CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Research Methodology generally consists of methods to enunciate a problem, to formulate hypothesis, to collect data and analyze facts; and thereby reach conclusions in the form of solutions or generalizations (Kothari, 2004). The present chapter discusses the research methodology applied for deriving desired results for the study. This chapter discusses sampling design, data collection procedure, variables adopted to measure the objectives, the statistical techniques applied and hypotheses tested for the objectives. The chapter discusses the methodology for each of the three objectives separately in three different sections to make it easier and distinct to understand.

3.2. Objectives of the Study

In light of the research gaps identified in the Review of Literature chapter, the study's objectives are as follows:

Objective 1: To analyse Green Banking practices and performance of selected Indian banks.

Objective 2: To examine the relationship between Green Banking Performance and corporate characteristics of banks.

Objective 3: To study the perception of selected stakeholders of banks with regard to Green Banking.

3.3. Type of Research

There are different types of researches. Descriptive research is where a researcher reports the current state of situation or a problem. It basically means reporting what is happening and what has happened. In Analytical research, the researcher however, collects information, analyzes them and reaches at critical conclusions (Kothari, 2004). Applied research, also known as Action research, aims at solving a problem that is currently being encountered by the society. Fundamental research is all about development of theories (Kothari, 2004). Quantitative research is mainly about situations which can be expressed in terms of quantity. Qualitative research tries to find perception, and motives of human behavior (Kothari, 2004). Quantitative research includes questionnaires, field and statistical data, interviews, focus groups and observations (Cavana et al., 2001). Conceptual research is used to build up new

concepts. Empirical research focuses on experience and observation. The type of research the current study falls is stated below.

Table 3.1: Objective and Type of Research

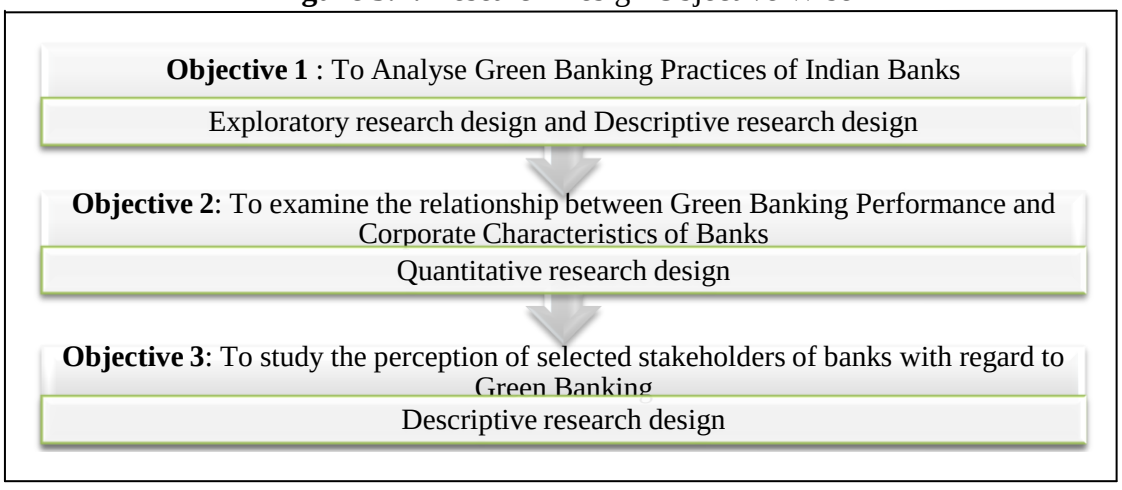
Objectives	Type of Research
1	Analytical, Descriptive, Quantitative, Empirical, Fundamental
2	Analytical, Quantitative, Empirical, Applied
3	Analytical, Quantitative, Empirical

Source: Compiled by researcher

3.4. Research Design

Research Design includes an outline for data collection, hypothesis formulation, and analysis of data (Kothari, 2004). Research design is important to make the research efficient and effective with minimal expenditure resources. Four kinds of research designs exists namely Exploratory, Descriptive, Experimental and Quantitative. Exploratory research design involves discovery of ideas and insights. It is used when the research problem is yet to be explored and framed. Descriptive research is about discussing the features of an individual/ group/ situation. Experimental research studies, also known as Hypothesis-testing research studies are used to find causal relationships between variables. In quantitative research, numerical data are gathered and examined. It is perfect for seeing patterns and averages, formulating hypotheses, vetting connections, and extrapolating findings for huge populations. Additionally, the results of the quantitative analysis are simple to depict using statistics, graphs, charts, and numbers (QuestionPro Survey Software, 2023). The research design used in the current study for the three objectives is diagrammatically represented below.

Figure 3.1: Research Design Objective Wise



Source: Compiled by the researcher

The detailed methodology for the three objectives is stated below.

3.5. Methodology for Objective 1

The first objective is to analyse Green Banking practices and performance of selected Indian banks. Methodology used for the first objective is divided into two parts, namely Sampling Details; and Data Collection and Data Analysis.

3.5.1 Sampling Details

The sampling detail for the first objective is studied under three sub-sections, namely sampling design, sampling technique and sample size.

3.5.1.1 Sampling Design

- *Population*: Population means the entire objects in a domain of research (Kothari, 2004). Population of a study can be finite or infinite based on the number of items. Finite population is where the number of items is certain and infinite population is where the number of items is not certain.

  Scheduled banks which are a part of the 2nd Schedule of the RBI Act, 1934 are of two types, namely Scheduled Commercial Banks and Scheduled Co-operative Banks (Reserve Bank of India, 2012). Scheduled Commercial Banks are divided into five categories, namely State Bank of India and its Associates, Nationalized Banks, Private Sector Banks, Foreign Banks, and Regional Rural Banks (Reserve Bank of India, 2012). The target population for Objective 1 is the Scheduled Commercial Banks, whose annual reports are available online from 2009-10 to 2018-19. It is a finite population, as the number of scheduled commercial banks in India is fixed. Foreign banks are excluded from the scope of this study.

- *Sampling Element and Sampling Unit*: The basic unit of the population from which the information is drawn is called the element of the population. In this study, elements are the Indian Private and Public Sector Banks. A sampling unit may be a state, village, home or an

individual. In the present study, the sampling unit is same as the sampling elements.

- *Geographical Extent***:** Objective 1 includes the Indian Commercial Bank under study, so India as a whole is the extent of the study.

- *Time Period for Study:* For objective 1, the longitudinal study approach is used. Longitudinal studies are those studies which are studied for over a period of time. The time frame for objective 1 is a 10 year span beginning in 2009-2010 to 2018-2019. The period is purposefully chosen considering the Securities and Exchange Board of India's (SEBI) guideline on Business Responsibility Report. It was in the year 2012 that SEBI came up with the Business Responsibility Report Guideline. The banks for the first time started reporting on their Green activities (though the regulation was voluntary). For 3 years, that is from 2009-10 to 2011-2012 there was no regulation, (not even voluntary) for the corporations of India towards sustainability. For the next 3 years, from 2012-2013 to 2014-2015, SEBI made the reporting of BRR mandatory for 100 corporations in India, based on market capitalization. Again, from 2015-2016 onwards, the regulation was made mandatory for the top 500 companies in India.

3.5.1.2 Sampling Technique

Out of two sampling techniques (Probability and another is Non-probability sampling), Non-Probability Sampling is used. Non-Probability Sampling is also commonly referred as Judgement Sampling and Purposive Sampling. It is a sampling procedure where the researcher uses his own judgement and deliberately selects the items under study. In this sampling procedure, the choice of the researcher concerning the items remains supreme (Kothari, 2004).

The sampling technique used in this study is Non-Probability Sampling Technique/ Judgemental Sampling Technique or Purposive Sampling Technique. Any bank satisfying all the below mentioned criteria forms the sample of the study. The criteria are:

- Any entity that comes under the definition of ‘"banking company" defined as “any company which transacts the business of banking [in India]; under Reserve Bank of India’’ (RBI).
- Banks which are Scheduled Commercial Banks.
- Banks which have been registered before 31st March, 2009.
- Availability of annual reports online since 2009-2010 to 2018-2019.

Considering the above criteria, certain banks are excluded from the sample, which are:

- Regional Rural Banks are not taken into consideration as annual reports from 2009-2010 is not accessible to the researcher.
- Foreign banks are excluded from the scope of this study. Also, Foreign banks operating in India reports only their financial data separately with reference to India. Full annual reports are required in this study as content analysis of the reports is done to identify Green Banking activities. Scrutinizing the annual reports of Foreign banks would not give us the required inputs as the data would not be India specific.
- Two Private Sector Banks are excluded from the sample, which are Bandhan Bank and IDFC Bank. Bandhan Bank came into existence on 23rd December, 2014 (Bandhan Bank). The IDFC Bank came into existence on 21st October, 2014 (Economic Times , 2020). According to the sampling criteria decided for the study, these banks are not registered within the time period mentioned, and hence the do not form a part of the sample. The banks that form the sample of the study are tabulated below.

Table 3.2: Banks under Sample

Public Sector Banks	Private Sector Banks
1. State Bank of India	1. Axis Bank Ltd.
2. Allahabad Bank	2. Catholic Syrian Bank Ltd
3. Andhra Bank	3. City Union Bank Ltd.
4. Bank of Baroda	4. DCB Bank Ltd
5. Bank of India	5. Dhanlaxmi Bank Ltd
6. Bank of Maharashtra	6. Federal Bank Ltd
7. Canara Bank	7. HDFC Bank Ltd
8. Central Bank of India	8. ICICI Bank Ltd
9. Corporation Bank	9. IndusInd Bank Ltd
10. Dena Bank	10. Jammu & Kashmir Bank Ltd.

11. Indian Bank	11. Karnataka Bank Ltd
12. Indian Overseas Bank	12. KarurVysya Bank Ltd
13. Oriental Bank of Commerce	13. Kotak Mahindra Bank Ltd
14. Punjab National Bank (PNB)	14. Lakshmi Vilas Bank Limited
15. Punjab & Sind Bank	15. Nainital Bank Limited
16. Syndicate Bank	16. RBL Bank Ltd
17. Union Bank	17. South Indian Bank Limited
18. United Bank of India	18. Tamilnad Mercentile Bank Limited
19. UCO Bank	19. YES Bank Limited
20. Vijaya Bank	Total Number of banks = 40
21. IDBI Bank Limited	

Source: Compiled by the researcher

3.5.1.3 Sample Size

Determining sample size is an important part in a research, for the sample must form an optimum part of the population. For Objective 1, sample size is determined based on two criteria, namely past literatures; sampling criteria and sample representation of population.

Sample sizes of past literatures are studied to find a range of appropriate sample size for objective 1. A brief description of the past literatures considered for objective 1 is stated below:

Table 3.3: Literatures about Banking Disclosure

Thesis/ Paper	Author (Year)	Sample Size
Thesis	Bidari (2016)	82
	Nahar (2015)	30
	Sheikh (2014)	43
	Hawashe (2014)	9
	Prashant (2013)	27
	Kainth & Agnihotri (2012)	10
Research Papers	Julia & Kassim (2019)	10
	Saminaa & Hossain (2019)	28
	Bose et al., (2018)	205
	Sharmeen et al., (2018)	40
	Rahman & Barua (2016)	42
	Bimha & Nhamo (2016)	68
	Hossain et al., (2016)	10
	Hossain & Kalince (2014)	45
	Yusoff et al., (2013)	6
	Kumar et al., (2018)	10
	Yadav (2016)	7
	Vilar & Simao (2015)	10
	Hawashe (2015)	9

	Sethi (2013)	79
	Islam & Ahmed (2012)	30
	Bhasin et al., (2012)	23
	Masud & Hossain (2012)	10
	Sobhani et al., (2011)	2
	Menassa (2010)	24
	Evangelinos (2009)	3
	Hossain (2008)	38
	Hossain & Reaz (2007)	38

Source: Compiled by the researcher

The average sample size of past literatures is 33.5, rounding off brings the sample size to 34. Secondly, based on the sampling criteria used in the study and availability of information, total banks that falls under the sample is 40.

Table 3.4: Sample Banks

Banks	Number
Public Banks	21
Private Banks	19
Total	40

Source: Compiled by the researcher

The sample representation is checked here to see the adequacy of sample in comparison to the population. Sample representation of the population is an adequate measure for sample size determination. Sample representation is decided by proportion of sample banks to total banks. Considering the sampling criteria used in this study, only scheduled commercial banks (SCB) registered before 31st march, 2009, whose annual reports are available online from 2009-10 to 2018-19 are considered in this (foreign banks are excluded from the study). Following the sampling criterion, sample bank representation is calculated below:

- Total Scheduled Commercial banks (SCB) = Public Sector banks+ Private Sector Banks+ Small Finance Banks+ Payment Banks+ Regional Rural Banks +Foreign Banks
  =21+21+12+4+43+45 =146
- SCB as per Sampling Criteria = Total banks – Registered before 31st March, 2009 – Availability of annual reports online since 2009-10 to 2018-19
  = Total banks – (Bandhan Bank+ IDFC Bank + Small Finance Banks + Payment Banks) – Regional Rural Banks – Foreign Banks

= 146 – (2+12+4) – 43 – 45 =40

Sample Banks= 40

$$\text{Sample Representation} = \frac{\text{Sample Banks}}{\text{Total Banks}} \times 100$$

$$\text{Sample Representation} = \frac{40}{40} \times 100 = 100\%$$

Since 100% of the banks are covered as per sample criteria, thus, it is concluded that number of banks considered for objective 1 can be considered as an appropriate sample size for this study.

3.5.2 Data Collection and Data Analysis

An annual report plays a central role in building an organization's public image. All types of information relating to an organization are published in the annual report. These reports play an important role in informing stakeholders about environmental performance of the organizations (Evangelinos et al., 2009). However, in recent times banks have started reporting their non-financial activities more elaborately in standalone reports like Sustainability Reports, Corporate Governance report, CSR reports etc. A combination of several media for information proves to be a better source for knowing companies' practices (Guthrie & Abeysekera, 2006).

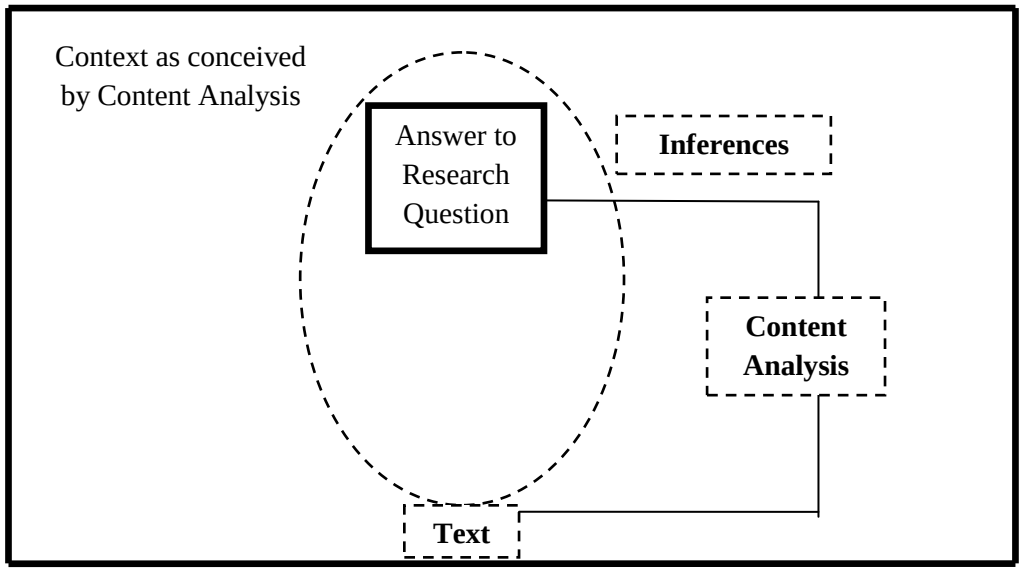
Data for objective 1 is collected from secondary sources. Green Banking information is taken from the annual reports of the banks. Also, any standalone reports found is considered for collecting data on Green Banking activities.

3.5.2.1 Research Instrument

The research instrument used for collecting data is content analysis. Content analysis means classifying data into groups based on chosen selected criteria (Weber, 1990). It is technique for deriving valid inferences from texts (Krippendorff, 2004). This technique is useful when we need to spot trends over a period of time (Berelson, 1952). It consists of observing and analyzing documents; such as annual reports (Kothari, 2004). In fact, for examining an entity's green (environmental) disclosures, the most popular methodology is content analysis (Milne & Adler, 1999). Also, content analysis is the longest established method of text analysis for social investigation (Titscher et al., 2000). One of the key features of content analysis is that, data are not directly found, in

fact the researchers make the data, and they are obligated to say how they made their data (Krippendorff, 2004). The concept of content analysis is illustrated in Figure 3.2.

Figure 3.2: Concept of Content Analysis



Source: *Krippendorff (2004)*

For the purpose of classifying and evaluating texts from the sample banks' annual reports, content analysis was used in this study.

3.5.2.2 Methods Used for Content Analysis

There are two methods for conducting content analysis, mainly Index Method and Volumetric method. Index method checks for the presence of matter (items) in an index whereas the Volumetric Method checks for the volume of information given in a report. Index method is one of the simplest forms of content analysis. For studies based on annual reports, Index method is considered to be more apt (Branco & Rodrigues, 2006). Index method is better than the Volumetric Method in situations where it is important to know the presence or absence of specific information. Vourvachis (2015) found that 60% of the papers reviewed in the study employed an Index method, 28% of the papers used a volumetric measure only; and only 12% employed a combination of the two methods. Index methods are found in majority in ethics and management journals (Vourvachis & Woodward, 2015). In Index Method the keywords are fixed in advance and hence are considered more reliable as it gives the same results in repeated trials (Sudibyo & Basuki, 2016). Considering the advantages of the Index Method, an index is developed and used for identifying the presence or absence of Green Banking activities

in a particular year. The procedure of creation of the index is a lengthy process, which is described in detail below.

Index Creation: For Objective 1, the Index methodology of content analysis is used to spot Green Banking practices and performances of banks. An index is proposed which can be used globally by all banks to measure, evaluate and compare their performance towards Green Banking activities. The development of the index was based on all 24 literatures that discussed Green Banking Performance and were accessible to the researcher, namely in the following 19 sources: Cambridge University Press, EPW, Emerald Journals, JStore, Marry ANN Liebert, Nature Publications, ISID, South Asia Archive, Oxford University Press, Project Muse, IET Journals & Conference, Elsevier Science, Springer, Sage, Wiley-Blackwell, Taylor and Francis, SSRN.Com, Shodhganga and Web of Science. Out of the 24 literatures, 7 are research papers and 17 are reports. The exhaustiveness of the index is thus made sure.

The development of the index in this study based on past literatures proves to be appropriate for several reasons. First, the study considers all possible literatures that were accessible online to the researcher in the domain of Green Banking Performance. Thus, the exhaustiveness of the index is justified. Secondly, the index is purely based upon the literatures and the reports that have measured Green Banking Performance using various techniques and tools. The lack of standardized tool to measure Green Banking Performance has made it necessary to create a tool in this regard. This study thus fills that research gap by developing the index 'Green Banking Performance Evaluation Index' (GBPEI). Also, there should not be any problem in the generalized use of the index as it was based on all literatures accessible to the researcher on Green Banking across various search portals. Since the methodology for the development of the index itself is based upon literatures across different nations, so the outcome (GBPEI) can be generalized to the whole world. Also, many studies have used this methodology wherein they have based their tools for measuring performance in a particular domain by referring to various literatures and report (Yusoff et., 2013; Bimha & Nhamo, 2017).

Construction of the index is done in two phases. The first phase involves extensive review of past literatures and identifying the variables, the sub-dimensions and finally the dimensions. The second phase is fixing of weights and deriving the scores of the index.

a. *Variables, Sub-Dimensions and Dimensions Identification*: All the 24 literatures are thoroughly studied, and sub-dimensions are identified. Sub-dimensions are a broad categorization of the Green Banking activities of a bank (Sarma & Roy, 2021). Dimensions having similar nature are clubbed under one category, and the dimensions are given names based on past literatures. All together 14 sub-dimensions are identified, namely Green Finance and Investments, Accounting of Green Initiatives, Disclosure and Reporting Practices, Green marketing and Green CSR, Capacity Building of Stakeholders, Green Awards and Recognition, Procurement and Internalization, Office for Green Banking, Paperless Mode of Operations, Green Building and Infrastructure, Resource Usage and Measurement, Planning and Policies, Green Supervision and Inspection, and Environmental Risk Management. After the identification of sub-dimensions, the sub-dimensions which are related are clubbed under common categories and named as dimensions. In total all the 14 sub-dimensions are clubbed into 6 dimensions, namely Accounting and Finance, Marketing, Awards, and Capacity Building; Green Human Resource Management; Mode of operations; Planning, Policies, and Supervision; and Risk Management. The next step of index formation was to identify the variables, which can be used to measure the sub-dimensions. Initially, a total of 231 variables were identified, however after cleaning of data, removing overlapping variables, the final index consists of 99 variables. The index is named 'Green Banking Performance Evaluation Index' and is denoted by GBPEI. The literatures from where the variables, sub-dimensions and dimensions are taken are stated in Annexure A.

b. *Scoring of the Index*: The next step involves deciding the weights of the index. Generally there are two approaches in Scoring of an index. One is Weighted Scoring approach and the other is Unweighted / Equal Weighted Scoring approach. The use of Weighted scoring approach has its own limitations, first it involves biasedness. Some items may be weighted higher than others. Verifying the correctness of weights assigned to different items is very complex and cannot be fully relied upon. Secondly, different user groups will give varying weights to different items in the index. A method that attempted to incorporate the varying subjective weights of various user groups proves to be ineffective (Cooke, 1989).

Also, there are some inherent advantages of the Equal Weighted Scoring approach. In Equal Weighted Scoring approach, all items are scored equally. Thus, by assigning equal weights to all the items in the index, it helps to avoid any kind of biasedness (Hawashe, 2015). For example, in development of a concept, there are various items which are going to frame the concept. Each item adds up to the whole of the concept and by assigning different weights to them would mean that different degree of importance is attached to them. This however, may prove to be detrimental for a new concept like Green Banking wherein no previous evidences are found on the degree of importance of various items in the development of the concept. Also, previous studies have confirmed that the use of Equal Weighted Scoring Approach (also known as Unweighted Scoring Approach) and Weighted Scoring Approach does not make much of a difference to the findings (Coombs & Tayib, 1998). The Equal Weighted Scoring Approach is also commonly adopted in past literatures (Ezhilarasi & Kabra, 2017; Nwobu et al., 2017; Hawashe, 2015; Yusoff et al.,2013; Bose et al., 2018; Yadav, 2016; Hossain & Reaz, 2007). Also, under Weighted Scoring approach, different user groups (stakeholders) assign varying weights to different items in the index. However, this study's focus is on all stakeholders of banking community and not just one specific user group (Cooke, 1989). Thus, using Equal Weighted Scoring approach in this study justifies the scoring of the index. Lastly, this study considers all items in the index of equal importance, and thus this leaves scope for improvisation for other researchers. In future, other researchers, if it deems fit to them to adopt Weighted Scoring approach, they may do so and improvise the present Index proposed in this study.

Thus, by looking at the advantages of Equal Weighted Scoring approach and the scope of the study, the scoring approach adopted for the index is Equal Weighted Scoring Approach. The reason behind selecting this method is that it will help us to spot the presence / absence of a particular item in the annual reports, and any other standalone reports of banks. In this approach, if a particular item is detected in a particular year, then a score of 1 is assigned and if not present, then 0 is given.

Scoring of the current index involves three steps, starting with scoring of the sub-dimensions, scoring of the dimensions and finally scoring of the Index. The following formulae are used in scoring of the index is:

$$\text{GBPEX} = \sum_{i=1}^{6} D_i$$

Where, GBPEX= Green Banking Performance Evaluation Index, D_i = Dimension Score, D_1= Score of Dimension 1 (Accounting and Finance), D_2= Score of Dimension 2 (Marketing, Awards and Capacity Building), D_3= Score of Dimension 3 (Green HRM), D_4= Score of Dimension 4 (Mode of Operations), D_5= Score of Dimensions 5 (Planning, Policies, and Supervision), D_6= Score of Dimension 6 (Risk Management)

The formulae for calculating the dimensions scores along with the sub-dimensions under each of the dimensions are defined below:

$$D_1 = \sum_{j=1}^{3} \text{SDj}\,, \quad D_2 = \sum_{j=4}^{6} \text{SDj}\,, \quad D_3 = \sum_{j=7}^{n=8} \text{SDj}\,, \quad D_4 = \sum_{j=9}^{11} \text{SDj}\,, \quad D_5 = \sum_{j=12}^{13} \text{SDj}\,, \quad D_6 = \sum_{j=14}^{14} \text{SDj}$$

Where, D_1= Dimension 1 Score, D_2= Dimension 2 Score… D_6= Dimension 6 Score, SD_j= Sub-Dimensions scores, SD_1 = Green Finance and Investments, SD_2= Accounting of Green Initiatives, SD_3 = Disclosure and Reporting Practices, SD_4 = Green Marketing and Green CSR, SD_5 = Capacity Building of Stakeholders, SD_6 = Green Awards and Recognition, SD_7 = Procurement and Internalization, SD_8 = Office for Green Banking, SD_9 = Paperless Mode of Operations, SD_{10} = Green Building and Infrastructure, SD_{11} = Resource Usage and Measurement, SD_{12} = Planning and Policies, SD_{13} = Green Supervision and Inspection, SD_{14} = Environmental Risk Management.

The formulae for calculating the sub-dimensions scores are described below:

$$SD_1 = \sum_{k=1}^{12} V_k \; SD_2 = \sum_{k=13}^{22} V_k \; SD_3 = \sum_{k=23}^{29} V_k \; SD_4 = \sum_{k=30}^{33} V_k \; SD_5 = \sum_{k=34}^{38} V_k$$

$$SDD_6 = \sum_{k=39}^{42} V_k \quad SD_7 = \sum_{k=43}^{48} V_k \quad SD_8 = \sum_{k=49}^{52} V_k \quad SD_9 = \sum_{k=53}^{63} V_k \quad SD_{10} = \sum_{k=64}^{70} V_k$$

$$SD_{11} = \sum_{k=71}^{78} V_k \quad SD_{12} = \sum_{k=79}^{84} V_k \quad SD_{13} = \sum_{k=85}^{90} V_k \quad SD_{14} = \sum_{k=91}^{99} V_k$$

Where, SD_1= Sub-Dimension 1… SD_{14}= Sub-Dimension 14; V_k=1, if the variable is present, V_k=0, if the variable is not present. The 99 variables

which are used to calculate the sub-dimension scores are shown below. The Green Banking Performance Evaluation Index is presented below:

Table 3.5: Green Banking Performance Evaluation Index (GBPEI)

Dimensions	Sub-Dimensions	Variables	Scores	
			Sub-Dimension	Dimensions
D_1: Accounting and Finance	SD_1: Green Finance and Investments	V_1) Green Bonds V_2) Financing of projects based on financial and environmental criteria or financing of eco-friendly projects. V_3) Establishment of a climate change fund. V_4) Extending green credit to a broadening range of commercial sectors, such as clean energy, clean transport, green buildings, water and sanitation V_5) Offering mutual funds that focus investment in 'green' companies. V_6) Offering a special line of credit to help homeowners invest in energy-efficiency upgrades for their homes. V_7) Banks can provide all the services in the area of clean development mechanisms and carbon credit business. V_8) Banks explore international funding options (like UN's Green Climate Fund) for investment in green projects and development of their Green Financing Portfolio V_9) The agricultural clients are financed for farming techniques based on lesser use of chemical fertilizers & pesticides, efficient water usage, drought resistant, etc. V_{10}) Encourage green credit innovation or Develop investment products to attract investment in 'green' bank assets. V_{11}) SMEs are financed for modern resource-efficient technologies as alternatives to traditional technologies etc. V_{12}) Impact measurement of potential client's business on the environment before sanctioning financing facilities.	12	29
	SD_2: Accounting of Green Initiatives	V_{13}) The budget allocated annually for Green Banking practices V_{14}) Amount spent on different Green Banking activities V_{15}) Measure own carbon footprint V_{16}) Tracking flows of green credit or Organize regular internal audit on green credit performances. V_{17}) Conduct energy audits V_{18}) Assess environmental benefit and cost impact V_{19}) Conduct Risk – return analysis V_{20}) Amount of paperless / card-based transaction. V_{21}) Credit/loan applications	10	

		declined/approved after being E&S risks evaluated. V_{22}) Total outstanding value of credits/loans granted / on hold which has been evaluated on E&S risks.		
	SD_3: Disclosure and Reporting Practices	V_{23}) Use of separate pages for Green Banking reporting in the annual report. V_{24}) Reporting in Standard Format. V_{25}) Utilize international platforms (like the Basel Committee, FSB, GRI, etc) for voluntary disclosure and information sharing. V_{26}) Maintaining / Developing a database on non-performing loans when the reason for the non-performance is environment-related. V_{27}) Installation of systems for data collection and generation on Green Banking. V_{28}) Senior management reports Green Banking results to the Board at regular intervals. V_{29}) Banks publish independent Green Banking Reports/ Web Page.	7	
D_2: Marketing, Awards and Capacity Building	SD_4: Green Marketing and Green CSR	V_{30}) Bank's initiatives in building networks on environmental with green groups including government bodies and NGOs. V_{31}) Sponsoring facilities harmonious with the environment (example restoring heritage buildings, beautifying cities or villages through tree plantation, community clean-ups, etc). V_{32}) Internalizing green marketing such as Plant a Tree, Save the Environment on the bank's letterhead and in other internal communication media. V_{33}) Marketing the green image of the bank.	4	13
	SD_5: Capacity Building of Stakeholders	V_{34}) Train employees regarding the green movement (e.g., education programs for bank employees or encourage the employees to take part in the green operation). V_{35}) Human Resource Department involved in employee awareness development and training work on environmental issues. V_{36}) Bank sensitized the general public on environmental issues through one-on-one meetings, electronic & print media, advertisements, melas, seminars, workshops, training, and conferences. V_{37}) Clients and business houses encouraged to comply with environmental regulations. V_{38}) Public Relations Department involved	5	

		in awareness development among consumers and clients.		
	SD_6: Green Awards and Recognition	V_{39}) Bank employees evaluated and recognized for their performance in environmental management. V_{40}) Bank awarded either for its environmentally friendly activities or excellence in environmental reporting practices. V_{41}) Bank's clients and value chain partners, employees winning awards for their initiatives to preserve the natural environment. V_{42}) Amount of rewards and recognition banks pay to clients for turning green.	4	
D_3: Green HRM	SD_7: 'Procurement and Internalization	V_{43}) BODs approving environment related policy/activities. V_{44}) E-tendering in procurement. V_{45}) Vendor selection based on the sustainability rating of their products, services, and operations. V_{46}) Identify or appoint a senior manager /directors to look after Green Banking activities including digital activities. V_{47}) Setting up of a Department/ Committee/ Team for looking at the environmental activities of the bank. V_{48}) Appoint a Green Liaison officer for additional work in any department or function may be appointed to work towards Green Banking.	6	10
	SD_8:Office for Green Banking	V_{49}) Setting up of Green Banking office which collects and consolidates Green Banking information and provides the same to senior management and BODs. V_{50}) E-Recruitment/ Performance appraisal online. V_{51}) Online Salary. V_{52}) Setting up of a department to manage green credit related work or a cross-function green credit committee.	4	
D_4: Mode of Operations	SD_9: Paperless Mode of Operations	V_{53}) Virtual meeting through the use of video conferencing. V_{54}) Email V_{55}) Online banking V_{56}) Automated teller machines V_{57}) Mobile banking V_{58}) Electronic banking: RTGS, NEFT, ECS/IMPS V_{59}) Offering credit cards co-branded with environmental charities V_{60}) E-statements V_{61}) Green Printing Guideline V_{62}) Plastic cards V_{63}) Green PIN	11	26
	SD_{10}: Green	V_{64}) Deploy renewable energy-based equipment in their 'non-green' branches/offices to reduce their reliance on fossil fuels/ grid electricity. V_{65}) Setting up green branches / Green Banking unit / green buildings.	7	

	Building and Infrastructure	V_{66}) Solar power system for ATMs. V_{67}) Greening Use of Laptops, Desktop Computers, and Servers. V_{68}) Greening Data Centers. V_{69}) Special logo and certification to Green branches V_{70}) Arranging transport pool for the employees.		
	SD_{11}: Resource Usage and Measurement	V_{71}) Clean energy capacity installed V_{72}) Energy savings V_{73}) Reduction of pollution and harmful emission by cutting down business travel or any other measure. V_{74}) Recycling of materials. V_{75}) Adopt techniques and plans to minimize inventory and wasted freight V_{76}) Develop annual resource consumption targets V_{77}) Introduce Green Office Guide containing instruction circulated among the employees. V_{78}) Optimum use of the resource (like use eco-font to reduce the use of ink, use of scrap papers as notepads, use disposable glasses, automatic shutdown of computers, lights, fans, energy-saving bulbs, use of solar energy in premises, employees should be encouraged to purchase energy-efficient cars energy efficiency).	8	
D_5: Planning, Policies, and Supervision	SD_{12}: Planning and Policies	V_{79}) Develop strategies and procedures in the following areas i.e., Environmental Risk Management, Green Business Facilitation, Own Impact Reduction, climate change, preservation of the environment. V_{80}) Develop Green Banking Policy V_{81}) Introduce sector-specific Green Banking policy V_{82}) Develop green lending guidelines V_{83}) Set green goals as the internal targets to reduce the carbon footprint V_{84}) Develop administrative procedures and accountability mechanisms to see the implementation of Green Banking Policy	6	12
	SD_{13}: Green Supervision and Inspection	V_{85}) Develop an effective green credit performance evaluation system. V_{86}) Monitoring clients' environmental initiatives such as an effluent treatment plant, recycling facilities, etc. V_{87}) Monitoring and reporting environmental risks and performance. V_{88}) Green Banking incorporated in the scope of compliance and routine internal controls. V_{89}) Green Banking checklists developed and made part of internal audit reports. V_{90}) Bank regularly reviews borrower's compliance with applicable environmental requirements.	6	

D_6: Risk Management	SD_{14}: Environmental Risk Management	V_{91}) Risk Management department should regularly report to the senior management about environmental risks. V_{92}) Incorporate Environmental Risk in Customer Relationship Management (CRM) V_{93}) Develop E&S risk management systems V_{94}) Develop E&S risk rating standard (Environmental Risk Rating / Risk Categorization Model) to assess and categorize clients' E&S risks V_{95}) Develop a list of clients with major E&S risks V_{96}) Incorporate environmental and climate change risk as part of the existing credit risk methodology prescribed to assess a prospective borrower V_{97}) Appoint officers, who have expertise in environmental risk assessment & management to serve as the Environmental Risk Managers of the bank V_{98}) Banks should develop an internal Environmental Risks manual/framework/plan. V_{99}) Conduct Environmental Due-Diligence Procedures with Environmental Checklists and Sector-Specific Guidelines	9	9
Total Score			99	99

Source: Compiled by the researcher

Table 3.5 includes the Green Banking Performance Evaluation Index, which contains 99 variables which are divided into 14 sub-dimensions. 14 sub-dimensions are clubbed to form 6 different dimensions.

3.5.2.3 Statistical Tools Applied

For analysis of objective 1, both Descriptive and Inferential statistical tools are used.

Descriptive Statistical Tools used are Mean, Range, Maximum, Minimum and Percentages. Scoring of the banks is done using the formulae mentioned in Section 3.5.2.2. Percentage is used to find the most popular dimension and least popular dimension of the GBPEI. Simple mean is used to find the average scores of the banks over the 10 year period, and thereafter ranks are assigned to the banks. Range is used to depict the maximum and minimum scores in a year, and also to depict the overall range of maximum and minimum score secured by any bank over the period of 10 years. Percentages are used to show the annual growth of Green Banking Performance over the different years. Also, line graphs are used to compare the growth of GBPEI scores

over the 10 years period. Two inferential statistical techniques are used for analysis of objective 1, namely One-Way Anova and Independent Sample t-test. In objective 1, the performances of the banks over three distinct period of time are compared. The first period is from 2009-2010 to 2011-2012 (SEBI BRR Implementation 1st phase); the second period is from 2012-2013 to 2014-2015 (SEBI BRR Implementation second phase); and the third period is from 2015-2016 to 2019-2020 (SEBI BRR Implementation third phase). For comparing the mean scores of the banks over the 3 different periods (phases), One-Way Anova is applied. One-Way Anova helps to find out statistical difference between means of three or more independent groups (Lund Research Ltd, 2018). The null hypotheses in this study are denoted with a number and alphabet 'a'. For example, for hypothesis 1 null hypothesis will be denoted as H_{1a}, for hypothesis 2 the null hypothesis will be denoted as H_{2a} and so on. The alternate hypotheses are denoted with a number and alphabet 'b'. For example, for hypothesis 1 alternate hypothesis will be denoted as H_{1b}, for hypothesis 2 the alternate hypothesis will be denoted as H_{2b} and so on.

The hypothesis tested for this purpose is:

H_{1a}: The mean GBPEI scores of banks across the 3 phases are equal.

H_{1b}: The mean GBPEI scores of banks across the 3 phases are not equal.

Also, a comparison of Green Banking Performance is done amongst Private and Public Sector Banks. For the same, Independent Sample t-test is used to compare the mean GBPEI scores of Private and Public Sector Banks for 10 years. Independent t-test finds the existence of any significant statistical difference between the averages of two groups which are independent of each other (Lund Research Ltd, 2018). The hypothesis tested for the same is:

H_{2a}: $\mu_1 = \mu_2$,

H_{2b}: $\mu_1 \neq \mu_2$,

Where, μ_1= Public Sector Banks' average GBPEI scores, μ_2= Private Sector Banks' Average GBPEI scores

3.6. Methodology for Objective 2

2nd objective of this study is to inspect the association among Green Banking Performance and corporate characteristics of banks. The methodology of this objective is divided into two parts, first part contains the variables adapted, and the second part contains the data collection and data analysis.

3.6.1 Variables Adapted

For objective 2, the independent variables taken from various literatures are illustrated below in Table 3.6.

Table 3.6: Independent Variables for Objective 2

Nature	Variables	Measurement of Variables	Source Reference
Financial	1) Bank Size	Bank Total Assets	Bose et al (2018); Hossain & Reaz (2007), Islam & Ahmed (2012), Weber O (2016), Stanny & Ely (2008)
	2) Return on Assets (ROA)	Ratio of Net Profit over total assets	Islam & Ahmed (2012), Weber O (2016), Bose et al., (2018)
	3) Non Performing Assets (NPA)	Net NPA= Gross NPA – Provisions related to unpaid debts over Gross Advances	Weber (2016)
Non-Financial	4) Board Size	Total count of members on board	Bose et al (2018)
	5)Women Director	Number of female directors	Islam & Ahmed (2012)
	6) Age	Number of years since incorporation of a bank	Bose et al (2018), Hossain & Reaz (2007), Hawashe (2015), Islam & Ahmed (2012)

Source: Compiled by the researcher

In Table 3.6 it can be seen that 3 financial variables are taken into consideration, and 3 non-financial variables are taken into consideration for analyzing Objective 2. The sources from where the variables are taken have also been shown in the table. Last, the measurement used for each of the variables is stated in table 3.6.

Dependent Variable: Dependent variable is the value of Green Banking Performance Evaluation Index (GBPEI). The total GBPEI for each of the banks is considered as the dependent variable.

3.6.2 Data Collection and Analysis

The sample banks for objective 2 are same as objective 1. 40 banks mentioned in Table 3.2 are the banks considered in objective 2. Banks' annual reports are used to gather details of independent variables of the 40 banks. Data is collected for 10 years that is from 2009-2010 to 2018-2019. Data for this objective is Panel Data. Panel Data means pooling of observations on a cross-section of entities or firms or households over many years (Baltagi, 2008). It means data for *N* individuals/units that are observed for a *T* period of time.

Statistical Technique Applied: Association between Green Banking Performance and corporate characteristics is studied using regression analysis. Regression helps to find the association between dependent and independent variables (Kuhn, 2020). In this objective, the data constitutes Panel Data; hence Panel Data regression is used for analysis. Panel Data Regression helps to conduct regression analysis for panel data. Panel Data Regression analysis starts with Pooled OLS Regression or Panel Least Squares and continues to Fixed / Random Effect Model. It is important to choose the appropriate Panel Data Regression model as the correct relationship between variables is dependent on it.

For using the Pooled Regression however, the assumptions of POLS (Pooled OLS Regression Model) must be met. The POLS Regression Model assumes that the intercepts of all the entities are same. It ignores the heterogeneity that exists between different units / entities and between different time periods (Wooldridge, 2012). Hence, to account for the individual heterogeneities, there are Fixed Effect Model (FEM) and Random Effect Model (REM). The test that helps to determine if Pooled OLS Regression Model is appropriate for the study is, Bruesch Pagan Test (Jawaid, 2021). The Breusch Pagan Test helps to determine if for the Panel Data set, the Pooled OLS Regression Model is appropriate or if not should Fixed Effect Model (FEM) / Random Effect Model (REM) need to be tested. The null hypothesis of Breusch Pagan Test is that 'POLS Model is more appropriate than FEM/REM' or the null hypothesis can be written as 'That Error Variances are Equal'. The rejection of the null hypothesis supports that the FEM / REM is more appropriate and that the error variances are not equal. The Hausman Test helps to decide the suitable model amongst the FEM and

REM (Hausman & Taylor, 1981). Hausman test's null hypothesis is 'The favored model is REM' and alternative hypothesis is that 'The favored model is FEM'. Model tested in this study is:

$$GBPEI = \beta_0 + \beta_1 BankSize + \beta_2 ROA + \beta_3 NPA + \beta_4 BRDSIZE + \beta_5 WOMNDIR + \beta_6 BANKAGE + \varepsilon_{it}$$

Where, GBPEI= Green Banking Disclosure Performance Index, BankSize is Bank Size measured as the total assets of the bank, ROA is return on assets measured as ratio of Net Profit over total assets, NPA is Non-Performing Assets (calculated as the ratio of Gross NPA minus provisions related to unpaid debts over Gross Advances), BRDSIZE is size of board which is measured as the count of directors on board, WOMNDIR is Female Directors on Board, calculated as the count of women directors, BANKAGE means age of the bank since its incorporation, ε_{it}= Error Term

The following hypotheses are tested for Objective 2:

- H_{3a}= There is no significant effect of bank size on Green Banking Performance

  H_{3b}= There is significant effect of bank size on Green Banking Performance

- H_{4a}= There is no significant effect of return on assets on Green Banking Performance

  H_{4b}= There is significant effect of return on assets on Green Banking Performance

- H_{5a}= There is no significant effect of NPA on Green Banking Performance

  H_{5b}= There is significant effect of NPA on Green Banking Performance

- H_{6a}= There is no significant effect of board size on Green Banking Performance

  H_{6b}= There is significant effect of board size on Green Banking Performance

- H_{7a}= There is no significant effect of number of women directors on Green Banking Performance

  H_{7b}= There is significant effect of number of women directors on Green Banking Performance

- H_{8a}= There is no significant effect of age of bank on Green Banking Performance

H_{8b}= There is significant effect of age of bank on Green Banking Performance

3.7. Methodology for Objective 3

The third objective is to study the perception of selected stakeholders of banks with regard to Green Banking. The methodology for this objective is divided into 5 parts, namely Sampling Details, Scope of the Study, Sampling Technique, Sample Size, and Data Collection and Data Analysis.

3.7.1. Sampling Design

The sampling design consists of population, sampling element, sampling unit, extent and time period of the study.

- *Population:* The population of this objective constitutes the urban population of India.
- *Sampling Element:* In the present objective, sampling elements are the stakeholders of banks which are bank employees and bank customers related to banking sector of India.

- *Sampling Unit:* Sampling Unit for the bank employees is the Regional Offices / Zonal Offices of each of the cities. For the customers, sampling unit and the element is same, any person belonging to Delhi or Mumbai and having a bank account in the 40 banks under sample is sampling unit.

- *Time*: The field study is conducted during 2019-2020.
- *Extent:* The survey is conducted within the territorial boundaries of India. India is the geographical extent for Objective 3 (shown below in Figure 3.3).

Figure 3.3: Map of India showing Study Area

Source: *(Orange Smile, 2020)*

3.7.2 Scope of the Study

- ***Scope of Stakeholders Targeted***: A stakeholder is a person who impacts an organization or gets impacted by the activities of an enterprise. There are various stakeholders in relation to a bank. Many literatures have targeted only customers of banks for Green Banking studies (Ramila, 2016). Many literatures on Green Banking targets only the perspcetives of bank employees (Shaumya & Arulrajah, 2017; Brar, 2016; Goel, 2017).

  The stakeholders targeted for this study are internal and external stakeholders. Internal stakeholders targeted are bank employees. External stakeholders targeted are customers of the banking community. There is widespread agreement that employees are the prime stakeholders (Frémond, 2000). Targeting employees is important to have the views of stakeholders that deal in the internal management or operations of the banks. Internal stakeholders play the most important role as they have greatest impact on the environmental management of an organization (Linh, 2017). Most

stakeholder models include customers (Fremond, 2000). Targeting the customers will help us to cover the external stakeholders of banks. Customers have significant effect on Green Banking. Customers may pressurize the banks to accept and adopt green strategies (Lindblom, 2011). Also, the views of customers will provide important inputs as to what external environment of a bank expect banks to disclose on their green activities.

Collecting data from diverse stakeholder groups would help us to know the popularity of Green Banking amongst them, which may provide important inputs for the bank to revise their communication strategies if required towards Green Banking.

- ***Geographical Scope***: The geographical extent of the study is confined to the urban population of India. Green Banking is an emerging concept which is based on the use of banking technology. Also, use of technology is related to the literacy level of stakeholders. Hence, top two urban cities based on highest urban population and high literacy level is chosen (illustrated below in Table 3.7).

Table 3.7: Cities Chosen for the Study

Cities	Urban Population	Literacy Level
Mumbai	18,394,912	89.78%
Delhi	16,349,831	86.32%

Source: Census Population (2011)

Rationales behind selecting Mumbai and Delhi for covering stakeholders' perception on Green Banking are**:**

(a) Highest Urban Population**:** A major aspect of Green Banking is related to the adoption of emerging technologies, products, services and tactics which would lead to environmental protection. Green Banking is a relatively fresh idea. Hence, targeting the urban stakeholders would provide more insightful results than targeting rural customers. The two cities selected have the highest urban population in India according to Census 2011.

(b) High Literacy Level: Technological use requires awareness and literacy. Penetration of Green Banking would not be easy amongst less literate mass of population. In fact in many literatures in India, it is often observed that lack of awareness, lack of computer and technical knowledge often hampers proper penetration

of Green Banking amongst the people. Both the targeted cities have higher literacy level as compared to the national average of 74.04%. This supports the selection of urban stakeholders with high literacy level in the sample of the study.

***(c) Cities part of Global Green Finance Index*:** Global Green Finance Index is an index which is calculated by Z/Yen, as part of its Long Finance Initiative, and Finance Watch (Z/Yen Group Limited, 2020). It is sponsored by MAVA Foundation. The index is published twice a year. It measures financial centres across the globe and ranks and rates the depth and quality of Green Finance in different financial centres. A total of 114 financial centres (cities) are researched and 64 countries across the world are evaluated and ranked. Geographical regions covered in this index are North America, Middle East and Africa, Eastern Europe and Central Asia, Western Europe, Latin America and The Caribbean and Asia/ Pacific. The index is developed in the year 2018 and had already been put to use in many relevant literatures (Toronto Finance International, 2018; Green and Sustainable Finance Cluster Germany, 2018; United Nations Environment Programme, 2019). Green Finance is a broad concept and Green Banking is a core part of Green Finance. Selection of Mumbai and Delhi is also supported by the fact that from India, only Mumbai and Delhi forms a part of this index. Only those two cities are rated and ranked based on the depth and quality of Green Finance. Both the cities are considered as the evolving centres in Green Finance (Finance Watch, Z/Yen Group, 2018).

(d) Diversification of Stakeholders: Stakeholders are targeted across different regions of India. Stakeholders from North India (Delhi) and West India (Mumbai) is covered, hence there is a diversification of respondents. Also, the stakeholders belonging to the Commercial Capital of India (Mumbai) and Economic Capital of India (Delhi) are covered. Covering Delhi and Mumbai will fairly reflect views of the urban population of India.

3.7.3 Sampling Technique

The present objective adopts a mix of sampling techniques. At first Purposive sampling technique is used in selecting the banks whose stakeholders are targeted. Next for selecting the stakeholders, a mix sampling technique is used, namely Purposive/ Judgement Sampling and Convenience sampling is applied.

a. *Selection of Banks*: To choose the banks, Judgemental Sampling, also known as Purposive Sampling Technique is used. Banks selected are Public and Private Banks of India, before merger 2020. Two banks are excluded from the study, namely Dena Bank and Vijaya Bank as they do not exist independently (combined with Bank of Baroda). The banks are purposefully chosen to match with the previous objectives. The sample banks are shown in Table 3.8.

Table 3.8: Banks under Sample

Public Sector Banks	Private Sector Banks
1. State Bank of India	1. Axis Bank Ltd.
2. Allahabad Bank	2. Catholic Syrian Bank Ltd
3. Andhra Bank	3. City Union Bank Ltd.
4. Bank of Baroda	4. DCB Bank Ltd
5. Bank of India	5. Dhanlaxmi Bank Ltd
6. Bank of Maharashtra	6. Federal Bank Ltd
7. Canara Bank	7. HDFC Bank Ltd
8. Central Bank of India	8. ICICI Bank Ltd
9. Corporation Bank	9. IndusInd Bank Ltd
10. Indian Bank	10. Jammu & Kashmir Bank Ltd.
11. Indian Overseas Bank	11. Karnataka Bank Ltd
12. Oriental Bank of Commerce	12. Karur Vysya Bank Ltd
13. Punjab National Bank	13. Kotak Mahindra Bank Ltd
14. Punjab & Sind Bank	14. Lakshmi Vilas Bank Limited
15. Syndicate Bank	15. Nainital Bank Limited
16. Union Bank	16. RBL Bank Ltd
17. United Bank of India	17. South Indian Bank Limited
18. UCO Bank	18. Tamilnad Mercentile Bank Limited
19. IDBI Bank Limited	19. YES Bank Limited
Total Number of banks = 40	20. Bandhan Bank
	21. IDFC Bank

Source: Compiled by the researcher

It is seen in Table 3.8 that 19 Public Sector Banks are taken in the sample, and 21 Private Sector Banks are taken in the sample.

b. *Selection of Bank Employees*: There are 40 banks under sample. Judgemental sampling method is used in selecting the bank unit from where employees are targeted. Every bank has one main office in a region. Some banks have zonal offices and some have regional offices, and some have both. For each of the 40 banks, their main offices are visited. Main offices are purposefully chosen to get the perception

of people working at the administrative level on Green Banking in their respective banks. After that, Convenience sampling is used in selecting the bank employees. The convenience of the respondents was the main priority, and based on that the questionnaires were circulated amongst them. Only those respondents, for whom it was convenient to share their responses, were asked to participate in the survey.

c. *Selection of Customers*: Mixed sampling technique is used. Judgement sampling is used to consider only those respondents who are customers of the sample banks and are capable of understanding Green Banking (Bryson et al., 2016). The next sampling technique used is Convenience sampling. Considering the convenience of customers in mind, the respondents were asked to participate in the survey. Below, the sampling technique applied in Objective 3, is depicted in Figure 3.4.

Figure 3.4: Sampling Technique Applied

Source: Compiled by the researcher

3.7.4 Sample Size

On deciding the sample size for this objective, previous stakeholder studies and their respective sample sizes on Green Banking are taken into consideration (Table 3.9).

Table 3.9: Stakeholder Studies on Green Banking

Papers	Sample Size	Papers	Sample Size
Deka (2015)	486	Sharma (2017)	307
Choudhury et al., (2013)	520	Jain (2017)	600
Lakshminarayanan (2015)	300	Shayana et al., (2017)	100
Brar (2016)	50	Ghosh (2017)	180
Shaumya &Arulrajah (2016)	155	Linh (2017)	552
Bryson et al., (2016)	298	Total Studies	11

Source: Compiled by the researcher

Average sample size= 320

Also, according to Bujang et al., (2017) for observational studies, a sample size of minimum 300 must be collected to represent the parameters in the population and to conduct tests such as Multiple Linear Regression, ANCOVA and Factor Analysis. Comrey and Lee in the year 1992 suggested that sample sizes of 100 is generally considered to be poor, sample size of 200 is considered to be fair, sample size of 300 is good and a sample size of 500 is considered to be very good. It was mentioned to use a sample size of 500 whenever possible. Roscoe (1975) stated that for conducting behavioral research, the appropriate range of sample size should be in between 30-500. Lastly, in order to determine the appropriate sample size, Cochran (1963) proposed a formula based on the desired level of accuracy, degree of variability, and desired level of confidence. The formula for sample size determination is:

$$n = \frac{z^2 pq}{e^2}$$

where, n is the sample size , e is the desired level of precision (margin of error) , p is the degree of variability , q is 1-p.

Assuming that, the confidence level required is 95%, then the level of precision (e) is taken to be ± 5 percent (Israel, 1992). Also, when the population is large and there is no certainty on the variability of the population, then p (degree of variability) is assumed to be 0.5 (Israel, 1992). If p is 0.5, then q is also 0.5. Thus, with 95% confidence level and ± 5 percent level of precision, the resulting Z value comes to 1.96 (Cochran, 1963). As per the formula stated above, the appropriate sample size is:

$$n = \frac{1.96^2 (0.5)(.5)}{0.005^2}$$

$$= 384$$

In the light of above calculations, a sample size of 500 stakeholders would have been fair. Initially, the researcher proposed to take a sample size 800 which was divided equally between customers and employees between the two cities, however only 630 responses could be collected, as some denied responding to the survey. The distribution of sample size is shown below in Table 3.10.

Table 3.10: Distribution of Sample Size

Cities	Bankers	Customers	Total
Delhi	190	140	330
Mumbai	125	175	300
Total	315	315	630

Source: Compiled by the Researcher

The distribution of sample size in Table 3.10 shows that 315 internal stakeholders (bankers) and 315 external stakeholders (customers) form the total sample. Also, 330 samples are collected from Delhi, and 300 samples are collected from Mumbai.

3.7.5 Data Collection and Data Analysis

3.7.5.1 Data Collection

Primary sources are used for gathering data for this objective. The research instrument used for the survey is questionnaire where respondents are provided with questions on Green Banking, and Green Banking Disclosures. The questionnaire framed for both the stakeholder groups is same so as to allow comparison of perception across stakeholder groups.

The questionnaire begins with a short introduction of the researcher and the research purpose. At the start of the questionnaire, the meaning of Green Banking is briefly explained. The questionnaire is divided into 7 parts. Each of the part deals with a specific topic of Green Banking and has several questions under it. The first part is Part A which measures 'Awareness and Usage of Green Banking', Part B relates to 'Benefits and Difficulties of Adopting Green Banking Products and Services', Part C has questions to measure 'Purposes of Green Banking Disclosures', Part D relates to 'Communication Media and Disclosures Type' and Part E has questions related to 'Performance of Green Banking Disclosures'. Part F is about stakeholders' perception on 'Benefits of Green Banking Disclosures' and Part G is about demographic information of the respondent.

The questionnaire consists of three types of questions: Dichotomous, Multiple Choice and Likert Scale. Nominal, Ordinal and Interval scales are used depending upon the aim of the information to be collected.

3.7.5.2 Pilot Study

Generally, a pilot study is conducted to check the reliability of a questionnaire and to identify any sort of difficulties faced by the respondents during the survey. The pilot study was conducted in May 2019. The location of the pilot survey was Delhi. Both bankers and customers were targeted. For the pilot study, out of the 40 commercial banks forming the main sample, only 16 were selected. Top 8 banks from each of the Public Sectors and Private Sectors based on market capitalization on May 2019 were selected (shown in Table 3.11).

Table 3.11: Banks for Pilot Study

Public Banks	Private Banks
State Bank of India	HDFC Bank
Punjab National Bank	Kotak Mahindra Bank
Bank of Baroda	ICICI Bank
IDBI Bank	Axis Bank
Bank of India	IndusInd Bank
Canara Bank	Bandhan Bank
Allahabad Bank	YES Bank
Corporation Bank	RBL Bank

Source: Compiled by the researcher

Total sample size of the pilot study was 96, out of which 32 were bankers (4 employees per bank) and 64 (8 customers per bank) were customers.

Time required for filling up a questionnaire was approximately 10 minutes. The respondents identified some poorly worded questions. The language of the questionnaire, the length of the questions and sequence of questions of the questionnaire were thus improved after the pilot study. Some questions were deleted because repetitions of questions were observed during the pilot study.

After completion of the pilot study, reliable testing is done. Any computing instrument is considered to be reliable if it is able to offer steady findings. The present study uses internal consistency reliability. Cronbach's alpha is commonly considered the most favorable measure for calculating internal consistency (Cronbach, 1951). Cronbach's Alpha over 0.60 is accepted as a good reliability measure. The Cronbach's alpha was calculated separately for customers and bankers and is shown below in Table 3.12.

Table 3.12: Reliability Statistics for Stakeholders' Perception

Stakeholder	Results		
	Cronbach's Alpha Value	Cronbach's Alpha Based on Standardized Items	Number of Items
Customers	.797	.790	13
Bankers	.700	.896	25

Source: Compiled by the researcher

The calculated Cronbach's alphas are 0.790 and 0.896, and hence it can be safely assumed that the questionnaire is reliable.

3.7.5.3 Variables Used

The variables considered for Objective 3 are tabulated below:

Table 3.13: Variables Considered for Objective 3

Variables	Items	Sources
1. Awareness	Concept of Green Banking	Goel (2017), Ramila (2016), Y, Menezes, & R (2015)
	Green Banking Products and Services	Sharma (2017), Rao (2018),
	Concept of Green Banking Disclosures	Researcher's Own
2. Adoption Behavior	Use of Green Banking Products and Services (GBPS)	Lakshminarayan (2011), Sharma (2017), Jain (2017), Ramila (2016)
	Benefits of GBPS	Lakshminarayan (2011); Sharma (2017); Jain (2017), Ramila (2016)
	Difficulties in adoption of GBPS	Lakshminarayan (2011), Sharma (2017), Jain (2017), Rao (2018)
3. Importance of Green Banking Disclosure	Purposes: Green Banking Disclosures	Joshi (2015), Singh (2013), Dobbs & Staden (2016)
4.Communication Medium	Source of Information :Frequently encountered and preferred source	Ramila (2016), Sharma (2017), Rao (2018), Jain (2017), Brar (2016), Singh (2013), Rao et al., (2015)
	Promotion of Green Banking in branch and offices	Sharma (2017), Y, Menezes, & R (2015)
	Preferred Location for Green Banking information.	Singh (2013),Y, Menezes, & R (2015)
5. Form of Reporting	Preferred form of Reporting	Singh (2013)
	Frequently	Singh (2013)

	encountered form of reporting	
6. Quality of Green Disclosures	Quality of Green Banking Disclosures	Singh (2013), Joshi (2015), Cormier et al., (2004)
	Satisfaction with quality and quantity of disclosures	Singh (2013)
7. Benefits and Difficulties of Green Disclosures	Benefits of Green Banking Disclosures	Researcher's own
8. Demographic Variables	Gender	Jain (2017), Lakshminarayan (2011), Goel (2017), Ramila (2016), Rao (2018)
	Marital Status	Ramila (2016)
	Bank Category (Public / Private)	Researcher's Own
	Stakeholder Category (Banker / Customer)	Researcher's Own

Source: Compiled by the researcher

3.7.5.4 Data Analysis

For analyzing this objective, both descriptive and inferential statistical techniques are used. Amongst descriptive statistics Frequency, Percentage and Cross Tabulation are applied. Amongst Inferential statistics, Chi-Square Test, Independent Sample t-test and Mann-Whitney U Test are used for analysis.

3.8. Limitations of the Study

The limitations of the study are:

- Only the Public Sector Banks and Private Sector Banks of India are considered in this study. Cooperative Banks, Regional Rural Banks, Foreign Banks, Payment Banks do not form a part of the sample of this study. Green Banking practices and performances of these banks are can be explored in future by the researchers.
- Index Method of Content Analysis is used to track Green Banking Performance of Banks. The Volumetric Method of Content Analysis could not be used due to time constraint.

- In Objective 2, only 3 financial variables and 3 non-financial variables are used for analysis. Future studies may increase the scope of independent variables to see their impact on Green Performance of banks.
- Only Urban Population forms a part of the study. Popularity of Green Banking amongst the rural population of India can be covered in future studies.

3.9. Chapter Summary

This chapter present various issues related to the methodologies used in the study. These include types of research, research design, sampling details, the model used, data collection methods and data analysis. This chapter offers explanation for the choice of specific research methods to fulfill the research objectives. The study is quantitative in nature. The chapter discusses sampling details for the objectives separately. The hypotheses used are also discussed in this chapter. Sample banks for the objectives constitute the Public and Private Sector Banks of India. An index is proposed and used to measure Green Banking Performance in the first objective. Both descriptive and inferential statistics are used in objective 1. The second objective analyzes the association between Green Banking Performance and corporate characteristics. 6 corporate characteristics are considered in objective 2 (3 financial variables and 3 non-financial variables). Panel Data Regression is used in objective 2. This chapter provides rationale for choosing the geographical location for objective 3. The chapter ends with discussing the various statistical tools applied in the third objective. Overall this chapter outlines and justifies the methodology used in this study.