking practices.

4. It will lead to improved and cost-effective management of the banks.

5. It will help in the promotion of research and development department of the Indian banking sector to develop sustainable banking practices.

6. This research work may provide significant understandings and insights to the managers about the factors that are inhibiting the banks in adopting green banking services.

7. The findings of this research work may help the banking managers to understand the advantages and disadvantages, if any, of adopting green banking practices.

8. The results and findings of this research work may help banks to improve their on-going green banking practices.

3.5 Delimitation of the Study

Notwithstanding its above significance, the methodology has the following major limitations:

1. Sustainability has three dimensions: social, economic and environment. In this study, the researcher had only seen the impact of adoption of green banking practices on Environmental Sustainability.

2. In this study, the researcher had only taken few factors affecting adoption of green banking practices i.e. management commitment and support, customer's pressure and competitors pressure.

3. The sample used was small due to the time and resources that such a research would otherwise require.

4. The research work is based on two procedures of data collection, i.e., questionnaire and analysis of records. Thus, the extent to which this study is reliable, depends on the reliability and validity of data collection methods.

3.6 Research Model and Development of Hypotheses

The researcher has discussed three main objectives of the thesis. The first objective of the research was, "To identify the factors affecting the adoption of green banking practices in Indian Banking sector". This has been achieved via in-depth review of literature. The researcher was able to find out six factors which are:

- Management Commitment and support
- Competitors pressure
- Customers Pressure
- Perceived Usefulness
- Perceived Ease of Use
- Intention to adopt Green Banking Practices

The second objective was, "To examine the relationship between factors to adopt green banking practices and Environmental Sustainability". This relationship has been examined by applying Exploratory Factor Analysis and it was confirmed by applying Confirmatory Factor Analysis.

The third objective of the study was, "To develop a model based on these factors and test the same". The model (Figure 3.1) was developed after in-depth analysis of

literature, various hypotheses have also been framed by the researcher and same was tested through path analysis.

In this study, to know about the adoption of green banking, the research had used Technology Accepted Model (TAM). It has been developed by Davis in the year 1989 (Davis, 1989), to predict use and acceptance of information systems and technology by individual users. TAM has been widely studied and verified by different studies that examine the individual technology acceptance behavior in different information systems constructs.
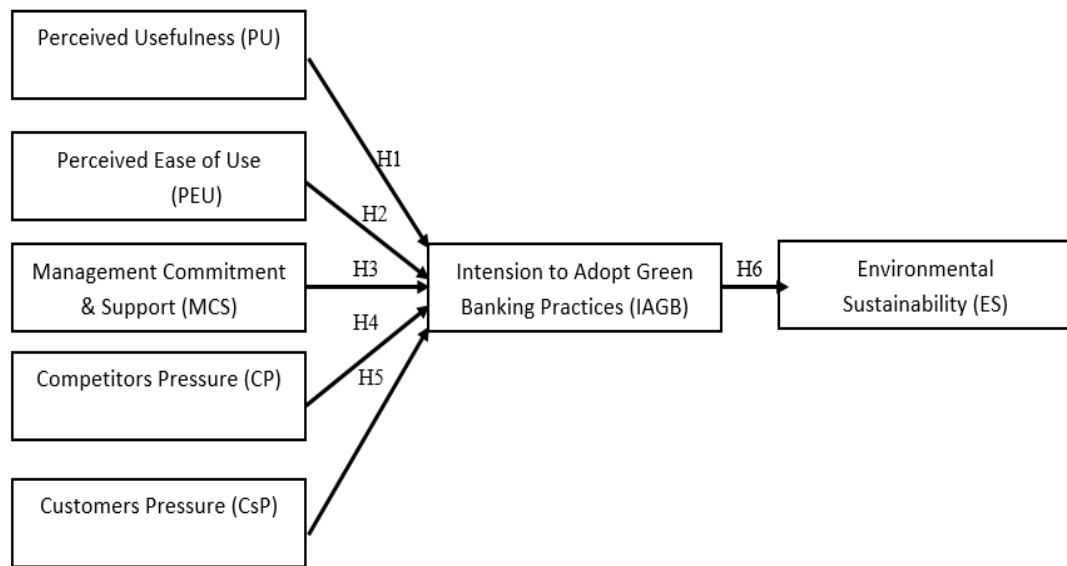
Figure 3.1: Proposed Research Model

According to Lu, Yu, Liu, and Yao (2003), Perceived Usefulness (PU) was defined as, "prospective user's subjective probability that using green banking service improves operations. Perceived Usefulness are the benefits that are understood by the members within the organization". Green Banking will help to get that kind of benefits to the members, if they will adopt it. The effect of PU on IT adoption has been validated in many existing literatures but in this case, it has been used for adoption of green banking, such as, Morteza, Aranda and Amado (2011), Al-Samadi (2012). Therefore, the following hypothesis has been proposed:

H1: Perceived Usefulness (IDV) has a positive relationship with Intention to adopt Green Banking Practices (DV)

According to Davis (1993), "PEU measures the prospective user's assessment of the mental efforts required of the use of the target applications". This follows from the definition of ease "freedom from difficulty or great effort". Individuals efforts was a measurable resource that he or she may have had allocated to various activities. "All else being equal, an application perceived to be easier to use than another is more likely to be accepted by users" (Baraghani, 2008). Several researches in the past suggested that PEU was the critical factor which impact intention to adopt new technology such as study on internet banking by Baraghani (2008), study on wireless internet by Lu, Yu, Liu, and Yao (2003), study on ecommerce by Aranda and Amado (2011). Therefore, in the context of green banking service, the following is proposed:

H2: Perceived Ease of Use (IDV) has a positive relationship with Intention to adopt Green Banking Practices (DV)

MCS (Management Commitment and Support), states the enthusiasm, encouragement, involvement and motivation given by management to its employees and other stakeholders to adopt the green practices in their operations. Top management support considers to be the one of the predictors to adopt new technology in the organizations. When executives of the company were convinced and understood the importance of adopting new technology then they tend to motivate the other organizational members to adopt the same and moreover they also provide sufficient resources to do so (Ifinedo, 2011). Several studies in the past shows, MCS was an important factor for intention to adopt new technology such as study on ecommerce by Chatterjee et al. (2002), study on enterprise system by Ramdani et al. (2009) and study on internet acceptance by Ifinedo (2011). Here, it has been proposed that:

H3: Management Commitment and Support (IDV) has a positive relationship with Intention to adopt Green Banking Practices (DV)

Competitors Pressure (CP) is the external factor which may lead to adoption of new innovative technology in the organization even if they do not see any advantage in adopting the same. It may lead to adoption of new policies and strategies particularly when the organization belongs to the sector where they face aggressive rivalry and hesitation to what competitors are undertaking various actions (Morteza, Aranda and

Amado, 2011). Several studies in the past described, CP was a critical factor in adopting innovative technologies, such as, study on internet banking by Ifineo (2011) and study on mobile commerce by Martin (2012). Here, the proposed hypothesis is:

H4: Competitors Pressure (IDV) has a positive relationship with Intention to adopt Green Banking Practices (DV)

According to Pavlou and Sawy (2010), the revolutionary movement towards IT could be a response towards an event or reaction towards the change, which has been originated because of the force from the customers as well as pressure from both the type of environments i.e. the internal and external. It has been largely demonstrated that providing customer service to the higher level and enhanced communication with distant customers are few major determinants of green banking adoption (Morteza, Aranda, and Amado, 2011). Some of the studies were conducted in the past such as Ifineo (2011) on internet/ e-business, Pavlou and Sawy (2006) on IT and Riemenschneider et.al., (2003) on IT adoption. Thus, the proposed hypothesis is:

H5: Customers Pressure (IDV) has a positive relationship with Intention to adopt Green Banking Practices (DV)

Banks had shown greater interest towards the adoption of various activities which promotes environmental sustainability. They consider themselves as environmental friendly industry with respect to pollution and carbon emission is concerned in comparison to other sectors, like, oil and gas, chemical, transport etc. But their external activities, i.e., their investment and lending policies for the clients may impact the environment in adverse manner. Generally, banks do not feel obliged to go beyond their legal requirement to adopt environmental and social policies. However, banks in developed countries had adopted voluntary principles and policies like equators principles to manage environmental and social issues in project finance (Weber and Acheta 2014). A. Kern (2014) noted that "the regulatory framework that governs today's banking system is not being used to its full capacity, with some notable exceptions, systemic environmental risks appear to be in the collective blind spot of bank supervisors." Thus, Kern recommends an integration of Environmental Sustainability criteria into banking operations and regulations. Thus, the proposed hypothesis is:

H6: Intention to adopt Green Banking Practices (IDV) has a positive relationship with Environmental Sustainability (DV).

3.7 Research Design

According to Berg (1989) "a research design is the strategy on how the research study will be administrated". "It also characterizes the factors that are significant as they can be utilized to identify noteworthy problematic issues and the techniques available to solve them" (Perry 2001). There are three key forms of research, explicitly, exploratory, descriptive and explanatory. In this research work, exploratory and descriptive research design has been used. Each has differing objectives, characteristics and techniques.

- **Exploratory Study**

An exploratory study is generally carried out "in order" to originally illuminate and describe the character of the chosen research predicament (Zikmund 2003) which is usually amorphous as well as qualitative. These studies are liable to be extremely adaptable and this facilitates the investigator to chase indication, thoughts and instincts for inquiring into topics regarding which the researcher not have the essential information to frame a rational model.

- **Descriptive Study**

Descriptive research is appropriate to illustrate "the characteristics of the variables of interest in a situation". Its core rationale is to search for responses to all the 'who', 'what', 'when', 'where' and 'how' queries. To a large extent social research is illustrative and expressive as it is also aptly suitable to portray an image of the explicit particulars of a state of affairs, social setting or an affiliation (Neuman 2006). It is also frequently carried out to elucidate the distinctiveness of pertinent cluster and assess the proportion of units in a particular populace displaying selected actions (Malhotra 1999). Descriptive research can be consequently described as an observable fact more evidently by giving an outline of the features (Zikmund 2003).

- **Combining Exploratory and Descriptive Research**

The available literature review acknowledged quite a few disparities in the accessible learning on the concerned research problem. For that reason, the planned research commenced with a significant exploratory objective to get insights into the research problem. Though, exploratory research solitarily has two major drawbacks. First, because it embraces a qualitative methodology, this presents consequences in a prejudiced elucidation of the results. Secondly, the consideration of small sample sizes hampers the projectability along with the generalizability of the research results (Carson et al 2001). To deal with these inadequacies, the researcher, in accordance with Carson et al (2001) has intermingled exploratory and descriptive approaches. The exploratory stage acknowledged the identified research disparities, framed the relevant research questions and a theoretical model by means of an all-embracing literature analysis as mentioned in this Chapter.

The second stage sanctioned the verification of the acknowledged research model on aspects relevant to green banking practices. With this intent, quantifiable data was gathered with the help of questionnaires done majorly through various web portals and a structural equation model was framed to assess the research model (Neuman 2006).

The researcher subsequently framed a research design that initially presents a research model based on a qualitative theoretical framework and then evaluates its strength by means of quantitative structural equation modeling. The present study adopted descriptive as well as an empirical research design based on the questionnaire mode of data collection. Here, the researcher exercises an inductive research approach to frame a model based on the analysis.

3.8 The Population and Sample

In this section of the thesis, researcher has tried to describe the Sampling Design, Population, Sample Frame, Location, Elements and Sampling Techniques, that have been used to determine the sampling size of the respondents. According to Cooper and Scindler (2001), the basic purpose of using the appropriate sampling design is to make ensure that the group of people that has been selected for the research work is the true representation of the whole population of interest. According to Zikmund (2003) & Sekaran (2006), determination of the population and sample sizes are also entailed in the sampling process.

3.8.1 Target Population

The population is a group of potential respondents to whom the results of a study can be generalized (Salkind, 2005). Sekaran (2006) defined population as, "the entire group of people, events or things of interest that the researcher wishes to investigate." The word population denotes the aggregate from which the sample is to be taken. It may be finite or infinite. A finite population is the one in which the number of items is determinable, while an infinite population is the one the items cannot be determined.

For this research, employees of scheduled public and private sector commercial banks in NCR were taken as population. Scheduled banks in India constitute those banks, which have been included in the Second Schedule of Reserve Bank of India (RBI) Act, 1934 as listed in table 3.1. RBI in turn includes only those banks in this schedule which satisfy the criteria laid down vide section 42 (6) (a) of the Act.

Table 3.1: List of Scheduled Banks in Indian Public Sector and Private Sector

A. List of Scheduled Banks in Indian Public Sector	
• Allahabad Bank	• Punjab National Bank
• Andhra Bank	• State Bank of Bikaner and Jaipur
• Bank of Baroda	• State Bank of Hyderabad
• Bank of India	• State Bank of India
• Bank of Maharashtra	• State Bank of Indore
• Canara Bank	• State Bank of Mysore
• Central Bank of India	• State Bank of Saurashtra
• Corporation Bank	• State Bank of Travancore
• Dena Bank	• Syndicate Bank
• Indian Bank	• UCO Bank
• Indian Overseas Bank	• Union Bank of India
• Oriental Bank of Commerce	• United Bank of India
• Punjab and Sind Bank	• Vijaya Bank

B. List of Scheduled Banks in Indian Private Sector:	
• Axis Bank Ltd	• IDBI Bank Ltd
• Bank of Punjab Ltd	• IndusInd Bank Ltd
• Centurion Bank Ltd	• ING Vysya Bank Ltd
• HDFC Bank Ltd	• Jammu & Kashmir Bank Ltd.
• ICICI Bank Ltd	• South Indian Bank

3.8.2 The Sample Frame and Sampling Technique

In NCR, there are 26 scheduled banks in public sector and 10 scheduled banks in private sector. It is not desirable to cover all the banks for the purpose of the study. For data collection, 23 banks have been selected, 13 from public sector (50% banks are covered), which were selected based on market capitalization (Money Control, 2017), as given in table 3.2 and 10 from private sector (100% banks are covered). For the collection of data from the banks, the respondents consist of employees of the bank.

The sample of bank employees has been derived on the basis of two consecutive stages, at first stage, probability sampling method was used to select the banks and in the second stage, convenience sampling method was used to select the respective bank employees. The researcher has taken 20-25 employees as respondents from each bank.

Table 3.2: Top Banks on the basis of their Market Capitalization 2017

Public Sector Banks		Private Sector Banks	
Banks	**Market Cap (INR crore)**	**Banks**	**Market Cap (INR crore)**
State Bank of India	223,776.40	IDBI	13,179.15
Bank of Baroda	32,935.46	Union Bank	9,215.15
Punjab National Bank	29,823.48	Vijaya Bank	6,277.74
Canara Bank	19,408.94	Syndicate Bank	5,834.28
Bank of India	15,327.03	IOB	5,584.51
Central Bank	13,942.91	Allahabad Bank	5,127.74
Indian Bank	13,440.96	Corporation Bank	5,087.20

Source: MoneyControl (2017)

Sample Size

Many researchers have discussed the appropriate procedures for choosing the suitable sample size. A sample size of less than 30 persons is considered a very small sample size and it is also too small to be useful for any research work. If the population is large, then the sample size of at least 100 or more is considered to be the appropriate and minimum sample size for any study (Sekaran, 2006). The sample size taken in this

research work is 432 respondents. As stated by Zikmund (2003) also, sample size plays a vital role as; the smaller the size of the sample, the higher is the chances of the margin of errors. The researcher has also claimed that, the large sample size gives more accurate results in the research work. The cost of collecting the data is a major consideration and, judgment must be made considering this factor. For interpreting the results of Structural Equation Modelling (SEM), the size of sample plays an important role, as it provides a base for the estimation of error due to sampling. The following criteria (Table 3.3) were used for determining the sample size.

Table 3.3: Sample Size Determination Criteria

Stated by	Criteria	Suggested Sample as per criteria
Hair et al,1999	Number of factors * 25	7 X 25= 175 Sample Size.
General thumb-rule	Number of statements *5	37 X 5= 185 Sample Size.
Nunnally 1978; Friedel 2001	For factor analysis, 330 sample size is adequate	330

Hence, after finalizing the questionnaire, the researcher was able to gather data from 528 respondents and, out of total respondents, only 432 were the actual and usable questionnaires.

3.9 Collection of Data

In this section, researcher has discussed the different data sources and data collection method, in order to fulfill the objectives. The instrument used in data collection basically depends on the approachability of facilities, costs, time, the expertise skills of the researcher, the degree of accuracy required, and the resources required for gathering the data. Burns and Bush (2003) suggested that the kind of data needed and the type of research design, helps in deciding about the suitability of the method for collection of data that is to be used.

Self-administrated 600 questionnaires were distributed to during interactions and meetings and through emails and social networking. The involvement of the employees of the banks in the research was voluntary; and all most majority of the employees who

were approached completed the questionnaire and responded satisfactorily to the questions. Out of six hundred (600) questionnaires, five hundred and twenty-eight (528) were returned. Then, out of five hundred and twenty-eight (528), four hundred thirty two (432) were used for the study purpose. That is a total of 432 valid responses were collected during the study.

3.10 The Questionnaire

The researcher has used survey method for this research. Structured questionnaire was used for the collection of data. Hair, Black, Anderson, Babin, and Tatham (2003) also suggested that a questionnaire is the most effective way for a well-educated target population and, normally generates a large amount of response rate. For collection of primary data, questionnaire was an essential tool that was developed for reliable and first-hand data collection. The researcher has used structured questionnaire for this purpose as shown in Appendix A.

The development of questionnaire is important as it goes through various phases like, a clear understanding of the topic, defining and identification of the research questions and their association with the constructs. As stated by Yin (2002) for the framing of the research questionnaire, the clear and systematic understanding is required to meet the research goals. The proposed model that was presented in Figure 3.2 has been used as the framework for designing the questionnaire for this research work.

3.10.1 Questionnaire Design

The questionnaire was designed in a manner that is able to convert research objectives into precise research questions. It was also taken care that the designed questionnaire enables the investigator to procure the required data. The questionnaire was designed as shown in Appendix A, which was related to adoption of green banking and its impact on Environmental Sustainability. In order to achieve the research rationale, each question was worded so as to bring forth an answer, which precisely and completely reflected the status of adoption of green banking practices and its impact on the environment.

Survey instruments were developed from different related studies that were conducted in the related fields. To develop questions and model, the researcher took help from different prior studies, such as, Al-Samadi (2012) on Electronic Banking, Baraghani (2008) on Internet banking, (Ifinedo, 2011) on Internet/ E-business, Morteza, Aranda& Amado (2011) on E-commerce and IT adoption and Martin (2012) on Mobile commerce and Martinez, Perez, and Bosque (2013) on Environmental Sustainability etc. The survey questions were contextualized and modified to fit the current context. In total, 37 questions were used to prepare questionnaire. The variables were measured on five point Likers scale, where "1" noted "Strongly disagree" and "5" "Strongly agree".

3.10.2 Format of Questionnaire

In this research work, questionnaire (Appendix A) used for the data collection was divided into two parts. The first part was designed to study the intention of employees to adopt green banking practices and Environmental Sustainability. The second part gathered information regarding the profile of employees, like, age, gender, occupation, and bank and branch name.

Table 3.4: Variables and their Corresponding Items in the Questionnaire

S.No.	Study Variable Areas	Number of Questions
1	Perceived Usefulness	Statement 1-6
2	Perceived Ease of Use	Statement 7-10
3	Management Control and Support	Statement 11- 15
4	Competitor Pressure	Statement 16-20
5	Customer Pressure	Statement 21-25
6	Intention to Adopt Green Banking	Statement 26-30
7	Environmental Sustainability	Statement 31-37

Table 3.4 indicates variables, part of questionnaire and number of questions in various sub-sections. In this research study, the questionnaire has 37 statements.

3.10.3 Pre-testing

After bringing to an end to questionnaire substantiate, it was subjected to pre-testing via a pilot survey which, as conducted on a small number of respondents (75 respondents). For pilot: testing respondents were chosen from same populace from which the actual survey study is to be made (Collis & Hussey 2003).

For superior research results, a questionnaire should gain from a pilot study as it can reveal the flaws in its draft (Cooper & Schindler 1998). A questionnaire was disseminated in initial scale to the target audience to ensure the reliability and identify errors. Seventy-five questionnaires were sent to selected participants for completion.

The respondents identified some poorly worded questions and researcher based on feedback reworded them and made improvisations in terms of sequence of questions, spacing, arrangement and physical appearance etc. The researcher also added more directives for the uncomplicated completion of the questionnaires. The result of pilot test was analyzed and little adjustments were made to items of the questionnaire.

3.10.4 Reliability and Validity

Reliability is applicable to a factor, which produces comparable outcomes either on further instances or comparable performances by some other researchers, consequently imparting dependable results (Zikmund 2003). Validity is related with the concept of ensuring whether the research findings are pertinent to facilitate the researcher in elucidating the research problems (Cooper & Schindler 2003, Zikmund 2003). In this study, the researcher considered five measures to enhance the reliability and validity of the research findings:

1. Embracing a mixed methodology intermixing qualitative and quantitative approaches. As the strong points of the quantitative technique are the weak points of the qualitative technique. This technical arrangement presented more valid and reliable findings (Cameron & Miller 2010).
2. Pre-testing the survey questionnaires to make it more rational and simple to comprehend. This enhanced the reliability of the survey questionnaire.

3. To make certain that survey questionnaire enclosed the series of the research concerns which were being assessed; the statements used in the survey were absolutely extracted from literature review after it's in depth analysis and comprised of all the precise constructs of the research model to be measured. This fulfilled the standard for content validity (Cameron & Miller 2010).

4. The hypotheses and constructs of the research model that were employed and substantiated by factor analysis are meticulously analyzed using structural equation modeling.

5. External validity of the research findings has been enhanced by comparing with the data analysis emerging after detailed data analysis (as in chapter four) and with the literature (from chapter two) with the intention to extract conclusions and ascertain the connotations for this research (Hair et.al. 2006).

3.10.4.1 Reliability Analysis

The reliability of the questionnaire for the consumers was tested using Cronbach Alpha on IBM-SPSS Version 19 software. It was found to be above 0.60, the detailed result of the reliability test has been discussed by the researcher in the next chapter, which is acceptable by many researchers (De Vellis, 1991; Nunnally, 1978; Spector, 1992, and Bernstein, 1994). The Cronbach alpha values of all the constructs were more than 0.7, which is regarded as good and acceptable. This indicates high internal consistency amongst each variable.

3.10.4.2 Validity of Instrument

Questionnaire validity is the "extent to which the items measure what the researchers want to be measured?" In case the research design used by the researcher is not able to accomplish, what it is anticipated to do, it implies an error in the research, which further indicates insufficient validity. The higher is the degree of validity, the higher would be the accuracy of results to real value. Following validity were tested for the instrument.

3.10.4.2.1 Face Validity

Face validity signifies the level of similarity amid the notion of the variables and the researcher's observation, which are analyzed through the questionnaire. To find out the face validity of the questionnaire used in the research work, many superior and skilled academicians and investigators were requested to state his/her impression of the examination variables. Furthermore, it was important to exhibit whether the operational meanings of the variables relate to the ideas or not. Subsequently, the wordings and the language of the questions in the questionnaire was also revised as per the recommendations and suggestions of the specialists.

3.10.4.2.2 Criterion-Related Validity

Criterion related validity alludes to the extent to which the inferences from the questionnaire are judiciously linked to the primary goals of the questionnaire. The criterion-related validity was tested by asking high- ranked and experienced researchers regarding the validity of the questionnaire. They had suggested a few recommendations and suggestions which were kept in mind while finalizing the questionnaire for this research work. Moreover, the language and wording of the questionnaire were also improved wherever needed.

3.10.4.2.3 Content Validity

Content validity focusses on the similarity amongst test questions and the substance or branch of knowledge they are anticipated to review or evaluate. This consideration of similarity is here and there alluded to as an arrangement, while the substance or branch of knowledge of the test could possibly be alluded to as an execution area. It is generally directed by the question: "Is the content of this measure representative of the content or the universe of content of the property being measured (Devellis, 1991).

3.10.4.2.4 Construct Validity

It alludes to "the extent to which a test or other measure evaluate the fundamental theoretical construct it is supposed to measure (i.e. the test measures what it is indicated to quantify) (Kerlinger, 1973)." Thus, in this research work also, construct validity for

the six constructs, i.e., Management Commitment and support, Competitors pressure, Customers Pressure, Perceived Usefulness, Perceived Ease of Use, Intention to adopt Green Banking Practices and environmental sustainability, has been tested by the researcher for the research items.

3.11 Techniques of Data Analysis

After the data collection, questionnaire was subjected to editing, coding, hypothesis testing and statistical analysis to derive meaningful information from the items.

The data collected from the survey were tested using SPSS version 19.0 and analyzed by SEM using AMOS version 20. According to Malhotra (2007), SEM is generally used to test the model, having many dependent links amongst different items.

As stated by Kerlinger (1973), factor analysis provides the researcher with the clear understanding of the arrangement of the correlation table. In particular, it facilitates the study of the inter-relationship among the huge set of correlated numeric items that are correlated by splitting the various measurements into a set of new factors/ variables. The items which are more correlated forms one construct.

Kerlinger (1973) also stated that PCA method i.e. principle component factor analysis takes into consideration, only the deviation that is linked within a set of measurements. Usually, the first factor taken in this process, does not postulate meaningful factors. Rotation by this method, makes higher loading larger and lesser loadings even smaller. Thus, this process of rotation produces those variables, which can be labelled and analysed. As stated by Dhillon and Goldstein (1984), varimax rotation gives the reasonable division of constructs and that is the reason it was used in this study. While performing the construct verification, loading for overall factor has also been confirmed. That is the reason of using the varimax rotation method in this research work.

3.11.1 Factor Analysis

It is a statistical procedure that is generally used to reduce data into some meaningful information. In this research work, it has assisted the researcher in rearranging the co-relational relationship between quantities of continuous variables. Exploratory Factor

Analysis (EFA), is a general name used for the step of the process to shrink the data and further summarizing it into some meaningful information. Factor analysis also supported this research work, by reducing the number of variables into a set of reduced, the number of factors or components. Principle Component Analysis i.e. PCA, is a main procedure in the Exploratory Factor Analysis i.e. EFA process, that was utilized to investigate the basic structure of the factors affecting the adoption of Green banking practices, and their impact on Intention to Adopt Green Banking Practices and Environmental Sustainability.

3.11.2 Structural Equation Modelling

Structural equation modeling, or SEM, is an extremely familiar, exceptionally impactful multivariate analysis procedure which allows intricate relations amid one or more independent variables and one or more dependent variables. It is an augmentation of the general linear model (GLM) which permits analyzing regression equations as well.

Factor analysis, path analysis and regression altogether symbolizes exclusive instances of SEM. SEM is mainly a confirmatory technique rather than an exploratory method. This means that SEM is customarily employed to find if a particular model is authenticated. The results are drawn with the help of overall indices along with the estimates and standard errors for each parameter.

3.12 Items before and after Deletion

In the backdrop of the conclusions extracted from the literature review, the variables and constructs sustaining the research model and the hypotheses were recommended. For effective and uncomplicated application of SEM, an adequate number of indicators per factor are needed for a model to be identified, and a precise description of a construct is needed so that indicators can be ascertained (Hulland et al, 1996).

3.12.1 Initial Scale

Scale initially used for this research work. This is the scale on which pilot testing was done by the researcher.

S.No.	
PU1.	Using Green Banking would enhance the output and quality of banking.
PU2.	The adoption of Green Banking would help in increasing my bank's revenues or profits.
PU3.	The adoption of Green Banking would eventually help in increasing my bank's returns on investments.
PU4.	The adoption of Green Banking would help us to give services to our customers in a much better way.
PU5.	Green Banking services enhance the company's image.
PU6.	Green Banking activities increase our profitability
PEU1	According to me, learning to use Green Banking services would not be difficult.
PEU2	I think that interaction with Green Banking services will not require lot of mental efforts.
PEU3	I think it is easy to use Green Banking services to accomplish my banking tasks.
PEU4	My interaction with the Green Banking is understandable and clear.
MCS1	Management is interested in the use of Green Banking services in banking operations.
MCS2	Management is supportive toward Green Banking.
MCS3	My bank has a clarity regarding the use of Green Banking.
MCS4	My bank has clear understanding of how Green Banking can be used.
MCS5	My bank has the necessary managerial and technical skills for implementing Green Banking.
CP1	Some of our competitors have already started providing Green Banking services.
CP2	My bank would experience a competitive disadvantage if it will not incorporate Green Banking in the business.
CP3	The rivalry among the different banks in this sector is very intense.
CP4	It is very easy for my customers to shift to another bank for similar services without any difficulty.
CP5	It is easy for my customers are able to easily access the other services in the market which perform the same function but are different from ours.
CsP1	Banking industry is forcing my bank to adopt Green Banking.

S.No.	
CsP2	Our customers are pressuring us to adopt Green Banking.
Csp3	Our suppliers and depositors are pressuring us to adopt Green Banking.
Csp4	I know that my customers are ready to do business within Green Banking guideline.
Csp5	My customers are demanding the use of Green Banking practices if my bank wants to do business with them.
IAGB1	We would use Green Banking services for our banking needs.
IAGB2	I see myself using Green Banking practices for handling all my banking activities.
IAGB3	My bank intends to use Green Banking within near future.
IAGB4	My Bank plans to use Green Banking.
IAGB5	My Bank is determined to use Green Banking soon.
ES1.	Adoption of green banking practices protect the environment.
ES2.	Adoption of green practices reduce bank's consumption of natural resources.
ES3.	Adoption of green banking helps in waste management and recycling.
ES4.	My bank communicates their environmental practices to its customers.
ES5.	My bank exploits all its renewable energy in a more productive manner which is compatible with its environmental guidelines.
ES6.	My bank conducts its annual environmental audits on regular basis.
ES7.	My bank also participates in various environmental certifications.
ES8.	My bank selects vendors by the sustainability rating of their products, services and operations.
ES9.	Banks monitor the progress regularly, watch industry trends and new developments and revise the green policy as required.

3.12.2 Finalized Items

Item-total statistics was used to finalize the item in the final questionnaire. Items with corrected item-total correlation was less than 0.5, were removed, which increased the overall value of Cronbach Alpha (Nunnally, 1978).

S.No.	
PU1.	Using Green Banking would enhance the output and quality of banking.
PU2.	The adoption of Green Banking would help in increasing my bank's revenues or profits.
PU3.	The adoption of Green Banking would eventually help in increasing my bank's returns on investments.
PU4.	The adoption of Green Banking would help us to give services to our customers in a much better way.
PU5.	Green Banking services enhance the company's image.
PU6.	Green Banking activities increase our profitability
PEU1	According to me, learning to use Green Banking services would not be difficult.
PEU2	I think that interaction with Green Banking services will not require lot of mental efforts.
PEU3	I think it is easy to use Green Banking services to accomplish my banking tasks.
PEU4	My interaction with the Green Banking is understandable and clear.
MCS1	Management is interested in the use of Green Banking services in banking operations.
MCS2	Management is supportive toward Green Banking.
MCS3	My bank has a clarity regarding the use of Green Banking.
MCS4	My bank has clear understanding of how Green Banking can be used.
MCS5	My bank has the necessary managerial and technical skills for implementing Green Banking.
CP1	Some of our competitors have already started providing Green Banking services.
CP2	My bank would experience a competitive disadvantage if it will not incorporate Green Banking in the business.
CP3	The rivalry among the different banks in this sector is very intense.
CP4	It is very easy for my customers to shift to another bank for similar services without any difficulty.
CP5	It is easy for my customers are able to easily access the other services in the market which perform the same function but are different from ours.
CsP1	Banking industry is forcing my bank to adopt Green Banking.
CsP2	Our customers are pressuring us to adopt Green Banking.
Csp3	Our suppliers and depositors are pressuring us to adopt Green Banking.
Csp4	I know that my customers are ready to do business within Green Banking guideline.

S.No.	
Csp5	My customers are demanding the use of Green Banking practices if my bank wants to do business with them.
IAGB1	We would use Green Banking services for our banking needs.
IAGB2	I see myself using Green Banking practices for handling all my banking activities.
IAGB3	My bank intends to use Green Banking within near future.
IAGB4	My Bank plans to use Green Banking.
IAGB5	My Bank is determined to use Green Banking soon.
ES1.	Adoption of green banking practices protect the environment.
ES2.	Adoption of green practices reduce bank's consumption of natural resources.
ES3.	Adoption of green banking helps in waste management and recycling.
ES4.	My bank communicates their environmental practices to its customers.
ES5.	My bank exploits all its renewable energy in a more productive manner which is compatible with its environmental guidelines.
ES6.	My bank conducts its annual environmental audits on regular basis.
ES7.	My bank also participates in various environmental certifications.

CHAPTER 4
DATA ANALYSIS AND INTERPRETATION

The preceding section comprehensively discussed about the methodology, research design and data collection instruments employed to carry out this research work. This chapter examines the primary data collected from the personal interviews and survey. It also presents facts about in what manner the results derived from the surveys have been utilized in the process of refining the research model as proposed by the researcher in the literature review section by substantiating the traits of each variable, and then identifying them into constructs.

4.1 Preliminary Data Analysis

Initially, the data was analyzed to represent the result of (1) instrument's reliability - which was tested via Cronbach alpha; (2) Determinants of Intention to adopt Green Banking Practices; (3) Impact of Intention to adopt Green Banking Practices on Environmental Sustainability. The data were analyzed by using various descriptive statistical techniques, such as, Exploratory Factor Analysis i.e. EFA and Structural Equation Modelling i.e. SEM. The data analysis fulfilled the following objectives:

1. To identify the factors affecting the adoption of green banking practices in Indian Banking sector.
2. To study the relationship between factors to adopt green banking practices and Environmental Sustainability.
3. To develop the model based on these factors and test the same.

The researcher has used the factor analysis to obtain the factors which influence the intention of employees to adopt green banking practices and then SEM method was applied to perform Confirmatory Factor Analysis (CFA) via measurement model and Model Development via the structural model. The proposed model for this research work has been shown in the previous chapter figure 3.2. the various components of the model discussed are:

- Management Commitment and Support

- Competitors Pressure

- Customers Pressure

- Perceived Usefulness

- Perceived Ease of Use

- Intention to adopt Green Banking Practices

- Environmental Sustainability

4.2 Methods of Data Analysis

It was mainly used to check the assumption and to write the research inquiries. It also considered the methods and types of the tools to be used, and finally helped in the development of the scheme, regarding data collection. In this context, for data analysis, SPSS version 19 was used.

4.2.1 Data Screening

Precisely, data screening is the course of action to make sure that data is clean and ready to go before we carry out advanced statistical analysis. Data should essentially be examined so as to make certain that the data is useable, dependable and authenticated for assessing fundamental theory.

4.2.1.1 Missing data

Several missing values in data creates problem to run analysis. The EFA and CFA entail a specific number of data points to facilitate the computation of estimates. It also includes biasness on the part of respondents, who have not responded some of the questions due to some personal bias or common issues. Upper limit for missing data is compliant but by and large, more than 10% of missing values could be problematic for analysis purposes. In this study, due care has been taken during personal interaction for questionnaire filling process that no question should be left unanswered.

4.2.1.2 Multivariate Outliers

Outliers embody instances whose counts are to a large extent dissimilar from all the others in a specific set of data. In this analysis, a univariate outlier has an outermost score on a particular variable, while a multivariate outlier has tremendous scores on two or more variables (Kline, 2005). A customary methodology for the discovery of multivariate outliers is the computation of the squared Mahalanobis distance (D2) for all the cases. This statistic estimates the distance in standard deviation units amongst a set of scores for one case and the sample means for all variables (centroids). Predictably, an outlying case will have a D2 value which positions itself uniquely distant from all the other D2 values. An assessment of these values has been reported in table "Observations farthest from the centroid (Mahalanobis distance)" in annexure 1 which exhibits minimal evidence of serious multivariate outliers.

4.2.2 Reliability

It is "concerned with the stability, constancy, and reproducibility of measurement results (Sekaran, 2000)." Reliability is considered as the utmost essential element for checking the quality of any measurement instrument. For instance, it assists in determining the inconsistencies if any and its influence on the findings of the measurement instrument. Whenever there are many items relating to one construct in the research work, then it becomes essential to check the internal reliability of the instrument (Bryman and Cramer, 2005).

In this research work, there are multiple measurements consisting of numerous items. For instance, there were five items that were used for measuring the Intention to adopt Green Banking Practices. Seven items were used for measuring Environmental Sustainability, and six were used to measure PU, and so on, as elucidated earlier. Name of the factors used and their codes are shown in table 4.1. As suggested by Nunally (1978), to check or estimate the uniformity in the answers of the respondents, reliability of the measurement of items was checked. To measure it, Cronbach's alpha i.e. the reliability coefficient was used and it was found out to be greater than 0.7 for all the individual constructs as shown in Table 4.2. According to many researchers also (Sekaran, 2000; Hair, 2006), the range of the Reliability coefficients should be greater than 0.7.

Table 4.1: Name of the Factors and their Codes

Codes	Factor Name
PU	Perceived Usefulness
PEU	Perceived Ease of Use
MCS	Management Control and Support
CP	Competitor Pressure
CsP	Customer Pressure
IAGB	Intention to Adopt Green Banking
ES	Environmental Sustainability

Table 4.2: Summary of Reliability Analysis

Factor Name	Items	Cronbach Alpha Coefficient	Reliability Results
Perceived Usefulness	6	0.907	Good
Perceived Ease of Use	4	0.820	Good
Management Control and Support	5	0.931	Good
Competitor Pressure	5	0.917	Good
Customer Pressure	5	0.842	Good
Intention to Adopt Green Banking	5	0.896	Good
Environmental Sustainability	7	0.944	Good
Overall	37	0.748	Good

4.3 Data Suitability

4.3.1 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity

For conducting the factor analysis, to check these two measures i.e. "KMO and Bartlett's Test of Sphericity" were important. They help in disclosing the appropriateness of the sample data. Table 4.3 shows the results of "KMO and Bartlett's test of Sphericity" and the values were 0.916 for KMO and 12331.456 ($p < .001$) for the Bartlett's test of sphericity.

Table 4.3: KMO and Barlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.916
Bartlett's Test of Sphericity	Approx. Chi-Square	12331.456
	df	666
	Sig.	.000

- Considering the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) for individual variance it was discovered that there is sufficient correlation amid the factors.

- The sampling adequacy value of Kaiser-Meyer-Olkin MSA was found to be 0.916 indicating that the sample was sufficiently decent for sampling.

- The substance of Bartlett's Test of Sphercity was found to be suitable, thus the test results gave enough clarity to substantiate the suitable practice of Exploratory Factor Analysis on the investor perception scale items.

4.4 Exploratory Factor Analysis

Once the data is suitable for analysis, EFA "Principal Components Analysis (PCA) and varimax rotation via orthogonal method" was performed, using SPSS (version 19.0), for data extraction which helps in finding the factors which determine the underlying relationship among the various variables.

4.4.1 Communalities

Communalities between the measured items that were loaded on the EFA model in this research work were varied from .504 for PU1 to .845 for ES4, as shown in Table 4.4. The PU1 was the lowest loaded item in this table, that indicated; it was the weakest measured item and the researcher might drop that for the final data analysis.

Table 4.4: Communalities

		Initial	Extraction
PU1	Using Green Banking would enhance the output and quality of banking.	1.000	.504
PU2	The adoption of Green Banking would help in increasing my bank's revenues or profits.	1.000	.773
PU3	The adoption of Green Banking would eventually help in increasing my bank's returns on investments.	1.000	.686
PU4	The adoption of Green Banking would help us to give services to our customers in a much better way.	1.000	.661
PU5	Green Banking services enhance the company's image.	1.000	.741
PU6	Green Banking activities increase our profitability	1.000	.775
PEU1	According to me, learning to use Green Banking services would not be difficult.	1.000	.667
PEU2	I think that interaction with Green Banking services will not require lot of mental efforts.	1.000	.692
PEU3	I think it is easy to use Green Banking services to accomplish my banking tasks.	1.000	.649
PEU4	My interaction with the Green Banking is understandable and clear.	1.000	.643
MCS1	Management is interested in the use of Green Banking services in banking operations.	1.000	.742
MCS2	Management is supportive toward Green Banking.	1.000	.774
MCS3	My bank has a clarity regarding the use of Green Banking.	1.000	.838
MCS4	My bank has clear understanding of how Green Banking can be used.	1.000	.789
MCS5	My bank has the necessary managerial and technical skills for implementing Green Banking.	1.000	.808
CP1	Some of our competitors have already started providing Green Banking services.	1.000	.672
CP2	My bank would experience a competitive disadvantage if it will not incorporate Green Banking in the business.	1.000	.826
CP3	The rivalry among the different banks in this sector is very intense.	1.000	.795

		Initial	Extraction
CP4	It is very easy for my customers to shift to another bank for similar services without any difficulty.	1.000	.817
CP5	It is easy for my customers are able to easily access the other services in the market which perform the same function but are different from ours.	1.000	.696
CsP1	Banking industry is forcing my bank to adopt Green Banking.	1.000	.706
CsP2	Our customers are pressuring us to adopt Green Banking.	1.000	.671
CsP3	Our suppliers and depositors are pressuring us to adopt Green Banking.	1.000	.675
CsP4	I know that my customers are ready to do business within Green Banking guideline.	1.000	.667
CsP5	My customers are demanding the use of Green Banking practices if my bank wants to do business with them.	1.000	.645
IAGB1	We would use Green Banking services for our banking needs.	1.000	.805
IAGB2	I see myself using Green Banking practices for handling all my banking activities.	1.000	.741
IAGB3	My bank intends to use Green Banking within near future.	1.000	.821
IAGB4	My Bank plans to use Green Banking.	1.000	.710
IAGB5	My Bank is determined to use Green Banking soon.	1.000	.735
ES1	Adoption of green banking practices protect the environment.	1.000	.752
ES2	Adoption of green practices reduce bank's consumption of natural resources.	1.000	.803
ES3	Adoption of green banking helps in waste management and recycling.	1.000	.824
ES4	My bank communicates their environmental practices to its customers.	1.000	.845
ES5	My bank exploits all its renewable energy in a more productive manner which is compatible with its environmental guidelines.	1.000	.789
ES6	My bank conducts its annual environmental audits on regular basis.	1.000	.707
ES7	My bank also participates in various environmental certifications.	1.000	.601

Extraction Method: Principal Component Analysis (PCA).

4.5 Exploratory Factors Extraction Model

For extracting the factors, Eigen values greater than one (Kaiser's criterion) was applied. After using this criterion, twelve factors were identified. The result of extraction of factors with Eigen value more than 1 is presented in Table 4.5.

4.5.1 Loadings of Items on Latent Factors

The loadings of the each of the items of the seven constructs that were characterized in the EFA present in the rotated component matrix, as represented in Table 4.6. The rotated component matrix demonstrates that "the items have sufficiently high loadings on their assumed factors and all the factors are above the minimum criteria of 0.30."

Table 4.5: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.517	33.829	33.829	12.517	33.829	33.829	5.372	14.520	14.520
2	4.163	11.250	45.079	4.163	11.250	45.079	4.207	11.370	25.891
3	2.990	8.080	53.159	2.990	8.080	53.159	4.007	10.830	36.720
4	2.511	6.787	59.947	2.511	6.787	59.947	3.952	10.680	47.400
5	1.898	5.129	65.076	1.898	5.129	65.076	3.723	10.062	57.462
6	1.715	4.636	69.712	1.715	4.636	69.712	3.133	8.468	65.930
7	1.250	3.378	73.090	1.250	3.378	73.090	2.649	7.159	73.090
Extraction Method: Principal Component Analysis.									

Table 4.6: Rotated Component Matrix

Rotated Component Matrix[a]							
	Component						
	1	**2**	**3**	**4**	**5**	**6**	**7**
PU1		.635					
PU2		.826					
PU3		.778					
PU4		.716					
PU5		.811					
PU6		.837					
PEU1							.774
PEU2							.789
PEU3							.774
PEU4							.734
MCS1			.810				
MCS2			.845				
MCS3			.885				
MCS4			.848				
MCS5			.873				
CP1					.710		
CP2					.837		
CP3					.810		
CP4					.826		
CP5					.759		
CsP1						.748	
CsP2						.701	
CsP3						.711	
CsP4						.645	
CsP5						.719	
IAGB1				.812			
IAGB2				.778			
IAGB3				.825			
IAGB4				.789			
IAGB5				.763			
ES1	.799						
ES2	.783						
ES3	.836						
ES4	.855						
ES5	.848						
ES6	.795						
ES7	.717						
"Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 6 iterations."							

4.6 Interpretation of Factors

According to Tabachnick and Fidell (2007), each construct needs to be given a unique label that shows its features and helps in the explanation of each factor. Each of the variables affecting Intention to adopt Green Banking Practices, were obtained through PCA in the process of EFA in this research work, which is discussed below. The total variance explained, factor loading of each item of the construct, and Cronbach alpha for each construct related to the employee's Intention to adopt Green Banking Practices, are also discussed in the subsequent sub-sections.

4.6.1 Environmental Sustainability

The foremost variable that has the largest total variance explained has been clearly explained as "Environmental Sustainability".

Table 4.7: "Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Environmental Sustainability"

Factor No. 1: Environmental Sustainability	Factor Loadings	% of Variance Explained		Cronbach's Alpha
Items		"Extraction Sums of Squared Loadings"	"Rotation Sums of Squared Loadings"	
Adoption of green banking practices protect the environment.	.799	33.829	14.520	0.944
Adoption of green practices reduce bank's consumption of natural resources.	.783			
Adoption of green banking helps in waste management and recycling.	.836			
My bank communicates their environmental practices to its customers.	.855			
My bank exploits all its renewable energy in a more productive manner which is compatible with its environmental guidelines.	.848			
My bank conducts its annual environmental audits on regular basis.	.795			
My bank also participates in various environmental certifications.	.717			

Table 4.7 represents the Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Environmental Sustainability. Factor loading, which is coefficient of correlation between the statements and a factor, for all the items are above the minimum criteria of 0.30 and percentage of total variance explained is 14.520 %. Value of cronbach alpha i.e. reliability coefficient is more than 0.7 for this construct.

4.6.2 Perceived Usefulness

The Second construct has been explained as "Perceived Usefulness".

Table 4.8: "Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Perceived Usefulness"

Factor No. 2: Perceived Usefulness	Factor Loadings	% of Variance Explained		Cronbach's Alpha
Items		"Extraction Sums of Squared Loadings"	"Rotation Sums of Squared Loadings"	
Using Green Banking would enhance the output and quality of banking.	.635	11.250	11.370	0.907
The adoption of Green Banking would help in increasing my bank's revenues or profits.	.826			
The adoption of Green Banking would eventually help in increasing my bank's returns on investments.	.788			
The adoption of Green Banking would help us to give services to our customers in a much better way.	.778			
Green Banking services enhance the company's image.	.811			
Green Banking activities increase our profitability	.837			

Table 4.8 represents the Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Perceived Usefulness. Factor loading for all the items are above the minimum criteria of 0.30 and percentage of total variance explained is 11.370 %. Value of Cronbach alpha i.e. reliability coefficient is more than 0.7 for this construct.

4.6.3 Management Control and System

The Third construct has been explained as "Management Control and System".

Table 4.9: "Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Management Control and System"

Factor No. 3: Management Control and System	Factor Loadings	% of Variance Explained		Cronbach's Alpha
Items		"Extraction Sums of Squared Loadings"	"Rotation Sums of Squared Loadings"	
Management is interested in the use of Green Banking services in banking operations.	.810	8.080	10.830	0.931
Management is supportive toward Green Banking.	.845			
My bank has a clarity regarding the use of Green Banking.	.855			
My bank has clear understanding of how Green Banking can be used.	.848			
My bank has the necessary managerial and technical skills for implementing Green Banking.	.873			

Table 4.9 represents the Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Management Control and System. Factor loading for all the items are above the minimum criteria of 0.30 and percentage of total variance explained is 10.830 %. Value of Cronbach alpha i.e. reliability coefficient is more than 0.7 for this construct.

4.6.4 Intention to adopt Green Banking Practices

The fourth variable has been elucidated as, "Intention to adopt Green Banking Practices".

Table 4.10: "Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Intention to adopt Green Banking Practices"

Factor No. 4: Intention to adopt Green Banking Practices	Factor Loadings	% of Variance Explained		Cronbach's Alpha
Items		**"Extraction Sums of Squared Loadings"**	**"Rotation Sums of Squared Loadings"**	
We would use Green Banking services for our banking needs.	.812	6.787	10.680	0.896
I see myself using Green Banking practices for handling all my banking activities.	.778			
My bank intends to use Green Banking within near future.	.789			
My Bank plans to use Green Banking.	.778			
My Bank is determined to use Green Banking soon.	.763			

Table 4.10 represents the Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Intention to adopt Green Banking Practices. Factor loading for all the items are above the minimum criteria of 0.30 and percentage of total variance explained is 10.680 %. Value of Cronbach alpha i.e. reliability coefficient is more than 0.7 for this construct.

4.6.5 Competitor Pressure

The fifth construct has been described as, "Competitor Pressure".

Table 4.11: "Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Competitors Pressure"

Factor No. 5: Competitor Pressure	Factor Loadings	% of variance explained		Cronbach's Alpha
Items		"Extraction Sums of Squared Loadings"	"Rotation Sums of Squared Loadings"	
Some of our competitors have already started providing Green Banking services.	.710	5.129	10.062	0.917
My bank would experience a competitive disadvantage if it will not incorporate Green Banking in the business.	.837			
The rivalry among the different banks in this sector is very intense.	.810			
It is very easy for my customers to shift to another bank for similar services without any difficulty.	.826			
It is easy for my customers are able to easily access the other services in the market which perform the same function but are different from ours.	.759			

Table 4.11 represents the Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Competitor Pressure. Factor loading for all the items are above the minimum criteria of 0.30 and percentage of total variance explained is 10.062 %. Value of Cronbach alpha i.e. reliability coefficient is more than 0.7 for this construct.

4.6.6 Customer Pressure

The sixth construct has been interpreted as "Customer Pressure".

Table 4.12: **"Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Customer Pressure"**

Factor No. 6: Customer Pressure	Factor Loadings	% of Variance Explained		Cronbach's Alpha
Items		"Extraction Sums of Squared Loadings"	"Rotation Sums of Squared Loadings"	
Banking industry is forcing my bank to adopt Green Banking.	.748	4.636	8.468	0.842
Our customers are pressuring us to adopt Green Banking.	.701			
Our suppliers and depositors are pressuring us to adopt Green Banking.	.711			
I know that my customers are ready to do business within Green Banking guideline.	.645			
My customers are demanding the use of Green Banking practices if my bank wants to do business with them.	.719			

Table 4.12 represents the Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Customer Pressure. Factor loading for all the items are above the minimum criteria of 0.30 and percentage of total variance explained is 8.468 %. Value of Cronbach alpha i.e. reliability coefficient is more than 0.7 for this construct.

4.6.7 Perceived Ease of Use

The seventh construct has been explained as "Perceived Ease of Use".

Table 4.13: "Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Perceived Ease of Use"

Factor No. 7: Perceived Ease of Use	Factor Loadings	% of Variance Explained		Cronbach's Alpha
Items		**"Extraction Sums of Squared Loadings"**	**"Rotation Sums of Squared Loadings"**	
According to me, learning to use Green Banking services would not be difficult.	.774	3.378	7.159	0.820
I think that interaction with Green Banking services will not require lot of mental efforts.	.789			
I think it is easy to use Green Banking services to accomplish my banking tasks.	.774			
My interaction with the Green Banking is understandable and clear.	.734			

Table 4.13 represents the Summary of Factor Loadings, Percentage of Total Variance Explained and Reliability of Perceived Ease of Use. Factor loading for all the items are above the minimum criteria of 0.30 and percentage of total variance explained is 7.159 %. Value of Cronbach alpha i.e. reliability coefficient is more than 0.7 for this construct.

4.7 Statistical Analysis- Structural Equation Modelling

It is a grouping of various statistical models that pursues to elucidate and describe different types of associations between multiple latent variables or constructs. According to Hair (2006), while using SEM, investigators can inspect interconnected associations amongst various dependent and independent variables concurrently. Hence, many different authors and researchers have suggested that SEM as a scientific procedure, has been utilized as a part of many fields, and has become an imperative technique for analyzing the data in various academic research (Hair, 2006; Kline, 2005; Byrne, 2001). Likewise, different authors also claimed that SEM is a multivariate technical analysis that permits scientists to analyze, both the estimation and basic parts of a research model by checking the relations and associations between numerous dependent and independent variables simultaneously (Tabachnick and Fidell, 2007; Gefen, 2000). Consequently, in the current research work, there were multiple dependent and independent relationships in the proposed model for research as discussed in chapter 3 of the thesis, so SEM techniques found out to be the most appropriate technique, that can be applied for data analysis of this research work. To investigate the statistical associations amongst the measurements of dependent variables "i.e., (Environmental Sustainability) and independent variables i.e. (PEU, PU, MCS and others)", researcher has used the SEM technical software package, known as, "AMOS (Analysis of Moment Structure) Version 20". SEM was chosen for the data analysis of this research work. There are two possible reasons for this: Primarily, it is a systematic tool to confirm the relationships between various variables and their indicators i.e. items, and to investigate the associations between the variables in one model (Hair, 2006; Hoyle, 1995). Secondly, according to many researchers, it offered an effective and challenging statistical tool that handles the complicated research models (Hair, 2006; Tabachnick and Fidell, 2001; Bryne, 2001). Bentler (1999) and Hoyle (1995, 2006) stated that in SEM, to find out the relationships among constructs and indicators, confirmatory factor analysis (CFA) was used, which is also called measurement model, and the model used to verify and investigate the associations among various constructs is known as structural model, which are explained in the Table 4.14.

Table 4.14: Exhibits the Code, Latent Variables and Observed Variables for the Research

Code	Latent Variable	Observed Variable
PU	Perceived Usefulness	Using Green Banking would enhance the output and quality of banking.
		The adoption of Green Banking would help in increasing my bank's revenues or profits.
		The adoption of Green Banking would eventually help in increasing my bank's returns on investments.
		The adoption of Green Banking would help us to give services to our customers in a much better way.
		Green Banking services enhance the company's image.
		Green Banking activities increase our profitability
PEU	Perceived Ease of Use	According to me, learning to use Green Banking services would not be difficult.
		I think that interaction with Green Banking services will not require lot of mental efforts.
		I think it is easy to use Green Banking services to accomplish my banking tasks.
		My interaction with the Green Banking is understandable and clear.
MCS	Management Commitment and Support	Management is interested in the use of Green Banking services in banking operations.
		Management is supportive toward Green Banking.
		My bank has a clarity regarding the use of Green Banking.
		My bank has clear understanding of how Green Banking can be used.
		My bank has the necessary managerial and technical skills for implementing Green Banking.
CP	Competitor Pressure	Some of our competitors have already started providing Green Banking services.
		My bank would experience a competitive disadvantage if it will not incorporate Green Banking in the business.
		The rivalry among the different banks in this sector is very intense.
		It is very easy for my customers to shift to another bank for similar services without any difficulty.
		It is easy for my customers are able to easily access the other services in the market which perform the same function but are different from ours.

Code	Latent Variable	Observed Variable
CsP	Customer Pressure	Banking industry is forcing my bank to adopt Green Banking.
		Our customers are pressuring us to adopt Green Banking.
		Our suppliers and depositors are pressuring us to adopt Green Banking.
		I know that my customers are ready to do business within Green Banking guideline.
		My customers are demanding the use of Green Banking practices if my bank wants to do business with them.
IAGB	Intention to adopt Green Banking	We would use Green Banking services for our banking needs.
		I see myself using Green Banking practices for handling all my banking activities.
		My bank intends to use Green Banking within near future.
		My Bank plans to use Green Banking.
		My Bank is determined to use Green Banking soon.
ES	Environmental Sustainability	Adoption of green banking practices protect the environment.
		Adoption of green practices reduce bank's consumption of natural resources.
		Adoption of green banking helps in waste management and recycling.
		My bank communicates their environmental practices to its customers.
		My bank exploits all its renewable energy in a more productive manner which is compatible with its environmental guidelines.
		My bank conducts its annual environmental audits on regular basis.
		My bank also participates in various environmental certifications.

4.7.1 Measurement Model

According to Kline (2005), CFA is a widely-used technique of SEM, and as per Byrne (2001), it is by and large connected, when there is some contextual knowledge and understanding of the basic factors and their measuring items. Be that as it may, it is exceptionally suggested that, CFA should be applied after EFA, so as to check and affirm the scales derived from EFA (Hair, 1998; Byrne, 2001). So, the researcher in this research

work has also applied EFA before CFA. As stated by Byrne (2001), in practice, unlike EFA, in which researcher explores the factors, CFA is a procedure used to affirm from the prior hypotheses regarding, associations among the set of items and their corresponding latent variables. As stated by Hair (2006), in CFA, there are two wide methodologies that were used to assess the measurement model: "(1) to decide the (GOF) goodness of fit criteria indices, (2) to assess the reliability and validity of the measurement model". Hence, for measuring the unidimensionality, reliability and validity of the measures, the researcher in this research work has applied the measurement model, which has been described below.

4.7.2 Reliability

Reliability has already been discussed and checked in the section 4.2.1. The result of reliability is within the range i.e. above 0.7.

4.7.3 Validity

As suggested by Sekaran (2000), validity is associated with the accuracy of items. As stated by Neuman (2003), validity is higher, when the items and the latent variables shows the good model fit. Convergent validity and discriminant validity are the two types of validity, which helps in the analysis of Construct validity, which are described below.

4.7.3.1 Convergent Validity

According to Hair (2006), for checking the convergent validity of each variable (represented in Table 4.15), three estimations are generally used, these are factor "average variance extracted (AVE), loadings of factors, and construct reliability (CR) estimation". In addition to this, Hair et al. (2006) also recommended that for assessing the convergent validity, the minimum cut off criteria is:

- Ideal standardized loading of each item should be either 0.7 or higher,
- The Average Variance Extracted estimate should be more than 0.5, and
- Reliability i.e. Cronbach alpha estimates should be greater than 0.7.

Table 4.15: Indices of Convergent Validity for the Constructs

Factor Name	Cronbach Alpha Coefficient	Average Variance Explained
Perceived Usefulness	0.907	0.604
Perceived Ease of Use	0.820	0.533
Management Control and Support	0.931	0.736
Competitor Pressure	0.917	0.588
Customer Pressure	0.842	0.699
Intention to Adopt Green Banking	0.896	0.699
Environmental Sustainability	0.944	0.689

4.7.3.2 Discriminant Validity

Hair (2006) suggested the method to assess the discriminant validity (represented in Table 4.16), in this AVE for every variable is equated with the matching (SIC) squared inter-construct correlations, and calculated value of Average Variance Extracted constantly should be greater than the estimate of SIC. This specifies the validation for discriminant validity of each variable.

In this study, the researcher has used both Convergent Validity and Discriminant Validity to evaluate the Construct Validity of each variable.

Table 4.16: Indices of Discriminant Validity for the Constructs

Factor Name	Average Variance Explained	Maximum Shared Variance
Perceived Usefulness	0.604	0.305
Perceived Ease of Use	0.533	0.169
Management Control and Support	0.736	0.166
Competitor Pressure	0.588	0.305
Customer Pressure	0.699	0.479
Intention to Adopt Green Banking	0.699	0.479
Environmental Sustainability	0.689	0.283

Table 4.16 encapsulates the reliability and validity values of all the constructs, explicitly Perceived Usefulness, Perceived Ease of Use, Management Control and Support, Competitor Pressure, Customer Pressure, Intention to Adopt Green Banking and Environmental Sustainability. The Cronbach alpha values for all the constructs are higher than the mandatory threshold. Average Variance Explained also has surpassed the needed threshold of 0.5. This exhibits that all indicators successfully determine the construct they belong to. Moreover, the MSV also is lower than AVE which is an adequate indication to validate that the statements vary from each other.

4.7.4 Goodness of Fit Indices

Hair (1998), suggested that there are three kinds of fit measure indices used in SEM: "incremental fit indices, parsimonious fit indices, and absolute fit indices". As stated by Hair (1998), "the absolute fit indices are used to measure the ability of the overall model fit and these indices incorporate the likelihood ratio statistic chi-square ($\chi 2$), in connotation with the root mean square error of approximation (RMSEA), and the goodness of fit index (GFI)." According to Hair (1998) and Hair (2006) to contrast the proposed model with the baseline model, incremental fit indexes were used and "the incremental fit indices comprised of comparative fit index (CFI) and normed fit index (NFI)". Particulars of all these fit indices and their suggested levels are shown in the Table 4.17.

Table 4.17: Statistics of Goodness of Fit used in SEM

Model Fix Index	Recommended Cut-off Value
P Value <0.05	P <0.05
CMIN/df	1< CMIN/*df*>3 (HU and Bentler,1999)
Comparative Fix Index (CFI)	Values greater than 0.9 (Bentler and Bonnet, 1980)
Goodness Fit Index (GFI)	Values greater than 0.9 (Bryne (2001); Hair et.al. (2006))
Root Mean Square Error of Approximation (RMSEA)	Values lower than 0.08 (MacCallum, Browne, and Sugawara, 1996)

4.8 Model Estimates

To assess the measurement model, there are also other standardized estimates other than GOF indices, such as, standardized regression weight i.e. factor loadings, and critical ratio (Cr) approximations standards. The cut-off point, as suggested by many academics, were used in this research work. As suggested by Holmes-Smith (2002),

- The value of each loadings of the factors should be at least 0.7; though, a value more than 0.5 is also tolerable (Churchill, 1979).
- The values of CR should not be less than 1.96 (Byrne, 2001; Hair, 1998).

As described earlier, measurement model was used in this research work to describe the relationships among the various observed variables i.e. indicator variables and unobserved variables i.e. latent variables. It assisted in determining and affirming which item is related to the each of its corresponding fundamental variable i.e. the latent variable. Hence, CFA is also called as measurement model, and according to Kline, (1998) and Hair, (1998), it was executed in order to classify and validate the outline, through this all the measuring items were loaded onto its own specific variable. Measurement model was projected by using AMOS software, as suggested by many researchers (Hair, 1998; Tabachnick and Fidell, 2001). There were many reasons for choosing this procedure of estimation discussed as follows:

- Firstly, as suggested by many researchers, if the sample size is small and in case the research model is not meeting the condition of having minimum 5 items of measurement for each variable, CFA was suggested by many researchers (Anderson and Gerbing, 1988; Hair, 1998). As some of the constructs in this research work has also used less than 5 measurement items.
- Secondly, in this research work, the researcher has used a five point Likert scale. As suggested by many researchers, this MLE technique is impartial contrasted with other estimation techniques under adequate defilements of normal data (Bollen, 1989; Bryne, 2001; Kline, 2005).
- At last, while using the SEM analysis technique, MLE technique is the most commonly used estimator (Tabachnick and Fidell, 2001; Kline, 1998) on the grounds, that this technique minimizes the difference between observed matrices and covariance; as an outcome, it enhances the assessments of various parameters (Hair, 2006).

Consequently, in this research work, MLE method was used while running the measurement model, as suggested by various investigators (Kline, 2005; Anderson and Gerbing, 1988; Hair, 1998).

4.8.1 Individual Construct SEM Models – Measurement Models

In order to verify the various variables that were identified during EFA, CFA was conducted as a next step. Further, to assess the whole model fit, the model fitness of individual factors was assessed through a zero order CFA, and it was constructed for all the latent variables, as discussed below in detail:

Perceived Usefulness
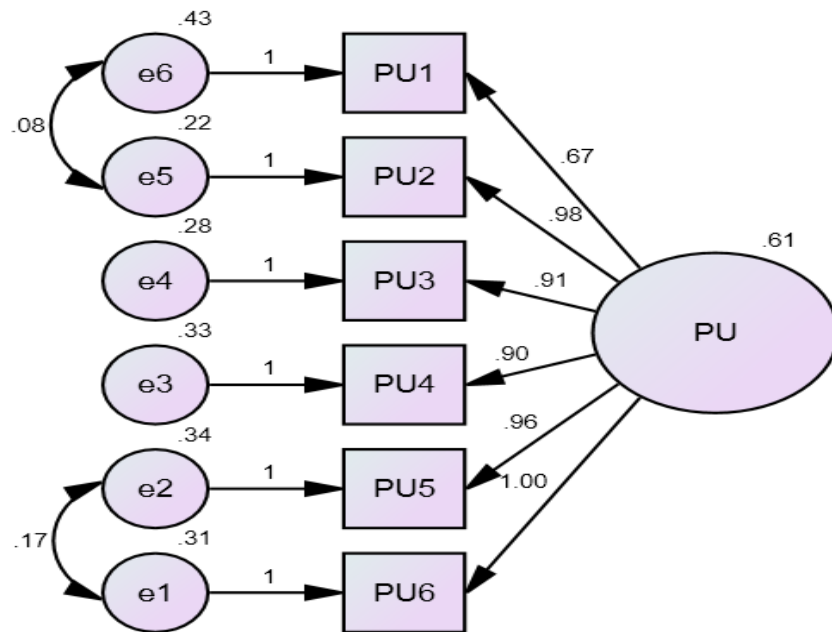
Figure 4.1: "Zero Order CFA of Perceived Usefulness and its Measured Variables"

The terminology used in this zero-order model is illustrated in Table 4.18 of "Perceived Usefulness" and its measured variables.

Table 4.18: Terminology Referred

Code	Latent Variable	Observed Variable
PU	Perceived Usefulness	
PU1		Using Green Banking would enhance the output and quality of banking.
PU2		The adoption of Green Banking would help in increasing my bank's revenues or profits.
PU3		The adoption of Green Banking would eventually help in increasing my bank's returns on investments.
PU4		The adoption of Green Banking would help us to give services to our customers in a much better way.
PU5		Green Banking services enhance the company's image.
PU6		Green Banking activities increase our profitability

Perceived Usefulness is the latent construct having six measured factors as shown in Figure 4.1, Variable loadings, or standardized estimate, represents the extent to which each of the items is associated with its latent construct. Since the item is unable to explain the latent variable entirely, so an error term was also added to its respected measured item.

The Unstandardized Regression Coefficient (as Shown in Table 4.19) denotes "the extent by which the dependent variable changes, if the investigator changes the independent variable by one unit, by keeping the other independent variables constant." Figure 4.2 also explains the error variance. Error variance represents the "extent of the amount by which variance could not be explained by the observed variable." For e.g., the result of the Zero Order CFA suggests that e5 is 0.22, which means; in predicting the Perceived Usefulness, 22% of the variance is unexplained by PU2. Lower Variance indicates lower error, so it is a good indication. Figure 4.1 also shows that the value of R^2 value is 0.61, and it reflects that, in the independent variable, 61% of the variance is explicated by all the independent constructs taken together.

Moreover, the two curved arrows represent the covariance or correlations between the pairs. Covariance is defined as "a measure of how much two random variables vary together." It is more or less same as the variance, but the difference is variance, explains

the variation of single variable, whereas, covariance explains the variation of two variables together.

**Table 4.19: Unstandardized Regression Coefficients of Perceived Usefulness**

Code	Unstandardized Regression Coefficients
PU	$R^2 = .61$
PU1	.67
PU 2	.98
PU 3	.91
PU 4	.90
PU 5	.96
PU 6	1.00

Table 4.20: Standardized Regression Weights and Model Fit Indices of Perceived Usefulness

			Estimate	Model Fit Indicator	
PU 6	<---	PU	.814	CMIN/DF	1.788
PU 5	<---	PU	.785	CFI	0.997
PU 4	<---	PU	.770	GFI	0.991
PU 3	<---	PU	.798	RMSEA	0.043
PU 2	<---	PU	.852	AVE	0.604
PU 1	<---	PU	.620	MSV	0.305

The Beta Value or Standardized Regression Weight is defined as "a measure of how strongly each predictor (independent) variable influences the criterion (dependent) variable." The Standard Deviation was used to measure the value of beta. As shown in Table 4.20, PU2 and PU6 have factor loadings of 0.852 and 0.814 respectively; this indicates that these two independent variables are the best indicators of Perceived Usefulness. The model fit indices illustrated that, the model was a good fit. All other model fit indices were at acceptable levels that represented a good fit for Perceived Usefulness.

Perceived Ease of Use
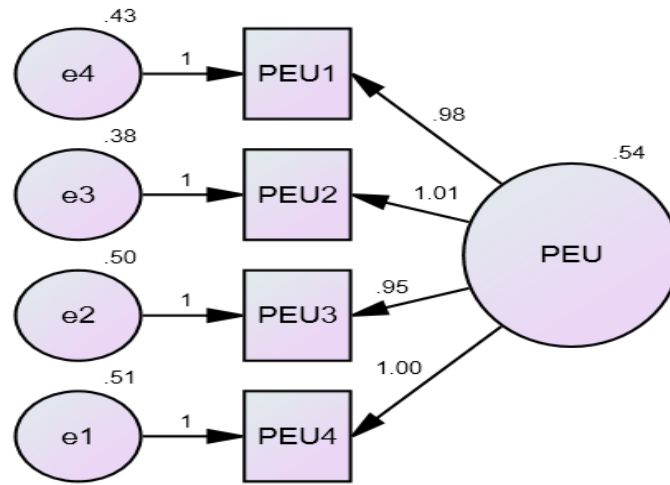
Figure 4.2: "Zero Order CFA of Perceived Ease of Use and its Measured Variables"

The terminology used in this Zero Order model is illustrated in Table 4.21 of "Perceived Ease of Use" and its measured variables.

Table 4.21: Terminology Referred

Code	Latent Variable	Observed Variable
PEU	Perceived Ease of Use	
PEU1		According to me, learning to use Green Banking services would not be difficult.
PEU2		I think that interaction with Green Banking services will not require lot of mental efforts.
PEU3		I think it is easy to use Green Banking services to accomplish my banking tasks.
PEU4		My interaction with the Green Banking is understandable and clear.

Perceived Ease of Use is the latent construct, having four measured factors as shown in Figure 4.2. The result of the Zero order CFA suggests that e3 is 0.38, which means in predicting the Perceived Ease of Use, 38% of the variance is unexplained by PEU2. The Figure 4.2 also shows that the value of R^2 value is 0.54, and it reflects that in the

independent variable, 54% of the variance is explicated by all the independent constructs taken together (as also depicted in Table 4.22).

**Table 4.22: Unstandardized Regression Coefficients of Perceived Ease of Use**

Code	Unstandardized Regression Coefficients
PEU	$R^2 = .54$
PEU1	.98
PEU2	1.01
PEU3	.95
PEU4	1.00

Table 4.23: Standardized Regression Weights and Model Fit Indices of Perceived Ease of Use

			Estimate	Model Fit Indicator	
PEU1	<---	PEU	.738	CMIN/DF	1.320
PEU2	<---	PEU	.769	CFI	.999
PEU3	<---	PEU	.699	GFI	.997
PEU4	<---	PEU	.714	RMSEA	0.027
				AVE	0.533
				MSV	0.169

As shown in Table 4.23, PEU2 and PEU1 have factor loadings of 0.769 and 0.738 respectively; this indicates that these two independent variables are the best indicators of Perceived Ease of Use. The model fit indices illustrated that, the model was a good fit. All other model fit indices were at acceptable levels that represented a good fit for Perceived Ease of Use.

Management Control and System
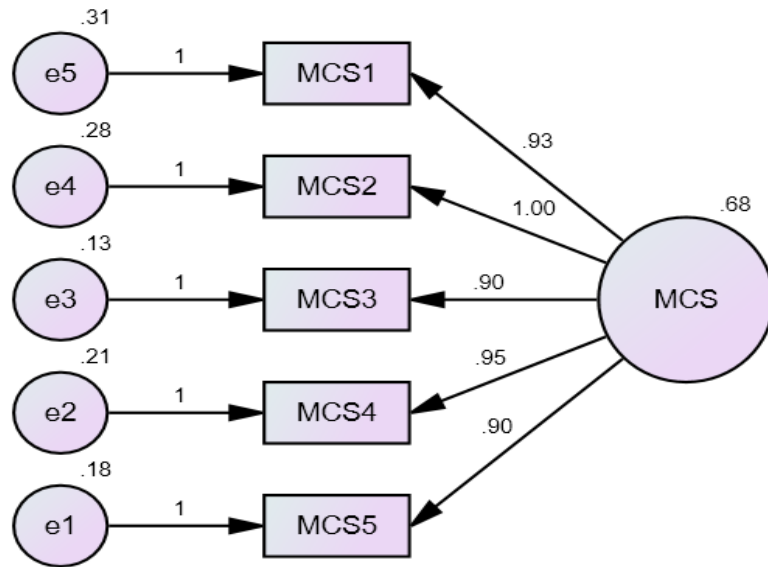
Figure 4.3: "Zero Order CFA of Management Control and System and its Measured Variables"

The terminology used in this zero-order model is illustrated in Table 4.24 of "Management Control and System" and its measured variables.

Table 4.24: Terminology Referred

Code	Latent Variable	Observed Variable
MCS	Management Control and System	
MCS1		Management is interested in the use of Green Banking services in banking operations.
MCS2		Management is supportive toward Green Banking.
MCS3		My bank has a clarity regarding the use of Green Banking.
MCS4		My bank has clear understanding of how Green Banking can be used.
MCS5		My bank has the necessary managerial and technical skills for implementing Green Banking.

Management Control and System is the latent construct having five measured factors as shown in Figure 4.3. The result of the Zero order CFA suggests that e3 is 0.13, which means in predicting the Management Control and System, 13% of the variance is unexplained by MCS3. The Figure 4.3 also shows that the value of R^2 value is 0.68, and it reflects that in the independent variable, 68% of the variance is explicated by all the independent constructs taken together (as also depicted in Table 4.25).

Table 4.25: Unstandardized Regression Coefficients of Management Control and System

Code	Unstandardized Regression Coefficients
MCS	$R^2 = .68$
MCS1	.93
MCS2	1.00
MCS3	.90
MCS4	.95
MCS5	.90

Table 4.26: Standardized Regression Weights and Model Fit Indices of Management Control and System

			Estimate	Model Fit Indicator	
MCS1	<---	MCS	.810	CMIN/DF	2.493
MCS2	<---	MCS	.842	CFI	.996
MCS3	<---	MCS	.902	GFI	.989
MCS4	<---	MCS	.864	RMSEA	.059
MCS5	<---	MCS	.868	AVE	0.736
				MSV	0.166

As shown in Table 4.26; MCS3 and MCS5 have factor loadings of 0.902 and 0.868 respectively; this indicates that these two independent variables are the best indicators of Management Control and System. The model fit indices illustrated that the model was a good fit. All other model fit indices were at acceptable levels that represented a good fit for Management Control and System.

Competitor Pressure
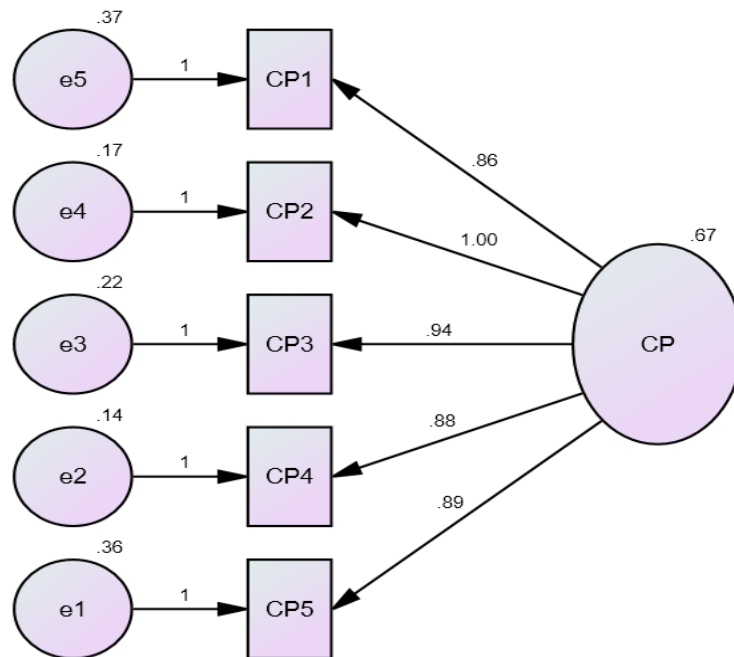
Figure 4.4: "Zero Order CFA of Competitors Pressure and its Measured Variables"

The terminology used in this zero-order model is illustrated in Table 4.27 of "Competitor Pressure" and its measured variables.

Table 4.27: Terminology Referred

Code	Latent Variable	Observed Variable
CP	Competitor Pressure	
CP1		Some of our competitors have already started providing Green Banking services.
CP2		My bank would experience a competitive disadvantage if it will not incorporate Green Banking in the business.
CP3		The rivalry among the different banks in this sector is very intense.
CP4		It is very easy for my customers to shift to another bank for similar services without any difficulty.
CP5		It is easy for my customers are able to easily access the other services in the market which perform the same function but are different from ours.

Competitor Pressure is the latent construct having five measured factors as shown in Figure 4.4. The result of the Zero order CFA suggests that e2 is 0.14, which means in predicting the Competitor Pressure, 14% of the variance is unexplained by CP4. The Figure 4.4 also shows that the value of R^2 value is 0.67, and it reflects that in the independent variable, 67% of the variance is explicated by all the independent constructs taken together (as also depicted in Table 4.28).

**Table 4.28: Unstandardized Regression Coefficients of Competitors Pressure**

Code	Unstandardized Regression Coefficients
CP	$R^2 = .67$
CP1	.86
CP2	1.00
CP3	.94
CP4	.88
CP5	.89

Table 4.29: Standardized Regression Weights and Model Fit Indices of Competitors Pressure

			Estimate	Model Fit Indicator	
CP1	<---	CP	.758	CMIN/DF	2.252
CP2	<---	CP	.892	CFI	.996
CP3	<---	CP	.858	GFI	.990
CP4	<---	CP	.885	RMSEA	.054
CP5	<---	CP	.774	AVE	0.699
				MSV	0.305

As shown in Table 4.29; CP2 and CP4 have factor loadings of 0.892 and 0.885 respectively; this indicates that these two independent variables are the best indicators of Competitor Pressure. The model fit indices illustrated that the model was a good fit. All other model fit indices were at acceptable levels that represented a good fit for Competitor Pressure.
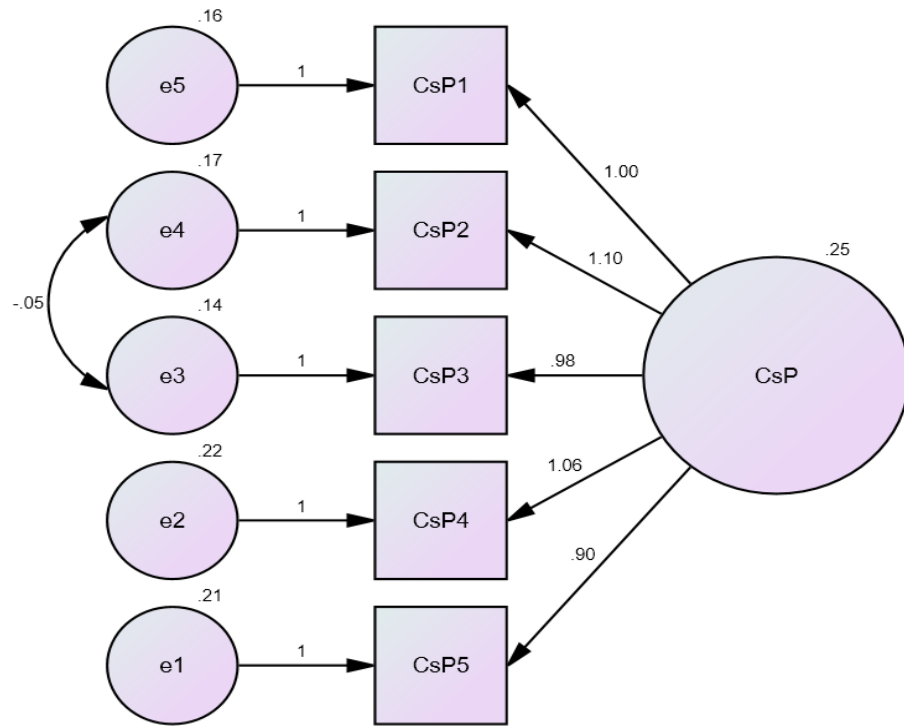
Customer Pressure

Figure 4.5: "Zero Order CFA of Customer Pressure and its Measured Variables"

The terminology used in this zero-order model is illustrated in Table 4.30 of "Customer Pressure" and its measured variables.

Table 4.30: Terminology Referred

Code	Latent Variable	Observed Variable
CsP	Customer Pressure	
CsP1		Banking industry is forcing my bank to adopt Green Banking.
CsP2		Our customers are pressuring us to adopt Green Banking.
CsP3		Our suppliers and depositors are pressuring us to adopt Green Banking.
CsP4		I know that my customers are ready to do business within Green Banking guideline.
CsP5		My customers are demanding the use of Green Banking practices if my bank wants to do business with them.

Customer Pressure is the latent construct having five measured factors as shown in Figure 4.5. The result of the Zero order CFA suggests that e3 is 0.14, which means in predicting the Customer Pressure, 14% of the variance is unexplained by CsP3. Figure 4.5 also shows that the value of R^2 value is .25, and it reflects that in the independent variable, 25% of the variance is explicated by all the independent constructs taken together (as also depicted in Table 4.31).

Table 4.31: Unstandardized Regression Coefficients of Customer Pressure

Code	Unstandardized Regression Coefficients
CsP	$R^2 = .25$
CsP1	1.00
CsP2	1.10
CsP3	.98
CsP4	1.06
CsP5	.90

Table 4.32: Standardized Regression Weights and Model Fit Indices of Customer Pressure

			Estimate	Model Fit Indicator	
CsP1	<---	CsP	.778	CMIN/DF	2.723
CsP2	<---	CsP	.803	CFI	.993
CsP3	<---	CsP	.800	GFI	.990
CsP4	<---	CsP	.752	RMSEA	0.063
CsP5	<---	CsP	.702	AVE	0.588
				MSV	0.479

As shown in Table 4.32; CsP2 and CsP3 have factor loadings of 0.803 and 0.800 respectively; this indicates that these two independent variables are the best indicators of Customer Pressure. The model fit indices illustrated that the model was a good fit. All other model fit indices were at acceptable levels that represented a good fit for Customer Pressure.

Intention to adopt Green Banking Practices
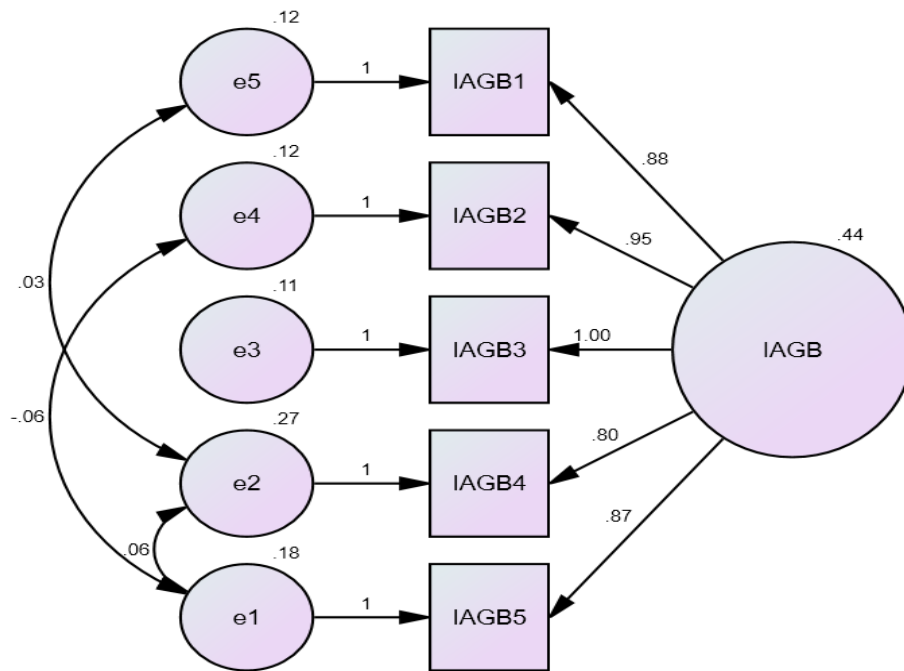
Figure 4.6: **"Zero Order CFA of Intention to adopt Green Banking Practices and its Measured Variables"**

The terminology used in this zero-order model is illustrated in Table 4.33 of "Intention to adopt Green Banking Practices" and its measured variables.

Table 4.33: Terminology Referred

Code	Latent Variable	Observed Variable
IAGB	Intention to adopt Green Banking Practices	
IAGB1		We would use Green Banking services for our banking needs.
IAGB2		I see myself using Green Banking practices for handling all my banking activities.
IAGB3		My bank intends to use Green Banking within near future.
IAGB4		My Bank plans to use Green Banking.
IAGB5		My Bank is determined to use Green Banking soon.

Intention to adopt Green Banking Practices is the latent construct having five measured factors as shown in Figure 4.6. The result of the Zero order CFA suggests that e3 is 0.11, which means in predicting the Intention to adopt Green Banking Practices, 11% of the variance is unexplained by IAGB3. The Figure 4.6 also shows that the value of R^2 value is 0.44, and it reflects that in the independent variable, 44% of the variance is explicated by all the independent constructs taken together (as also depicted in Table 4.34).

Table 4.34: Unstandardized Regression Coefficients of Intention to adopt Green Banking Practices

Code	Unstandardized Regression Coefficients
IAGB	$R^2 = .44$
IAGB1	.88
IAGB2	.95
IAGB3	1.00
IAGB4	.80
IAGB5	.87

Table 4.35: Standardized Regression Weights and Model Fit Indices of Intention to adopt Green Banking Practices

			Estimate	Model Fit Indicator	
IAGB1	<---	IAGB	.860	CMIN/DF	2.289
IAGB2	<---	IAGB	.880	CFI	.998
IAGB3	<---	IAGB	.899	GFI	.996
IAGB4	<---	IAGB	.715	RMSEA	.055
IAGB5	<---	IAGB	.804	AVE	0.699
				MSV	0.479

As shown in Table 4.35; IAGB3 and IAGB2 have factor loadings of 0.899 and 0.880 respectively; this indicates that these two independent variables are the best indicators of Intention to adopt Green Banking Practices. The model fit indices illustrated that the model was a good fit. All other model fit indices were at acceptable levels that represented a good fit for Intention to adopt Green Banking Practices.

Environmental Sustainability
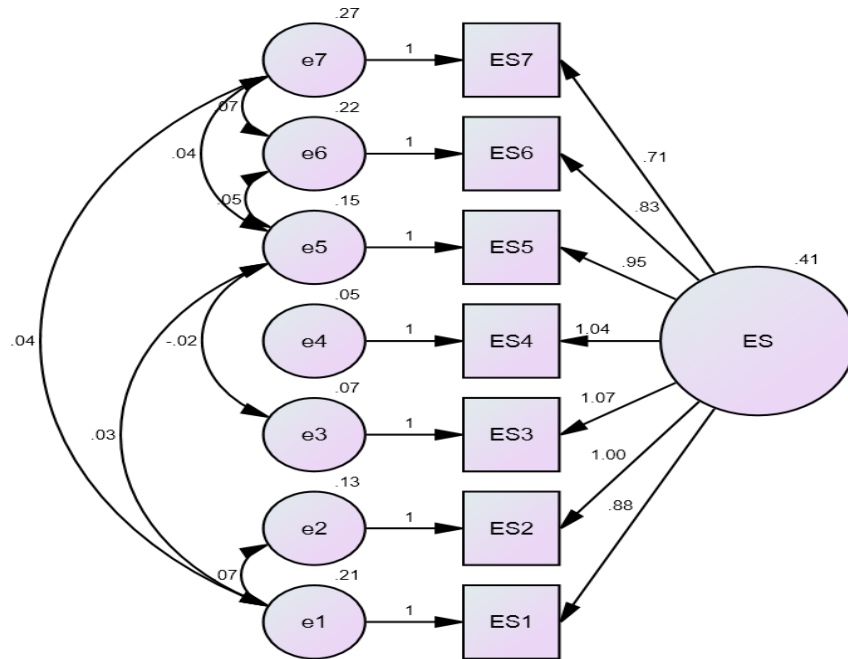
Figure 4.7: "Zero Order CFA of Environmental Sustainability and its Measured Variables"

The terminology used in this zero-order model is illustrated in Table 4.36 of "Environmental Sustainability" and its measured variables.

Table 4.36: Terminology Referred

Code	Latent Variable	Observed Variable
ES	Environmental Sustainability	
ES1		Adoption of green banking practices protect the environment.
ES2		Adoption of green practices reduce bank's consumption of natural resources.
ES3		Adoption of green banking helps in waste management and recycling.
ES4		My bank communicates their environmental practices to its customers.
ES5		My bank exploits all its renewable energy in a more productive manner which is compatible with its environmental guidelines.
ES6		My bank conducts its annual environmental audits on regular basis.
ES7		My bank also participates in various environmental certifications.

Environmental Sustainability is the latent construct having seven measured factors as shown in Figure 4.7. The result of the Zero order CFA suggests that e4 is 0.05, which means in predicting the Environmental Sustainability, 5% of the variance is unexplained by ES4. Figure 4.7 also shows that the value of R^2 value is 0.41, and it reflects that in the independent variable, 41% of the variance is explicated by all the independent constructs taken together (as also depicted in Table 4.37).

Table 4.37: Unstandardized Regression Coefficients of Environmental Sustainability

Code	Unstandardized Regression Coefficients
ES	$R^2 = .41$
ES1	.88
ES2	1.00
ES3	1.07
ES4	1.04
ES5	.95
ES6	.83
ES7	.71

Table 4.38: Standardized Regression Weights and Model Fit Indices of Environmental Sustainability

			Estimate	Model Fit Indicator	
ES1	<---	ES	.771	CMIN/DF	2.200
ES2	<---	ES	.868	CFI	.997
ES3	<---	ES	.935	GFI	.990
ES4	<---	ES	.944	RMSEA	.053
ES5	<---	ES	.838	AVE	0.689
ES6	<---	ES	.750	MSV	0.283
ES7	<---	ES	.658		

As shown in Table 4.38; ES4 and ES3, have factor loadings of 0.944 and 0.935 respectively; this indicates that these two independent variables are the best indicators

of Environmental Sustainability. The model fit indices illustrated that the model was a good fit. All other model fit indices were at acceptable levels that represented a good fit for Environmental Sustainability.

4.8.2 First Order Model

The fitness of the model was tested using the measurement and structural model test. Confirmatory factor analysis (CFA) was carried out with the intention to assert a more meticulous elucidation of Green Banking Practices. To estimate the goodness-of-fit of the model a number of measures of indices are employed as suggested numerous eminent researchers like Hair et al. (1998). All item parcels loaded significantly onto their respective factors. All measures accomplish the minimum suggested benchmark value requirements (refer to Table no. 4.39). Consequently, CFA model can be understood to be a good fit model.
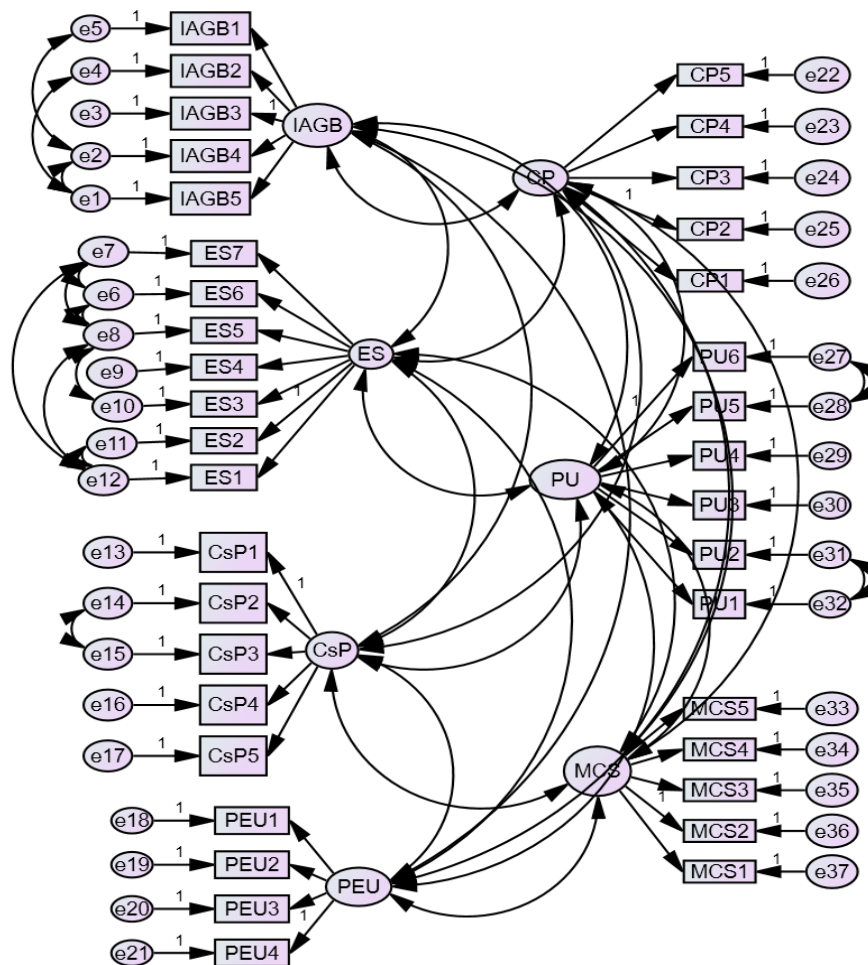
Figure 4.8: First Order Model

Table 4.39: Model Fit Indices

	CFI	GFI	RMSEA	CMIN/df
First Order Model	.998	.996	.055	2.289

The value of GFI in First Order model as shown in Figure 4.8, was above 0.90, the required cut-off criterion. The CFI was also above the accepted guideline of 0.90. Additionally, the RMSEA was below the 0.08 guideline of acceptability (as depicted in Table 4.39). Therefore, the model was determined to be acceptable enough to proceed with further analysis.

4.9 Evaluation of Structural Model and Hypothesis Testing

In this research work, the researcher has used a two-step method in analyzing the research model via SEM. Initially, measurement model estimation (via CFA) was performed by investigating the unidimensionality, reliability, and validity of all the latent variables. Henceforth, Kline (2005) and Hair (2006) suggested to test the postulated association amongst all the latent variables in the proposed model via the structural model. The hypothesized model, i.e. structural model showed the associations between the latent variables. According to Byrne (2001), it aimed at hypothesizing which variables directly or indirectly impact the values of other variables in the proposed model for research.

The structural model was verified by using the Path analysis. It was initiated by constructing a path diagram on the AMOS screen graphical program. As discussed earlier, the observed variables (multiple items are summed and averaged into scales to measure variables) were connected to other variables, representing the hypothesized linkage in the conceptual model on the AMOS screen. The observed variables were drawn in rectangles and the resulting path model is drawn on AMOS screen (Figure 4.9). Model – fitting analysis was then computed to determine the path coefficients. Two dependent variables in the path analysis model "(i.e. Intention to adopt Green Banking Practices and Environmental Sustainability)" were being explained by five independent constructs "(i.e. Perceived Ease of Use, Perceived Usefulness, Customer Pressure, Competitor Pressure, and Management Commitment and Support)". The variables being explained in the model are called as endogenous variables.

Path coefficients were the standardized regression coefficients (Beta weights), derived from the analysis. In Figure 4.9, the error terms designated by the circles e1 and e2 represented other influences which may affect the endogenous variables besides those specified in the model. In Figure 4.9, the error terms already have been assigned values of 1, as the unstandardized path coefficients in order to provide it with a scale of measurement.

After conducting the path analysis, the researcher examined the selected overall fit measures as discussed in the preceding section how the path model (as Shown in Figure 4.9). fits the data. Analysis of a path model yielded a reasonable model fit to the collected data and it is depicted in Table 4.40.

Table 4.40: Path-Analysis Model Fit Indices

CFI	GFI	RMSEA	CMIN/df
.982	.993	0.041	2.762
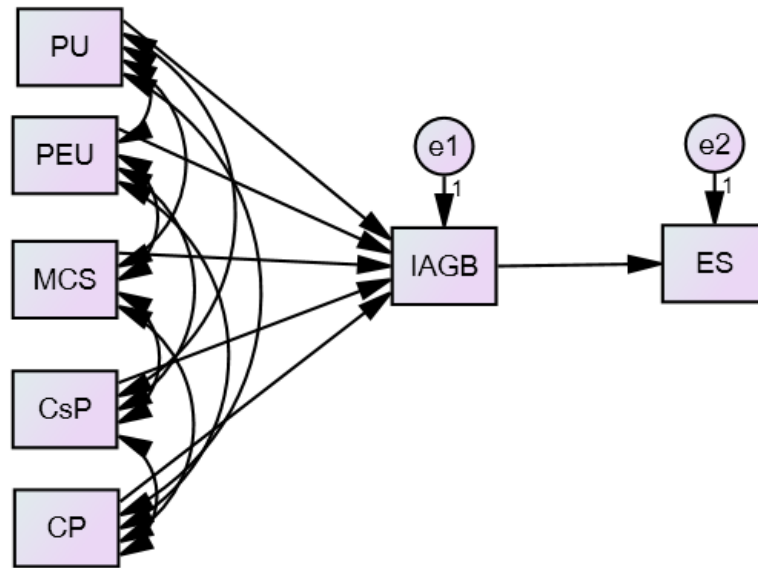
Figure 4.9: Path-Analysis Model

The value of GFI was above 0.90, the required cut-off criterion. The CFI was also above the accepted guideline of 0.90. Additionally, the RMSEA was below the 0.08 guideline of acceptability. Therefore, the model was determined to be acceptable enough to proceed with further analysis.

4.9.1 Summary of Hypotheses Testing by doing Path Analysis

The establishment of an identified path model allowed the researcher to test the hypothesized relationship between the factors as outlined in the proposed research model.

H1 stated that Perceived Usefulness possessed a positive relationship with Behavioral Intention to adopt Green Banking Practices. As indicated in estimates of path analysis in Table 4.41, the effect of Perceived Usefulness on Intention to adopt Green Banking Practices is in the hypothesized direction, and it was statistically significant (Standardized Beta = 0.114; p <0.05). Accordingly, **this hypothesis was supported**.

Table 4.41: Estimates of Path Analysis

Path			Path Analysis		
			Beta	**p-Value**	
IAGB	<---	PU	0.114	**0.010**	Significant
IAGB	<---	PEU	-0.060	0.116	Not Significant
IAGB	<---	MCS	0.085	**0.024**	Significant
IAGB	<---	CP	-0.101	0.117	Not Significant
IAGB	<---	CsP	0.739	**0.001**	Significant
ES	<---	IAGB	0.554	**0.001**	Significant

H2 stated that PEU possessed a positive relationship with consumer Behavioral Intention to adopt Green Banking Practices. As indicated in estimates of path analysis in Table 4.41, the impact of Perceived Ease of Use on Intention to adopt Green Banking Practices is not in the hypothesized direction, and it was not statistically significant (Standardized Beta = -0.060; p >0.05). Accordingly, **this hypothesis was not supported**.

H3 stated that MCS possessed a positive relationship with Behavioral Intention to adopt Green Banking Practices. As indicated in estimates of path analysis in Table 4.41, the effect of Management Commitment and Support on Intention to adopt Green Banking Practices is in the hypothesized direction, and it was statistically significant (Standardized Beta = 0.085; p <0.05). Accordingly, **this hypothesis was supported**.

H4 stated that CP possessed a positive relationship with Behavioral Intention to adopt Green Banking Practices. As indicated in estimates of path analysis in Table 4.41, the effect of Competitor Pressure on Intention to adopt Green Banking Practices is not in the hypothesized direction, and it was not statistically significant (Standardized Beta = -0.101; $p > 0.05$). Accordingly, **this hypothesis was not supported**.

H5 stated that CsP possessed a positive relationship with Behavioral Intention to adopt Green Banking Practices. As indicated in estimates of path analysis in Table 4.41, the effect of Customer Pressure on Intention to adopt Green Banking Practices is in the hypothesized direction, and it was statistically significant (Standardized Beta = 0.739; $p < 0.05$). Accordingly, **this hypothesis was supported**.

H6 stated that Intention to Adopt Green Banking possessed a positive relationship with Environmental Sustainability. As indicated in estimates of path analysis in Table 4.41, the effect of Intention to adopt Green Banking Practices on Environmental Sustainability is in the hypothesized direction, and it was statistically significant (Standardized Beta = 0.554; $p < 0.05$). Accordingly, **this hypothesis was supported**.

Overall, out of H1, H2, H3, H4, H5, H6, only 4 (H1, H3, H5, H6) are confirmed by the data.

H1: Perceived Usefulness has a positive relationship with Intention to adopt Green Banking Practices. This Hypothesis is **accepted.**

H2: Perceived Ease of Use has a positive relationship with Intention to adopt Green Banking Practices. This Hypothesis is **not accepted.**

H3: Management Commitment and Support has a positive relationship with Intention to adopt Green Banking Practices. This Hypothesis is **accepted.**

H4: Competitors Pressure has a positive relationship with Intention to adopt Green Banking Practices. This Hypothesis is **not accepted.**

H5: Customers Pressure has a positive relationship with Intention to adopt Green Banking Practices. This Hypothesis is **accepted.**

H6: Intention to adopt Green Banking Practices has a positive relationship with Environmental Sustainability. This Hypothesis is **accepted.**

This section covered the data analysis, the next section will discuss the findings, research implications, limitations, suggestions, and recommendations.

CHAPTER 5

INTERPRETATION OF FINDINGS, CONCLUSIONS, LIMITATIONS AND SUGGESTIONS

In view of the outcome of this research work, a detailed discussion of the theoretical and practical implication is represented in this chapter. Additionally, the researcher has also given some recommendations that can be adopted by the banks. In this chapter, suggestions from research work, its delimitations and further scope of research is also discussed.

5.1 Interpretation of Findings of Main Variables of Study

For finalizing the scale of different variables, Factor analysis was used which is a technique of data reduction. From the analysis, 7 factors were finally extracted regarding Green Banking, these are: "Management Commitment and Support, Customer Pressure, Competitors Pressure, Perceived Ease of Use, Perceived Usefulness, Intention to adopt Green Banking Practices and Environmental Sustainability". It has been found the percentage of variance explained by factor one to seven is 11.370 for Perceived Usefulness, 7.159 for Perceived Ease of Use, 10.830 for Management Commitment and Support, 8.468 Customer Pressure, 10.062 for Competitors Pressure, 10.680 for Intention to adopt Green Banking Practices, 14.520 for Environmental Sustainability. The empirical analysis of the data has validated several major findings as per the objectives. The key objectives of this study are, to classify those factors which affect the adoption of green banking practices in Indian Banking sector, and to study the relationship between factors to adopt green banking practices and Environmental Sustainability, and to analyze the suggested model. The details of the findings of the research work are discussed below.

5.1.1 Perceived Usefulness

The initial hypothesis formulated for this study was: "H1: **Perceived Usefulness (DV) has a positive relationship with Intention to adopt of Green Banking Practices (IDV)."** This hypothesis is **Accepted.**

The results of the study indicate that Perceived Usefulness (PU) has a positive influence on users Intention to adopt Green Banking Practices (IAGB). By adopting green banking, banks can provide better customer service, although, they may face fewer difficulties in transition process as few customers are reluctant to adopt new technologies. It will also help banks to insure more environmental and social responsibility in the financial sector by ethical investments and loans. This suggests that green banking has a notable benefit on individual and organizational-level performance. So, this finding shows that Perceived Usefulness is a significant variable to influence the intention of employees to adopt green banking practices. This outcome is in harmony with prior studies like Al-Samadi, (2012); Aboelmaged and Gebba (2013).

5.1.2 Perceived Ease of Use

Second hypothesis, i.e. **"H2: Perceived Ease of Use (DV) has a positive relationship with Intention to adopt of Green Banking Practices (IDV)."** This hypothesis is **not Accepted.**

The results of this study indicate that Perceived Ease of Use (PEOU) has negative influence on Intention to adopt Green Banking Practices (IAGB). This suggests that the adopters confront with difficulties to adopt it in full swing because the technology and the procedure required to launch and operate service under green banking is not user friendly, therefore both the service providers and customers face problems as they do not know how to access in it and use it effectively and efficiently. Thus, to ensure effective use of it, Central Bank requires enough time and expertise to provide green banking guideline to the bank executives and employees. Bank may not be interested to spend more time and money to hire, train their existing employees, whereas, they are already profitable in the existing operations. Those might be the reasons to come up with negative impact. This finding confirms prior research that Perceived Ease of Use has no noteworthy influence such as (Aboelmaged and Gebba 2013; Khanifar et al. 2012).

5.1.3 Management Commitment and Support

Third Hypothesis, i.e. **"H3: Management Commitment and Support (DV) has a positive relationship with Intention to adopt of Green Banking Practices (IDV)."** This hypothesis is **Accepted.**

The results of this study indicate that Management commitment and support has positive influence on intension to adopt green banking (IAGB). It means that top management of bank is able to realize the relevance of green banking to introduce new products and services to the customers that will help them to motivate, engage, and increase enthusiasm towards the adoption and acceptance of green banking. Prior studies have also suggested that Management Commitment and Support (MCS) is an important variable which affect intention to adopt and accept green banking (IAGB) like Ifinedo (2011); Ramdani et al. (2009); Chatterjee et al. (2002).

5.1.4 Competitors Pressure

Fourth Hypothesis, i.e. **"H4: Competitors Pressure (DV) has a positive relationship with Intention to adopt Green Banking Practices (IDV)."** This hypothesis is **not Accepted.**

The results of this study indicate that Competitors pressure has negative influence on intension to adopt green banking (IAGB). Green banking is at premature stage in India. Through in-depth literature review, it has been found that most of the banks have not adopted green banking practices in India. For this reason, competitors pressure has not been taken into consideration as it does not have any impact on their reputation and performance. The banks that have presently launched few green banking practices think that they are innovators or leaders in the banking industry and hence they do not focus on competitive advantage of adopting more of such practices. They focus on other factors which are significant to perceive performance. Prior studies on green banking by Martin (2012) support these findings.

5.1.5 Customer Pressure

Fifth hypothesis, i.e. **"H5: Customers Pressure (DV) has a positive relationship with Intention to adopt of Green Banking Practices (IDV)."** This hypothesis is **Accepted.**

The results of this study indicate that customers pressure has positive influence on intension to adopt green banking (IAGB). It tells that customers are pressuring the bank to adopt green banking in India. It also advocates the notion that external pressures such as customers are generally accelerating the overall rates of adoption (Looi, 2005). Customers pressure leads to creation of more advanced products and services in banking industry which will lead to sustainability in their performance. So, this finding shows that customers' pressure is a significant predictor of adoption of green banking in banking industry. Some of the studies were conducted in the past, which are consistent with this finding such as Ifineo (2011), Pavlou and Sawy (2006) and Riemenschneider et al. (2003).

5.1.6 Intention to Adoption Green Banking Practices and Environmental Sustainability

Sixth hypothesis, i.e. **"H6: Intention to adopt Green Banking Practices has a positive relationship with Environmental Sustainability."** This hypothesis is **Accepted**.

The results of this study indicate that Intention to adopt Green Banking Practices (IAGB) has positive influence on Environmental Sustainability (ES). It tells that the rising adoption of green practices in various banks is associated with the strategic roles played by the financial institutions in the economy of a country and their ability and capability to promote Environmental Sustainability via their own deeds. Now a day, Banks need to utilize principles of sustainability to their business model, like formulation of sustainable products and services, use of paperless banking in their operations and defining minimum environmental standards for their investment and financing activities which in turn leads to attaining environmental benefits for the economy. So, this finding shows that Intention to adopt Green Banking Practices is an important predictor of Environmental Sustainability in Indian banking industry. Some

of the studies were conducted in the past, which are consistence with this finding such as Tara, Singh and Kumar (2015); Sreesha (2014) and Riemenschneider et al. (2003).

5.2 Conclusions

1. In this empirical research work, the researcher has provided useful insights into the green practices adopted by banking sector in the background of a developing economy like India where environmental concern is on rise.

2. Using confirmatory factor analysis, the study confirms five major factors i.e. "a) Management commitment and support, b) Competitors pressure, c) Customers pressure, d) Perceived Usefulness, e) Perceived Ease of Use", important for adoption of green practices by banking sector in India and it also establishes the structural relationship between these factors and environmental sustainability of banking sector in India.

3. The insights from the study, can indeed be used to formulate marketing strategies especially for green products and services in Indian banking sector. It would ultimately give rise to sustainable development and preservation of environment. Green banking helps in the effective outcomes like they could get a first mover advantage, banks can also develop a competitive edge by creating a brand image as an environment conscious body.

4. In view of the optimistic response of banking sector towards adoption of green practices, the research work suggests implication for the marketers and policy makers for effective implementation of green programs in future which helps them to get subsidies from the government. This also guide the banks to use modern plant and machineries which generate low carbon dioxide emission, save energy and ensures conservation of water for the better environmental performance.

5. This study also concludes that the main requirement is active participation and commitment of the top management and owners. They should be convinced of the benefits of green banking practices and should exhibit their enthusiasm and support for successful implementation of green programs.

6. 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.

7. After this research, it was clear that the pro activeness of the commercial banks in acceptance and adoption of various initiatives towards green banking is very sluggish and this has become the need of hour to adopt such practices, which is leading to sustainable and ethical banking for optimistic results, environmentally, financially and socially as well. If Indian banks wants to enter deeply into the western markets, then the banks have to understand their duties and responsibilities as global corporate citizen. In this respect, RBI plays a very important role in giving a confirmative direction to the banks in this direction. Better and innovative service channels, more ecofriendly banking products, customer education, paperless banking should be promoted so as to gain maximum benefit and to minimize the damage to the environment.

8. Finally, customers, lenders, investors, and employees of the banks need to intensify the efforts to minimize the negative effects of conventional way of banking operations in the context of green banking assuming even more importance and relevance in developing countries like India. 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.

5.3 Limitations

This research work was carried out to find out the variables that influence the intention of banks to adopt green banking practices and its impact on Environmental Sustainability. Despite best of efforts to minimize all limitations that might creep in course of the research, there were certain constraints within which the research was completed. These are discussed below:

- Notwithstanding its wide-ranging coverage, the current research work may be criticized because it misses an in-depth analysis of the type the psychologists or anthropologists has often conducted. This research work has not analyzed by using any econometric test or psychometric test. This research work is totally based on the practices followed in the banks and, it has been observed from the marketing point of view only.

- Sustainability has three aspects: social, economic and environment. In this study, the researcher has studied only environment dimension in relation to adoption of green practices in Indian banking sector.

- In this study, the researcher has only taken few factors affecting adoption of green banking practices i.e. management commitment and support, customer's pressure, competitors pressure, and Intention to adopt Green Banking Practices. There are other factors which impact the adoption of green banking practices, like, regulatory pressure, earnings, size, age, etc. are not considered.

- The research was purely based on primary data as well as secondary data. The primary data for this study was collected from the samples based in NCR only. While researcher has tried to make sure that the sample is a true depiction of the population, the generalization of the findings of the research work is restricted as defined by the size of the sample, which comprised of 432 respondents carefully chosen from various areas of NCR.

5.4 Suggestions

Green banks can accelerate the growth of the sustainable energy market by maximum utilization of public funds. They can offer solutions to overcome the investment and financing barriers for new projects and promotes the development of low carbon projects. They play a significant role in development of clean energy market. Based on the above findings the following are the suggestions are made by the researcher for the effective implementation of the green banking system in the study area.

5.4.1 To Business Organizations

- Traditional Indian banks offer higher interest rates and shorter payback period which is not suitable for the organizations developing clean energy projects. Banks adopting green banking may offer lower interest rates and longer financial terms to coincide with the repayment period and allow more projects to be built. This allows a wider group of clean energy projects to obtain economic financing that make projects more likely to develop and attract more investors, including the management of international sources of capital to local projects.

- Traditional Indian bankers perceive investments in clean energy as a high risk because of their ignorance of clean energy technologies. These high risks involve greater cost financing. Green banks can offer products, like, partial credit guarantees, insurance, or risk losing reserves that reduce the risk and thus the cost of capital.

- International investment and new private financial investors for sustainable projects in India are critical sources of unused capital to stimulate the implementation of renewable energy in India. At present, national (both public and private) investments have more than twice as compare to international investment in low-carbon or climate-resistance projects. Green banks can lend their name, capital, and credibility to sustainable projects that attract private agents to invest in them. In addition, a green bank may issue green bonds, allowing access to scalable, long-term and low-cost institutional capital debt. Following the example of the so-called "masala" bonds, green banks can help to attract and lead international private investors to invest in clean energy projects that are currently missing.

- Smaller projects, such as, solar systems in buildings and installation of solar panels or microgrids in rural villages have the potential in India. It is currently estimated that micro-enterprises provide electricity to at least 125,000 households throughout India. Green banks can finance or invest in these projects and have the capacity to supply electricity to a previously un-occupied population or reduce stress on a network already exhausted. In addition, projects may increase work during night time, as well as replace the use of oil or other harmful fuels.

- 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. Industries that are funded by banks must have purification facilities, recycling facilities and smoke and gas stopping units. Industries should not discharge any effluent, chemicals or smoke into the environment. Banks should also take the various initiatives of organizing seminars and conferences related to Environmental Sustainability. They can also organize

awareness campaigns in business schools, shopping centers or in community centers.

- India has many problems with proper waste management, sanitation and, drainage and is affected by river pollution, pesticide water pollution, and so on. Each bank can take initiative to start a specific environmentally sustainable project for the disposal of existing pollutants in the ecosystem. Conservation of the environment and the safeguarding the ecological balance must be supported via the joint efforts of multi-stakeholder. The main stakeholders are entrepreneurs, professionals and consumers, NGOs and government institutions. As the banking industry deals with public money, they must be more sensitive in maintaining the ecological balance.

- Banks generally do not take much initiative in marketing and promoting their products and services through advertising. Green bank is a relatively new concept and a large part of financial institution clients still do not know it. To create rapid customer awareness, banks should move away from their traditional method. They can increase their marketing activities and promotion through printed media and other advertising platforms.

- Banks 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. The banker may have to carry out various programs, such as, the customer's day, customers meet etc. in which, they interact directly with their customers and educate them on their new products and services.

- India has set ambitious energy goals for itself, including 175 GW of renewable energy by 2022. Local developers cannot rely solely on national funding or international development banks to finance and build solar and wind power projects necessary to achieve these clean energy goals. The capacity of green banks to attract international investment and to finance small projects at lower costs for developers makes it a key tool to quickly scale the domestic market.

- The goal of reducing India's emission intensity from 33 to 35 percent of 2005 levels by 2030, as part of UN climate change commitments in December 2015,

requires serious investment in sustainable energies and energy efficiency projects. As one of the most exposed to climate change impacts, positioning itself as a market leader in clean energy not only reduces carbon emissions and meets these climate commitments but also helps India to develop its low carbon economy.

- Research on sustainable Indian markets shows that instruments such as, infrastructure debt funds, government bonds, partial risk guarantees, partial credit guarantees and currency hedging, could solve the underlying constraints of Indian debt markets. Customized with finance professionals and capitalized with low-cost funds, an Indian Green Bank would be a link to the development and distribution of these products. Green banks will serve as a bridge between government ministries and private markets to ensure market responsiveness to serve the public interest.

- Since banks are struggling to reduce energy consumption, an easy solution could be the use of low-energy lighting fixtures. Although banks have very limited use of energy-efficient light bulbs, but for greater efficiency, solar energy could be used.

- Banks should design the environmental system to assess the risk before investing in several projects that could be an "Environmental Audit Management (EAM), Environmental Impact Assessment (EIA), Annual Information System (ARS)" etc.

- Financial institutions are generally not exposed to climatic stress and are not reliant on fossil fuels in their day to day operations. Therefore, the important issues for the banks will be to evaluate the effect of climate change on the financial portfolio and also on the type and quality of the loan. It is of utmost imperative for the banks to adopt the environmental standards for providing loans and also follow the financing principles, so that borrowers can reduce the carbon footprint by using appropriate technologies.

- Management Commitment and Support is an important factor which is needed to encourage and motivate the employees to introduce new products and services to adopt green banking practices. It is imperative that the new recruits get idea about

green banking concept and the organizations endeavor in implementing it. Management of the banks must include sessions on green banking during orientation programs of the new employees.

- This study has also discovered a positive association between adoption of green banking practices and Environmental Sustainability. So, drafting of any policy is not enough to go green for any financial institution. The management has to be serious enough to implement the policy rigorously. And for that, all the employees need to be encouraged and trained.

- The findings show that Customer Pressure is an important factor to adopt green banking practices. As green banking is a new concept, so to create awareness among customers, mangers of the banks can organize some awareness programmes to promote the sustainable practices they have adopted. They can also highlight their activities through print media or other advertisement programmes.

- 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. To support the development and expansion of the economy of India, all the financial institutions and banks have to work really hard, as they play a vital role in sustaining the Environmental Sustainability of their country's economy. But green banks are still in starting mode in India. Now is the time for India to take rigorous measures to motivate financial institutions and banks for adopting the green banking system, so that it can contribute towards the protection of the environment in the present and future.

5.4.2 To the Government

- RBI should come out with some productive and constructive policy suggestions to assist and facilitate the progression from the current traditional business models towards more comprehensive and sustainable business practices to attain the objective of economic development in more sustainable manner and will decarbonize the economy.

- Government of India can also play a proactive role with a special role assigned to ministry of finance in enhancing the speed of reforms to combat the issues of climate change and decarbonize the economy.

- Government should upgrade the circumstances of the environmental market to offer more incentives to the commercial banks to involve more in financing of environment related projects. Examples of some specific measures include, like, preference from the governmental in terms of fiscal supports, such as, fiscal subsidies, tax credits, environmental funds, and policy of bank on providing credit with comparatively lower rate of interest etc.

- Branchless banking procedures can be challenging for people who are illiterate or unfamiliar with technology. Making customer aware of how best to use banking services is critical. While this is the responsibility of bank, RBI and government who can create the appropriate climate through a well-planned media campaign.

- Banks need to adopt a strategic plan for long-term and short-term ecological activities. The government, in association with RBI, should define a comprehensive guide to the Green Bank for environmental protection, safeguarding biodiversity. The Reserve Bank of India plays a more important role in defining a concrete guide to green banking practices and every bank and financial institution must follow the same.

- From the model depicted, based on the survey, the researcher has noticed that even though the Perceived Usefulness has positive impact, but Perceived Ease to Use has adverse influence on intention of banks to adopt green banking practices. Consequently, to facilitate greater acceptance of green banking and related services in the region, the central bank should provide training and mentoring to the bank executives and employees to make them realize the ease of operating banking activities under green banking.

5.4.3 To Researchers

- From an academic perspective, the current research provides some steps towards the adoption of green banking practices, which have not been studied earlier in the existing literature. As previously noted, the literature in this area has been primarily normative in which most researchers have developed

conceptual schema which requires empirical testing, or are based on limited case study analyses.

- This research work should act as a guiding force for the scientists and engineers working in the research and development department of the organization to develop energy efficient, sustainable and environmentally friendly product and services.

- In the present study, the researcher has studied only few banks, the future researcher can select some other banks of study and can suggest some more options for better implementation of Green Banking Practices.

- This study should also provide insight to the researchers having special interest in the banking sector and the environmental sustainability. An integrated, less polluted, IT enabled banking sector can be thought of to make Green Banking industry a reality.

- Promotion of Green Banking Practices, i.e., Green Products and Services, Green Processes, Green Strategies and Green Infrastructure are some of the areas where more contribution can be made.

- Academicians in the field of management and engineering, economics and law to come together and suggest an integrated model for environment that can be applied for this great nation-India and use this piece of research as a small link of a big chain which needs to be developed fast.

5.5 Future Scope of Research

The following are the related areas which have been identified by the researcher for the scope for further research in the present study.

- As there is still confusion and compromise on the integration of environmental issues into bank policies, further research should be conducted to determine the association between the bank's financial performance and its relationship with the environmental performance.

- Further research can be conducted on to measure the potential of the green market, which might provide the management of the bank with a prospective

resource of business, and also to provide them with an estimated amount of money that is not been realized.

- A comparative study of green banking system among Indian banks can be conducted to get an insight of green practices followed by the banks.

- In addition, it will be of interest to the future researchers to explore and validate the model developed for this study in other cultural settings, like other Asian or Western developing or developed countries. This will be valuable in providing evidence concerning the robustness of research model across different cultural settings. It is understood that the robustness of the model may vary across different cultural settings and thus need to be empirically tested (Mao and Palvia, 2006).

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1. Nath V, Nayak N and Goel A. Green Banking Practices – A Review. Impact: International Journal of Research in Business Management, 2014; 2(4): 45-62.

2. Nath V, Goel A. and Goel N. Development of Model on Adoption of Green Banking in Indian Banking Sector. Impact: International Journal of Research in Business Management, 2017.

QUESTIONNAIRE

Dear Respondent,   Respondent ID- _____

This survey is anonymous and is used for the academic research purpose only. No individual will be identified and responses will only be viewed in aggregate.

Directions: Please indicate your level of agreement or disagreement with each of these statements regarding green banking products & services, processes, strategies, infrastructure and its impact on environment in Indian Banks. Place a "√" mark in the box of your answer using the following scale:

(1)   Strongly Disagree (SD)

(2)   Disagree (D)

(3)   Neither Agree nor Disagree (N)

(4)   Agree (A)

(5)   Strongly Agree (SA)

      a. Are you aware of the term "Green Banking"?

- Yes

- No

      b. Do you think it is important for your bank to adopt Green -banking practices?

- Yes

- No

   If Yes, please comment: _

      c. Does your bank have any sustainability benchmarks while evaluating investment/lending opportunities? (Such as assessing any social or environmental risk of the project, use of renewable natural resources, socio-economic impacts, etc.)

- Yes

- No

   If Yes, please specify: _

d. What factors drive the importance of climate change activity in your bank today? (Click all that apply)

Internal Factors

- Improved shareholder value

- Investor pressure, including socially responsible investing

- Board influence

- Economic benefits and profitability

- Cost reductions

- Marketing benefits - reputation and brand

- Employee attraction and retention

- Others (please specify): _

External Factors

- Competitive advantage/business opportunities

- Government benefits/regulatory compliance

- Globalization

- Environmental benefits

- Social and community benefits/responsibility

- Customer demand

- Pressure groups

- Others (please specify): _

e. What challenges and barriers do you face in implementing climate change activity in your bank today? (Click all that apply)

- Lack of management focus

- Lack of awareness about climate change

- Lack of business opportunities

- Lack of Regulatory Benefits/Policy

- Lack of technical know-how

- Cost Implications

- Lack of employee motivation

- Not seen as important in the organization

- Time constraints

- No peer group organizations doing it

- Others (please specify): _

f. Is your bank a member/signatory to any of the protocols/frameworks? (Check all that apply)

- UNEP FI

- The Climate Principles

- Equator Principles

- UN Global Compact

- Carbon Disclosure Project

- Others (please specify): _

- None of the above

- Not Aware

S. No.		SD	D	N	A	SA
PU1.	Using Green Banking would enhance the output and quality of banking.					
PU2.	The adoption of Green Banking would help in increasing my bank's revenues or profits.					
PU3.	The adoption of Green Banking would eventually help in increasing my bank's returns on investments.					
PU4.	The adoption of Green Banking would help us to give services to our customers in a much better way.					
PU5.	Green Banking services enhance the company's image.					
PU6.	Green Banking activities increase our profitability					
PEU1	According to me, learning to use Green Banking services would not be difficult.					
PEU2	I think that interaction with Green Banking services will not require lot of mental efforts.					
PEU3	I think it is easy to use Green Banking services to accomplish my banking tasks.					
PEU4	My interaction with the Green Banking is understandable and clear.					
MCS1	Management is interested in the use of Green Banking services in banking operations.					

S. No.		SD	D	N	A	SA
MCS2	Management is supportive toward Green Banking.					
MCS3	My bank has a clarity regarding the use of Green Banking.					
MCS4	My bank has clear understanding of how Green Banking can be used.					
MCS5	My bank has the necessary managerial and technical skills for implementing Green Banking.					
CP1	Some of our competitors have already started providing Green Banking services.					
CP2	My bank would experience a competitive disadvantage if it will not incorporate Green Banking in the business.					
CP3	The rivalry among the different banks in this sector is very intense.					
CP4	It is very easy for my customers to shift to another bank for similar services without any difficulty.					
CP5	It is easy for my customers are able to easily access the other services in the market which perform the same function but are different from ours.					
CsP1	Banking industry is forcing my bank to adopt Green Banking.					
CsP2	Our customers are pressuring us to adopt Green Banking.					
Csp3	Our suppliers and depositors are pressuring us to adopt Green Banking.					
Csp4	I know that my customers are ready to do business within Green Banking guideline.					
Csp5	My customers are demanding the use of Green Banking practices if my bank wants to do business with them.					
IAGB1	We would use Green Banking services for our banking needs.					
IAGB2	I see myself using Green Banking practices for handling all my banking activities.					
IAGB3	My bank intends to use Green Banking within near future.					
IAGB4	My Bank plans to use Green Banking.					
IAGB5	My Bank is determined to use Green Banking soon.					
ES1	Adoption of green banking practices protect the environment.					
ES2	Adoption of green practices reduce bank's consumption of natural resources.					
ES3	Adoption of green banking helps in waste management and recycling.					
ES4	My bank communicates their environmental practices to its customers.					
ES5	My bank exploits all its renewable energy in a more productive manner which is compatible with its environmental guidelines.					
ES6	My bank conducts its annual environmental audits on regular basis.					
ES7	My bank also participates in various environmental certifications.					

Demographic Profile

Q1) Age
 	
    a) 18-35
    b) 36-50
    c) 51-65
    d) 66 & Above
Q2) Gender
    a) Male
    b) Female
	Q3) Occupation
	
	    a) Intermediate
	    b) Bachelors
	    c) Master's Degree
	    d) Professional Degree
	Q4) Bank Name and Branch Name:

Thank you for participating in this short survey to help us understand the green banking practices of Indian banks to promote sustainable banking.