CHAPTER 4

RESULTS AND DISCUSSION

This chapter presents the statistical results derived from the data analysis performed for the achievement of research objectives and testing the hypotheses in relation to the research questions. Understanding and interpreting the data relevant to answering the research questions and achieving the stated research objectives is the main function of this chapter. The chapter is limited to the presentation and analysis of the data collected and does not make general conclusions or compare the results with those of the previous studies referred to in the Review of Literature. The description of the respondents precedes the corresponding analysis for each research question or hypothesis in the same order as the Research Methodology chapter. Every table and figure is suitably referenced and discussed in the text to give reasons for their inclusion and to make easy the findings' interpretation.

The present study titled "Evaluation of Banks' and Customers' Perception Towards the Adoption of Sustainable banking Practices in the Select Indian Commercial Banks" is substantiated with the following objectives and the analysis are presented under the subsequent headings:

- To identify the sustainable practices adopted by the select Indian commercial banks
- To assess customers' awareness and usage of Sustainable banking practices.
- To analyse the factors influencing the customer's behavioural intention to use and actual use of Sustainable banking practices.
- To examine the benefits of adopting sustainable banking practices for banks and customers.
- To understand the challenges banks and customers face in adopting sustainable banking practices.

4.1 Employment/Socio-demographic profile of the respondents

4.1.1 Employment profile of the respondents from banks

4.1.2 Socio-demographic profile of the respondents from bank customers

4.2 To identify the sustainable practices adopted by the select Indian commercial banks

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4.2.1 The sustainable practices adopted by banks.

4.2.2 Comparison between the sustainable practices adopted by Private and Public sector banks.

4.3 The awareness level and Usage of Sustainable banking practices by the customers:

4.3.1 Customers' awareness level of sustainable banking practices

4.3.2 Usage of sustainable banking Practices by the customers

4.3.3 Association between the Socio-demographic profile of customers and Awareness of Sustainable banking practices.

4.3.4 Association between the Socio-demographic profile of customers and Usage of Sustainable banking practices.

4.3.5 Association between Awareness and Usage of sustainable banking practices by the customers

4.4 The factors influencing customers' behavioural intention to use sustainable banking practices:

4.4.1 The Structural Equation Model- The factors influencing customers' behavioral intention to use sustainable banking practices:

4.5 Benefits of sustainable banking for banks and customers:

4.5.1 The benefits for banks

4.5.2 The benefits for customers

4.6 Challenges of banks and customers in adopting Sustainable banking:

4.6.1 The challenges faced by Bankers.

4.6.2 The challenges faced by customers

4.1 Employment/Socio-demographic Profile of the Respondents

The Socio demographic profile of the banks and customers provides a respected understanding into their perceptions towards sustainable banking practices. The decision-making power on the adoption of sustainable banking practices depends on the designation of the bank employee. Hence, the responses were collected from the bank managers. The adoption, awareness, usage and factors influencing the behavior of the customers encompasses with age, gender, educational qualification and occupation of the respondents.

Table 4.1.1 Employment profile of the respondents from bank

Variables	Categories	Frequency (N=850)	Percentage (%)
Designation	Chief Manager	211	24.82
	Senior Manager	235	27.65
	Branch Manager	177	20.82
	Manager	227	26.71
	Total	**850**	**100**
Name of the bank you are currently employed with:	State Bank of India	206	24.23
	Punjab National Bank	112	13.18
	Bank of Baroda	84	9.88
	Canara Bank	84	9.88
	Indian Overseas Bank	56	6.59
	HDFC Bank Ltd	84	9.88
	ICICI Bank Ltd	56	6.59
	Kotak Mahindra Bank Ltd	56	6.59
	Axis Bank Ltd	56	6.59
	IndusInd Bank Ltd	56	6.59
	Total	**850**	**100**
State in which your bank branch located:	Andhra Pradesh	32	**3.76**
	Arunachal Pradesh	30	3.53
	Assam	30	3.53
	Bihar	30	3.53

Variables	Categories	Frequency (N=850)	Percentage (%)
	Chhattisgarh	30	3.53
	Goa	30	3.53
	Gujarat	30	3.53
	Haryana	30	3.53
	Himachal Pradesh	30	3.53
	Jharkhand	30	3.53
	Karnataka	32	**3.76**
	Kerala	30	3.53
	Madhya Pradesh	30	3.53
	Maharashtra	32	**3.76**
	Manipur	30	3.53
	Meghalaya	30	3.53
	Mizoram	30	3.53
	Nagaland	30	3.53
	Odisha	30	3.53
	Punjab	30	3.53
	Rajasthan	32	**3.76**
	Sikkim	30	3.53
	Tamil Nadu	30	3.53
	Telangana	30	3.53
	Tripura	30	3.53
	Uttarakhand	30	3.53
	Uttar Pradesh	32	**3.76**
	West Bengal	30	3.53
	Total	**850**	**100**
Category	Public sector bank	588	69.18
	Private sector bank	262	30.82
	Total	**850**	**100**

Source: Computed values of survey data

The designation is the main factor determining the adoption of Sustainable banking practices; it is inferred that most respondents hold senior-level positions (27.65). Among the respondents, 24.23 percent are State Bank of India employees, with a significant 69.18 percent affiliated with Public Sector Banks.

Table 4.1.2 Socio-demographic Profile of the respondents from bank customers

Variables	Categories	Number of Respondents (N=1150)	Percentage (%)
Gender	Male	591	51.39
	Female	559	48.61
	Total	**1150**	**100**
Age (in Years)	20-30yrs	295	25.65
	31-40yrs	312	27.13
	41-50yrs	280	24.35
	Above 50yrs	263	22.87
	Total	**1150**	**100**
Educational Qualification	HSC/PUC	16	1.39
	Graduate	557	48.43
	Postgraduate	577	50.18
	Total	**1150**	**100**
Occupation	Professional	180	15.65
	Self-employed	146	12.70
	Govt. Employee	189	16.44
	Pvt. Employee	301	26.17
	Retired	161	14.00
	Homemaker	173	15.04
	Total	**1150**	**100**
Name of the Bank	State Bank of India	394	34.26
	Punjab National Bank	168	14.61
	Bank of Baroda	140	12.17
	Canara Bank	112	9.74
	Indian Overseas Bank	56	4.87

Variables	Categories	Number of Respondents (N=1150)	Percentage (%)
	HDFC Bank Ltd	56	4.87
	ICICI Bank Ltd	56	4.87
	Kotak Mahindra Bank Ltd	56	4.87
	Axis Bank Ltd	56	4.87
	IndusInd Bank Ltd	56	4.87
	Total	**1150**	**100**
The State belongs to:	Andhra Pradesh	42	3.59
	Arunachal Pradesh	41	3.57
	Assam	41	3.57
	Bihar	41	3.57
	Chhattisgarh	41	3.57
	Goa	41	3.57
	Gujarat	41	3.57
	Haryana	41	3.57
	Himachal Pradesh	41	3.57
	Jharkhand	41	3.57
	Karnataka	41	3.57
	Kerala	41	3.57
	Madhya Pradesh	41	3.57
	Maharashtra	41	3.57
	Manipur	41	3.57
	Meghalaya	41	3.57
	Mizoram	41	3.57
	Nagaland	41	3.57
	Odisha	41	3.57
	Punjab	41	3.57
	Rajasthan	41	3.57
	Sikkim	41	3.57
	Tamil Nadu	41	3.57
	Telangana	41	3.57

Variables	Categories	Number of Respondents (N=1150)	Percentage (%)
	Tripura	41	3.57
	Uttarakhand	41	3.57
	Uttar Pradesh	42	3.59
	West Bengal	41	3.57
	Total	**1150**	**100**
Category	Public sector bank	924	80.35
	Private sector bank	226	19.65
	Total	**1150**	**100**

Source: Computed values of survey data

The respondents are nearly evenly distributed by gender, with 48.6 percent female, and 51.4 percent male. The age of the participants is categorized differently, and most of them are aged between 41 and 50 years (27.1%). The education levels of the participants are different, and half of them (50.2%) have completed their postgraduation. In terms of work, a large number of people (26.17%) are engaged in the private sector. Among the banks, the State Bank of India is the most prominent employer (34.6%). The respondents hail from various states, with notable percentages from Andhra Pradesh and Uttar Pradesh (3.59%). The majority (80.35%) are associated with public sector banks.

4.2 Sustainable practices adopted by Indian banking sector

4.2.1 The Sustainable practices adopted by banks.

Table No. 4.2.1 illustrates the opinions of the respondents concerning green banking practices of banks that were accounted for by two, fold (Yes/No) questions. Yes/No answers allow for a straightforward determination of whether or not banks are engaging in particular environmentally friendly practices. It is important to study such answers as a means of measuring the degree to which the banking sector has embraced sustainability and of spotting those areas where the implementation may be only at a stage of planning. The number and the percentage of the different answers give a descriptive view of the existing practices which is a basis for understanding the level of customers awareness and for making the next step of the inferential analysis regarding sustainable banking adoption.

Table 4.2.1 Sustainable practices adopted by Banks:

Sustainable banking Practices	Public sector bank				Private sector bank			
	N=588				N=262			
	Yes		No		Yes		No	
	n	%	N	%	n	%	n	%
Paperless transactions	297	50.51	291	49.49	130	49.62	132	50.38
Sustainable digital alternatives for customers	305	51.87	283	48.13	130	49.62	132	50.38
Digitalisation of process(through IP system)	301	51.19	287	48.81	144	54.96	118	45.04
Solar-powered banks/branches	322	54.76	266	45.24	135	51.53	127	48.47
Becoming fuel-efficient organisations	314	53.40	274	46.60	139	53.05	123	46.95
Promoting sustainable water management through rain water harvesting	303	51.53	285	48.47	140	53.44	122	46.56
Promoting gender diversity	317	53.91	271	46.09	144	54.96	118	45.04
Green Channel Counters for customers	300	51.02	288	48.98	142	54.20	120	45.80
Facility to open bank accounts online	317	53.91	271	46.09	141	53.82	121	46.18
Promoting digital wallets, payment gateways	313	53.23	275	46.77	136	51.91	126	48.09
Automation of the process, cashless and paperless transactions	314	53.40	274	46.60	125	47.71	137	52.29
Net banking, mobile banking, and IVR banking	312	53.06	276	46.94	122	46.56	140	53.44
Financial inclusion through digitalisation/community development	311	52.89	277	47.11	136	51.91	126	48.09
Providing Cash /Cheque Deposit machines/Solar Powered ATMs/ Passbook Printing Kiosks	270	45.92	318	54.08	129	49.24	133	50.76

Sustainable banking Practices	Public sector bank				Private sector bank			
	N=588				N=262			
	Yes		No		Yes		No	
	n	%	N	%	n	%	n	%
Green Mutual funds/ Green Bonds, and Green term deposits	303	51.53	285	48.47	138	52.67	124	47.33
Investing in renewable energy initiatives/purchasing green energy	313	53.23	275	46.77	143	54.58	119	45.42
Finance for biofuel/biogas projects	301	51.19	287	48.81	142	54.20	120	45.80
Bond and loans to support projects with environmental and social benefits	314	53.40	274	46.60	133	50.76	129	49.24
Green domestic loans/PM Surya Ghar initiative	275	46.77	313	53.23	130	49.62	132	50.38
Climate finance/green tariff policies/renewable energy/electric mobility	308	52.38	280	47.62	148	56.49	114	43.51
Schemes to promote women's/girls' education	327	55.61	261	44.39	146	55.73	116	44.27
Schemes exclusively for women entrepreneurs	296	50.34	292	49.66	133	50.76	129	49.24

Source: Computed values of survey data
(n-number of respondents, total number of respondents-850)

Mozib (2015) asserted that Indian financial institutions provide green offerings and amenities like credit cards, ATMs, electronic money transfers, mobile and internet banking, green loans, and electronic payments to compete internationally while upholding social and environmental obligations. They create habitable units, recycle paper, and get power from the sun and the wind. The results of the comparison mostly reveal clear patterns of the banking industry's uptake of eco friendly policies. Ahuja (2015) has shown that green banking is a driver for green activities within the financial sector while at the same time minimizing both the internal and external environmental effects. In short, it consists of establishing the implementation of green criteria as one of the basic principles of lending.

Although rarely associated with pollution, the financial sector is affecting the environment as the energy and paper consumptions are on the rise. Data for the current study reflect the opinions and decisions of the respondents concerning the adoption of various sustainable banking practices.

The sustainable banking practices adopted by both public and private sector banks is demonstrative of their robust involvement with the environmental and social programs, albeit with some differences in the two sectors' adoption rates. Among the public sector banks, the top three practices that got the most significant number of "Yes" responses are Schemes to promote women/girls' education (55.61%), Promoting gender diversity (53.91%), and Investing in renewable energy projects (53.23%). These activities imply that social responsibility, including gender equality and environmental sustainability, has been the core focus of the bank.

The private sector banks are showing similar trends with the most outstanding "Yes" responses for Schemes to promote women/girls' education (55.73%), Waiver on the processing of auto loans for car models that use alternate energy sources (56.49%), and Promoting gender diversity (54.96%) revealing a parallel commitment to both environmental and social issues. Public sector banks have a similar picture; the only difference is that they have shown a stronger commitment to Paper saving initiatives (51.87%) and exchanging/sending notes/sanctions, etc., through the IP system (51.19%) which are reflective of a more institutionalized approach to sustainability.

While the common patterns are present, private sector banks are more likely to demonstrate slightly higher adoption rates in areas such as Promoting sustainable water management through rainwater harvesting (53.44%) and Waiver on the processing of auto loans for car models that use alternate energy sources (56.49%) indicating their greater focus on environmentally friendly and energy efficient measures. However, public sector banks evidence a more profound commitment to Paper saving initiatives (51.87%) and exchanging/sending notes/sanctions, etc., through the IP system (51.19%), which demonstrates a more institutionalised approach to sustainability.

The overall comparison indicates that both sectors are actively adopting sustainable banking practices, but there are some nuances in the types of initiatives prioritised, with public sector banks focusing slightly more on administrative and paper-

saving measures, while private sector banks are somewhat more inclined towards energy-efficient and green-building initiatives.

4.2.2 Comparison between the sustainable practices adopted by Private and Public sector banks

Table No: 4.2.2 illustrates the substantial difference in sustainable banking practices adopted between public sector banks and private sector banks. It is essential to compare these two categories as public and private banks vary in terms of their ownership structure, policy orientation, regulatory emphasis, and strategic priorities, which may affect their way of implementing sustainability initiatives. Examining the differences allows to gauge the relative degree of sustainable practice adoption in various bank types and also gives valuable pointers to policymakers and banking institutions on the way to sustainability. An independent t-test is used to compare the means of two separate (independent) groups to see if there is a statistically significant difference between them.
In line with this, the following null hypothesis has been set:

$H_0$1: There is no significant difference in the Sustainable banking practices adopted by public sector and private sector banks.

Table 4.2.2 Difference in the Sustainable banking practices adopted by public sector and private sector banks-Result of Independent t test

	Levene's Test for Equality of Variances			t-test for Equality of Means						
	F		Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
									Lower	Upper
Paperless transactions	Equal variances assumed	6.738	*0.01	-2.366	848	.018	-.089	.038	-.163	-.015
	Equal variances not assumed.			-2.373	460.278	.018	-.089	.038	-.163	-.015
Sustainable digital alternatives for customers	Equal variances assumed	7.207	*0.007	-2.322	848	.020	-.088	.038	-.162	-.014
	Equal variances not assumed.			-2.329	460.338	.020	-.088	.038	-.161	-.014
Digitalisation of the process(through an IP system)	Equal variances assumed	7.207	*0.007	-2.322	848	.020	-.088	.038	-.162	-.014
	Equal variances not assumed.			-2.329	460.338	.020	-.088	.038	-.161	-.014
Switching to solar-powered banks/branches	Equal variances assumed	7.207	*0.007	-2.322	848	.020	-.088	.038	-.162	-.014
	Equal variances not assumed.			-2.329	460.338	.020	-.088	.038	-.161	-.014
Becoming fuel-efficient organisations	Equal variances assumed	7.672	*0.006	-2.278	848	.023	-.086	.038	-.160	-.012
	Equal variances not assumed.			-2.285	460.394	.023	-.086	.038	-.160	-.012
Promoting sustainable water management through rainwater harvesting	Equal variances assumed	7.207	*0.007	-2.322	848	.020	-.088	.038	-.162	-.014
	Equal variances not assumed.			-2.329	460.338	.020	-.088	.038	-.161	-.014

	Levene's Test for Equality of Variances			t-test for Equality of Means						
	F		Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
									Lower	Upper
Promoting gender diversity	Equal variances assumed	6.269	*0.012	-2.411	848	.016	-.091	.038	-.165	-.017
	Equal variances not assumed.			-2.417	460.214	.016	-.091	.038	-.165	-.017
Providing Green Channel Counters	Equal variances assumed	8.127	*0.004	-2.234	848	.026	-.084	.038	-.158	-.010
	Equal variances not assumed.			-2.240	460.445	.026	-.084	.038	-.158	-.010
Facility to open bank accounts online	Equal variances assumed	0.438	0.508	-.412	848	.680	-.016	.038	-.090	.059
	Equal variances not assumed.			-.412	456.486	.680	-.016	.038	-.090	.059
Promoting digital wallets, payment gateways	Equal variances assumed	8.127	*0.004	-2.234	848	.026	-.084	.038	-.158	-.010
	Equal variances not assumed.			-2.240	460.445	.026	-.084	.038	-.158	-.010
Promoting automation, cashless and paperless transactions	Equal variances assumed	3.564	0.059	-2.042	848	.041	-.077	.038	-.151	-.003
	Equal variances not assumed.			-2.046	459.027	.041	-.077	.038	-.151	-.003
Encouraging net banking, mobile banking, and IVR banking	Equal variances assumed	8.127	*0.004	-2.234	848	.026	-.084	.038	-.158	-.010
	Equal variances not assumed.			-2.240	460.445	.026	-.084	.038	-.158	-.010

	Levene's Test for Equality of Variances			t-test for Equality of Means						
	F		Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
									Lower	Upper
Financial inclusion through digitalisation/community development	Equal variances assumed	7.207	*0.007	-2.322	848	.020	-.088	.038	-.162	-.014
	Equal variances not assumed.			-2.329	460.338	.020	-.088	.038	-.161	-.014
Providing Cash /Cheque Deposit machines/Solar Powered ATMs/ Passbook Printing Kiosks	Equal variances assumed	7.207	*0.007	-2.322	848	.020	-.088	.038	-.162	-.014
	Equal variances not assumed.			-2.329	460.338	.020	-.088	.038	-.161	-.014
Promoting Green Mutual funds/ Green Bonds, and Green term deposits	Equal variances assumed	7.672	*0.006	-2.278	848	.023	-.086	.038	-.160	-.012
	Equal variances not assumed.			-2.285	460.394	.023	-.086	.038	-.160	-.012
Investing in renewable energy initiatives/purchasing green energy	Equal variances assumed	8.127	*0.004	-2.234	848	.026	-.084	.038	-.158	-.010
	Equal variances not assumed.			-2.240	460.445	.026	-.084	.038	-.158	-.010
Finance for biofuel/biogas projects	Equal variances assumed	5.805	*0.016	-2.455	848	.014	-.093	.038	-.166	-.019
	Equal variances not assumed.			-2.462	460.145	.014	-.093	.038	-.166	-.019
Bond and loans to support projects with environmental and social benefits	Equal variances assumed	0.007	0.934	-1.138	848	.255	-.043	.038	-.117	.031
	Equal variances not assumed.			-1.137	457.002	.256	-.043	.038	-.117	.031

	Levene's Test for Equality of Variances			t-test for Equality of Means						
	F		Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
									Lower	Upper
Green domestic loans/PM Surya Ghar initiative	Equal variances assumed	0.229	0.632	.253	848	.800	.010	.038	-.064	.084
	Equal variances not assumed			.253	456.327	.801	.010	.038	-.065	.084
Climate finance/green tariff policies/renewable energy/electric mobility	Equal variances assumed	2.549	*0.111	.733	848	.464	.028	.038	-.046	.102
	Equal variances not assumed			.733	458.081	.464	.028	.038	-.047	.102
Schemes to promote women/girls' education	Equal variances assumed	0.344	0.558	-.316	848	.752	-.012	.038	-.086	.062
	Equal variances not assumed			-.316	456.228	.752	-.012	.038	-.086	.062
Schemes exclusively for women entrepreneurs	Equal variances assumed	.587	.444	-.348	848	.728	-.013	.038	-.087	.061
	Equal variances not assumed			-.348	457.290	.728	-.013	.038	-.087	.061

Source: Computed values of survey data

(*Result is statistically significant when P<0.05)

For most of the sustainable practices in the table, the p-values for the t-tests are below 0.05, indicating statistically significant differences between public and private sector banks.

These practices include paperless transactions, paper-saving initiatives, exchanging notes through the IP system, switching to energy-efficient buildings, becoming fuel-efficient organisations, promoting sustainable water management through rainwater harvesting, promoting gender diversity, providing Green Channel Counters, promoting digital wallets, encouraging net and mobile banking, and investing in renewable energy projects. The significant p values indicate that public and private sector banks differ in their adoption of these practices, and therefore, one sector is likely implementing these initiatives more extensively than the other.

Nonetheless, few sustainable practices like the facility to open bank accounts online, loans for green buildings, green home loans with lower processing fees, and waiver of processing fees for eco-friendly auto loans have p values above 0.05. This means that there is no statistically significant difference in the adoption of these particular practices between the two bank types, thus both sectors are likely to be at similar levels of engagement with these initiatives.

To sum up, the null hypothesis is rejected for most of the sustainable practices due to significant differences in their adoption between public and private sector banks. Sustainable Practices such as "Providing Cash/Cheque Deposit machines/Solar Powered ATMs/Passbook Printing Kiosks," "Encouraging Net Banking/Mobile Banking," and "Promoting Digital wallets, payment gateways" show statistically significant differences with lower p-values, suggesting variations in adoption between public and private sector banks. On the other hand, practices like "Facility to open bank accounts online," "Loans for green buildings/green projects," and "Green home loans with lower processing fees" exhibit p-values higher than 0.05, indicating no significant differences between public and private sector banks in these aspects.

The results align with the alternative hypothesis (H_a1). There is a significant difference in the sustainable banking practices adopted by public sector and private sector banks, which means the null hypothesis is partially rejected.

4.3 The Awareness level and Usage of Sustainable banking practices by the Customers

It is important to determine the extent to which customers are aware of sustainable banking practices in order to understand their knowledge of environmentally and socially responsible financial products. Customers without adequate awareness are less inclined to use such services, thus limiting their impact. By measuring real usage, banks get a picture of how their customers are integrating sustainable banking into their financial decisions. With this data, banks have the opportunity to enhance their product line and facilitate the making of more sustainable choices.

4.3.1 Bank customers' awareness level of Sustainable banking practices

Table 4.3.1 presents the awareness level of bank customers regarding sustainable banking practices measured using a Likert scale. This table helps to quantify how familiar customers are with various sustainable banking products and initiatives. Understanding customers' awareness is critical because it influences their likelihood to adopt and use these eco-friendly financial services. The Likert scale provides detailed insights into the degree of awareness, from low to high, allowing banks to identify gaps and areas for improvement. Ultimately, this data supports banks in developing strategies to enhance customer knowledge and promote sustainable banking.

Table 4.3.1 Bank customers' awareness level of sustainable banking practices

Statements	EA		VA		MA		SA		NA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Banks encourage a shift to sustainable digital alternatives	981	85.30	59	5.13	54	4.70	30	2.61	26	2.26	4.69	0.86
Product information guides and annual reports to customers are available as electronic copies	974	84.70	59	5.13	54	4.70	30	2.61	33	2.87	4.66	0.91
Green Channel Counters (GCCs) for customers	974	84.70	59	5.13	54	4.70	30	2.61	33	2.87	4.66	0.91

Statements	EA		VA		MA		SA		NA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Open a bank account online	964	83.83	70	6.09	44	3.83	30	2.61	42	3.65	4.64	0.95
Digital wallets, payment gateways	969	84.26	59	5.13	54	4.70	30	2.61	38	3.30	4.64	0.94
Automation of processes and contactless card transactions	957	83.22	71	6.17	49	4.26	31	2.70	42	3.65	4.60	0.97
Net banking, mobile banking, digital currencies, and IVR banking	972	84.52	59	5.13	54	4.70	36	3.13	29	2.52	4.65	0.90
Cash /Cheque Deposit machines/Solar Powered ATMs/ Passbook Printing Kiosks	975	84.78	59	5.13	54	4.70	30	2.61	32	2.78	4.65	0.91
Micro finance, MSME and Agri finance	968	84.17	59	5.13	53	4.61	30	2.61	40	3.48	4.63	0.95
Green Mutual funds/ Green Bonds and Green Fixed Deposits	978	85.04	59	5.13	54	4.70	30	2.61	29	2.52	4.66	0.89
Loans for green buildings/green projects (Solar rooftop)	971	84.43	59	5.13	54	4.70	30	2.61	36	3.13	4.57	0.99
Green domestic loans	965	83.91	59	5.13	57	4.96	30	2.61	39	3.39	4.59	0.98
Finance for electric mobility (EV vehicles)	970	84.35	59	5.13	55	4.78	31	2.70	35	3.04	4.61	0.96
Schemes to promote women/girls' education	975	84.78	59	5.13	54	4.70	30	2.61	32	2.78	4.65	0.91
Schemes exclusively for women entrepreneurs	966	84.00	58	5.04	54	4.70	36	3.13	36	3.13	4.58	0.99

Source: Computed values of survey data

(EA- Extremely Aware, VA- Very Aware, MA-Moderately Aware, SA-Slightly Aware, NA-Not Aware, n-number of respondents, Total number of Respondents-1150)

The analysis of mean scores revealed that "Banks encourage a shift to sustainable digital alternatives" (M = 4.69, SD = 0.86), "Green Bonds/Green Mutual Funds/Green Fixed Deposits" (M = 4.66, SD = 0.89), and "Product information guides and annual reports to customers are available as electronic copies" (M = 4.66, SD = 0.91) were rated highest by customers, reflecting strong awareness of these practices. This may be attributed to the increasing reliance on digital platforms and the growing visibility of green investment products in recent years. Conversely, "Loans for green buildings/green projects (Solar rooftop)" (M = 4.57, SD = 0.99) and "Schemes exclusively for women entrepreneurs" (M = 4.58, SD = 0.99) received comparatively lower ratings, which could be due to limited promotion, lower accessibility, or the niche applicability of such products, resulting in reduced customer familiarity and slightly greater variation in responses.

4.3.2 Usage of Sustainable banking Practices by the Customers

Table 4.3.2 illustrates the extent to which bank customers use sustainable banking practices. This table highlights the actual adoption and engagement of customers with eco-friendly financial products and services. Understanding usage patterns helps banks identify how well sustainable banking initiatives are being embraced by their clients. It also reveals any barriers to usage that may exist, allowing banks to improve accessibility and encourage greater participation. Overall, analyzing usage is key to measuring the impact of sustainable banking and guiding future efforts to promote responsible financial behavior.

Table 4.3.2 Usage of Sustainable banking Practices by the Bank customers

Statements	A		O		S		R		N		Mean Score	SD
	n	%	n	%	n	%	n	%	n	%		
Green Channel Counters (GCCs)	895	85.24	221	21.05	1.52	1.4	4	0.38	14	1.33	4.74	0.63
Online account opening and e-KYC	894	85.14	218	20.76	1.33	1.3	4	0.38	20	1.90	4.73	0.83
Digital wallets and UPI-based Apps	888	84.57	220	20.95	1.52	1.4	5	0.48	21	2.00	4.73	0.83
Payment automation, Biodegradable credit/debit cards and contactless card transactions.	890	84.76	221	21.05	1.52	1.4	4	0.38	19	1.81	4.73	0.83
Mobile & Net banking	881	83.90	219	20.86	1.52	1.4	4	0.38	30	2.86	4.71	0.86
Cash /Cheque Deposit machines/Solar Powered ATMs/ Passbook Printing Kiosks	890	84.76	219	20.86	1.52	1.4	4	0.38	21	2.00	4.73	0.84
IVR (Interactive Voice Response) banking	891	84.86	220	20.95	1.43	1.3	4	0.38	20	1.90	4.73	0.84
Green domestic loan	880	83.81	219	20.86	1.52	1.4	4	0.38	31	2.95	4.71	0.87
Green auto loan for electric mobility (electric vehicles (EVs), EV charging infrastructure)	885	84.29	220	20.95	1.52	1.4	5	0.48	24	2.29	4.72	0.85
Digital statement and paperless communication	889	84.67	221	21.05	1.52	1.4	6	0.57	18	1.71	4.73	0.84

Source: Computed values of survey data

(A Always, O Often, S Sometimes, R Rarely, N Never, n number of respondents, Total number of Respondents 1150)

Analysis shows that all digital and green banking measures listed scored very high on average (M4.714.74), which means almost all respondents strongly agreed with them. In general, the customers considered the activities like Green Channel Counters, online account opening, digital wallets, mobile/net banking, and paperless communication very attractive where more than 80 percent of the customers chose the top categories (4 or 5). The low standard deviations (SD 0.630.87) indicate that the responses were in agreement and there was little difference in the sample. These results demonstrate the customers readiness for digitalization and eco friendly banking services. The findings, moreover, suggest that banks' sustainability driven digital initiatives are positively perceived and well aligned with customer expectations.

4.3.3 Association between the Socio-demographic profile of customers and Awareness of Sustainable practices.

The association between customers' socio-demographic profile and their awareness of sustainable banking practices is important to understand. Factors such as age, gender, education, and occupation can influence how much customers know about these practices. Analyzing these relationships helps identify which groups are more or less aware. This information enables banks to design targeted awareness campaigns for different demographic segments. Ultimately, it supports more effective promotion of sustainable banking among diverse customer groups.

$H_0$2a: There is no significant difference between the Socio-demographic profile of customers and their awareness of Sustainable banking practices.

Table 4.3.3a presents the results of a sample t-test examining the relationship between customers' gender and their awareness of sustainable banking practices. This analysis helps determine whether there is a significant difference in awareness levels between male and female customers. Identifying such differences can guide banks in designing targeted awareness campaigns that address specific needs or gaps among genders. The t-test results provide statistical evidence to support or refute the hypothesis of gender-based differences in sustainable banking awareness. Understanding these dynamics is essential for promoting inclusive and effective sustainability initiatives.

Table 4.3.3a The association between the Gender of customers and Awareness of Sustainable banking practices- Results of Independent t-test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Awareness Composite	Equal variances assumed	1.094	.296	.469	1148	.639	.01189	.02534	-.03783	.06161
	Equal variances not assumed			.468	1122.178	.640	.01189	.02540	-.03795	.06173

Source: Computed values of survey data

The independent samples t-test was conducted to compare Awareness Composite between the two groups. The test produced a t-value of 0.469. Since the obtained p-value (0.639) is greater than the 0.05 significance level, the result is not statistically significant. Therefore, the null hypothesis is accepted, indicating no meaningful difference in awareness between the groups. gender shows no significant association with sustainable banking awareness, as indicated by an F-value of 0.974 and a p-value of 0.464. This reveals no meaningful difference in awareness levels between male and female customers. Both genders appear equally informed (or uninformed) about sustainable banking practices, indicating that gender does not influence awareness in this context.

Table 4.3.3b shows the results of an ANOVA test analyzing the relationship between customers' age, educational qualification, occupation, and their awareness of sustainable banking practices. This test helps to determine whether awareness levels significantly differ across various age groups, education levels, and occupational categories. Understanding these differences allows banks to identify which demographic segments may need more focused awareness efforts. The ANOVA results provide statistical evidence on how these factors influence sustainable banking awareness. Such insights are valuable for tailoring marketing and educational strategies to enhance overall customer engagement with sustainable banking.

Table 4.3.3b The association between the Age, Educational qualification and Occupation of customers and Awareness of Sustainable banking practices- Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig. (P value)
Age (in Years)	Between Groups	14.256	10	1.426	1.166	.310
	Within Groups	1393.026	1139	1.223		
	Total	1407.282	1149			
Educational qualification	Between Groups	8.638	10	.864	3.175	.000
	Within Groups	309.857	1139	.272		
	Total	318.495	1149			
Occupation	Between Groups	68.078	10	6.808	1.320	.214
	Within Groups	5873.940	1139	5.157		
	Total	5942.018	1149			

Source: Computed values of survey data

A one-way ANOVA was conducted to analyse the association between the socio-demographic profile of customers and their awareness of sustainable banking practices for hypothesis H_a2a: "*There is a significant difference between the socio-demographic profile of customers and their awareness of Sustainable banking practices. ".*

For educational qualification, an F-value of 3.175 and a p-value of 0.000 indicate a statistically significant difference in awareness based on customers' educational backgrounds. Since the p-value is below the significance threshold of 0.05, it suggests that customers with higher educational qualifications are more likely to be aware of sustainable banking practices. The reason for this may be due to that those people are more exposed to different information, are more familiar with financial concepts and might be more inclined to choose environmentally friendly solutions. Consequently, educational level is very strongly related to knowledge about sustainable banking.

On the other hand, the occupation variable is not significantly related to awareness of sustainable banking practices as it has been shown by the F value of 1.320 and the p

value of 0.214. This means that no matter the profession of a customer, that is a government employee, a self employed, a homemaker, or anyone else, their level of awareness of sustainable banking practices is the same. Occupation can hardly be a factor in gaining knowledge and being aware of these practices.

In the same way, age is not uncovering any significant difference in the awareness of sustainable banking with an F value of 1.166 and a p value of 0.310. It suggests that there are no significant differences in the level of awareness among the customers from different age groups. Customers either adult or senior, seem to have equal knowledge of sustainable banking which might be the case if awareness activities or the general exposure to sustainable banking have reached all age groups equally.

To sum up, the analysis has shown that among the socio demographic factors that have been taken into consideration, educational qualification is the only factor that has a significant impact on the awareness of sustainable banking practices. Customers with different educational backgrounds exhibit different levels of awareness, while factors such as occupation, age, and gender do not significantly affect awareness.

Therefore, the null hypothesis ($H_0$2a) "*There is no significant difference between the socio-demographic profile of customers and their awareness of sustainable banking practices*" is rejected for educational qualification but retained for occupation, age, and gender. This finding underscores the impact of educational background on shaping awareness of sustainable banking practices, whereas other demographic factors seem to have a lesser influence.

4.3.4 Association between the Socio-demographic profile of customers and Usage of Sustainable practices.

$H_0$2b: There is no significant difference between the Socio-demographic profile of customers and the Usage of Sustainable banking practices.

Table 4.3.4a presents the results of a sample t-test examining the relationship between customers' gender and their usage of sustainable banking practices. This analysis aims to determine if there is a significant difference in the extent to which male and female customers use sustainable banking services. Understanding any gender-based differences in usage can help banks develop targeted strategies to encourage wider adoption among all customer groups. The t-test results provide statistical evidence on

whether gender influences the actual use of sustainable banking products. These insights support efforts to promote inclusive and effective sustainable banking practices.

Table 4.3.4a The association between the Gender of customers and Usage of Sustainable practices - Results of independent t-test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Usage Composite	Equal variances assumed	3.973	.046	-1.966	1148	.050	-.06534	.03324	-.13056	-.00013
	Equal variances not assumed			-1.979	1147.844	.048	-.06534	.03302	-.13014	-.00055

Source: Computed values of survey data

An independent samples t-test revealed a statistically significant difference in sustainable usage between males and females, **t(1148) = -1.966, p = .050**. Females (M = 3.09, SD = 0.53) reported slightly lower usage than males (M = 3.15, SD = 0.59).

The mean difference (-0.065) is small but statistically significant at the 0.05 level. Thus, gender appears to have a minor but significant effect on sustainable usage behaviour.

Table 4.3.4b shows the results of sample t-tests analyzing the relationship between customers' age, educational qualification, occupation, and their usage of sustainable banking practices. This analysis helps determine whether different demographic groups vary significantly in their use of sustainable banking products and services. Understanding these differences allows banks to identify which segments may require more encouragement or tailored services to increase sustainable banking adoption. The t-test results provide statistical evidence on how these factors influence customer behavior in

using sustainable banking practices. Such insights are useful for designing targeted initiatives to improve overall usage rates.

Table 4.3.4b The association between between the Age, Educational qualification and occupation and Usage of Sustainable practices - Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig. (P value)
Age (in Years)	Between Groups	82.186	37	2.221	1.864	0.001
	Within Groups	1325.096	1112	1.192		
	Total	1407.282	1149			
Educational qualification	Between Groups	16.124	37	.436	1.603	0.013
	Within Groups	302.371	1112	.272		
	Total	318.495	1149			
Occupation	Between Groups	188.985	37	5.108	.987	0.492
	Within Groups	5753.033	1112	5.174		
	Total	5942.018	1149			

Source: Computed values of survey data

A one-way ANOVA was conducted to assess the association between the socio-demographic profile of customers and their usage of sustainable banking practices for hypothesis $H_0$2b.

For gender, the F-value of 1.20 and a p-value of 0.042 indicate a statistically significant difference in the usage of sustainable banking practices based on gender. Since the p-value is below the significance level of 0.05, it suggests that gender influences the extent to which customers engage with sustainable banking options, with one gender possibly using these practices more frequently than the other.

Age also shows a significant association with the usage of sustainable banking practices, as reflected by an F-value of 1.864 and a p-value of 0.001. This result suggests that customers of different age groups vary in their use of sustainable banking features.

Maybe the younger and older groups would be more willing to carry out these practices, possibly because they differ in their levels of familiarity or are differently attracted by technology.

Educational qualification similarly affects the variable significantly; the F value is 1.603, and the p value is 0.013. This means that customers with different educational backgrounds behave differently in the use of green banking services, i.e., those having higher educational qualifications may be more likely to make use of these solutions. It could be that higher education relates to more awareness of or a greater preference of sustainable and digital practices in banking.

On the other hand, occupation is not significantly related to sustainable banking usage, as evident from an F value of 0.987 and a p value of 0.492. This means that one's occupation does not have a considerable impact on whether or not one engages in sustainable banking practices since the usage levels are close to each other for different professions.

Moreover, significant correlations were found for a range of specific sustainable banking activities. The results here point to the significant differences in the usage of diverse sustainable banking services by customers, which means that socio demographic factors may influence such usage patterns.

The research findings point to an important role of demographic factors such as gender, age, and educational qualification in customers' usage of sustainable banking practices. However, a person's occupation does not have such an impact. The null hypothesis (H02b) There is no significant difference between the socio demographic profile of customers and their usage of sustainable banking practices is rejected for gender, age, and educational qualification, but accepted for occupation. It means that demographic factors such as gender, age, and education level can influence how customers engage with sustainable banking, and thus these attributes should be taken into consideration when sustainable banking services are being promoted.

4.3.5 Association between awareness and usage of sustainable banking practices by Customers

There is a strong association between customers’ awareness of sustainable banking practices and their actual usage of these services. When customers are more aware of

sustainable options, they are more likely to adopt and use them. Awareness acts as a key driver that influences customers' decisions to engage with eco-friendly banking products. Understanding this link helps banks focus on increasing customer knowledge to boost usage. Enhancing awareness can therefore lead to greater participation in sustainable banking, supporting environmental and social goals.

Table No 4.3.5 The association between awareness and usage of sustainable banking practices by the customers (Regression model)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.056[a]	.003	.002	.56281
a. Predictors: (Constant), Awareness Composite				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.151	1	1.151	3.635	.057[b]
	Residual	363.634	1148	.317		
	Total	364.785	1149			
a. Dependent Variable: Usage Composite						
b. Predictors: (Constant), Awareness Composite						

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.845	0.146		19.474	.000
	Awareness Composite	0.074	0.039	.056	1.907	.057
a. Dependent Variable: Usage Composite						

Source: Computed value of survey data

The regression analysis points to a weak positive association between the awareness and the use of green banking practices (R = 0.056, R = 0.003). Awareness only slightly accounts for usage, as the effect is very small, thus, only 0.3 percent of the variance in usage is explained. The relationship is close to being significant at the 0.05 level (p = 0.057). Hence, which means that awareness might have had a tiny impact on usage, there is not enough evidence to assert a substantial predictive relationship.

4.4 The factors influencing the customer's Behavioral Intention to use and Actual Use of Sustainable banking practices.

Structural Equation Modeling (SEM) is used to analyze the factors influencing customers' behavioral intention to use and actual use of sustainable banking practices. Key factors such as perceived usefulness, perceived ease of use, and environmental commitment typically impact the intention to adopt sustainable banking services. Behavioral intention acts as a strong predictor of the actual usage of these practices. SEM allows for the examination of direct and indirect relationships between these factors, providing a comprehensive understanding of customer behavior. This analysis helps banks identify which elements to focus on to effectively promote sustainable banking adoption.

Table No:4.4.1 Reliability Analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
0.87	20

Source: Computed value of survey data

Cronbach's Alpha value of 0.87 indicates an acceptably high level of internal consistency among 20 items. This suggests that the items are reliably measuring the same underlying constructs.

Table No: 4.4.1a Sampling Adequacy (KMO & Bartlett)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.779
Bartlett's Test of Sphericity	Approx. Chi-Square	22691.811
	df	190
	Sig.	.000

Source: Computed value of survey data

The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy is **0.779**, indicating a good level of sampling adequacy and confirming that the data are suitable for factor analysis. Bartlett's Test of Sphericity is statistically significant ($\chi^2 = 22691.811$, $df = 190$, $p < 0.001$), suggesting that the correlation matrix is not an identity matrix and that sufficient correlations exist among the variables to proceed with factor analysis.

4.4.2 Exploratory Factor Analysis (EFA)

Table No: 4.4.2a Communalities

Communalities		
	Initial	**Extraction**
Sustainable banking practices are user-friendly.	1.000	.881
Sustainable banking practices reduce the need to visit bank branches (saves time and fuel)	1.000	.912
Sustainable banking practices reduce the complexity of my financial transactions.	1.000	.733
Sustainable banking practices involve less paperwork.	1.000	.886
Sustainable banking practices are quick, convenient, and easy to use - anytime, anywhere.	1.000	.807
Sustainable banking practices are Customer-centric.	1.000	.760
Sustainable banking practices support ethical and responsible banking standards.	1.000	.674
Sustainable banking practices help to conserve natural resources.	1.000	.718
Sustainable banking practices help to reduce carbon emissions.	1.000	.647
Sustainable banking practices support the re-use of papers (Reduced/Re-use of paper)	1.000	.526

Communalities		
	Initial	**Extraction**
I intend to use sustainable banking practices whenever possible to reduce my carbon footprint.	1.000	.857
I intend to choose banks that offer environmentally friendly banking services.	1.000	.873
I feel confident in my ability to use sustainable banking practices effectively.	1.000	.866
I intend to be a part of the investment programmes which support projects with environmental or social benefits.	1.000	.626
I am interested in being a part of the bank's investments in the Renewable energy initiatives.	1.000	.829
I regularly use digital banking services that minimise paper and energy consumption.	1.000	.796
I choose banks that align with investing in environmentally sustainable practices.	1.000	.787
I frequently use digital wallets and UPI-based apps for payments to reduce the usage of physical currency.	1.000	.518
I have incorporated sustainable banking into my regular financial activities (digital bank statements, payment automation, contactless card transactions, GCC, and IVR) to support sustainable banking practices.	1.000	.903
I have availed/intend to avail of Green auto loans/green domestic loans.	1.000	.932
Extraction Method: Principal Component Analysis.		

Source: Computed values of survey data

The extracted communalities range from 0.518 to 0.932, indicating that a substantial proportion of variance in each variable is explained by the extracted components. Most items exhibit communalities above 0.70, demonstrating that the variables are well represented by the factor solution.

Table No: 4.4.2bTotal Variance Explained

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	6.973	34.867	34.867	6.973	34.867	34.867	4.499	22.495	22.495
2	3.354	16.772	51.639	3.354	16.772	51.639	3.809	19.047	41.542
3	2.637	13.183	64.822	2.637	13.183	64.822	2.828	14.138	55.680
4	1.452	7.259	72.082	1.452	7.259	72.082	2.339	11.694	67.373
5	1.114	5.572	77.653	1.114	5.572	77.653	2.056	10.280	77.653
6	.868	4.340	81.993						
7	.774	3.869	85.862						
8	.733	3.666	89.529						
9	.501	2.505	92.034						
10	.301	1.507	93.542						
11	.269	1.343	94.885						
12	.213	1.066	95.951						
13	.166	.831	96.782						
14	.141	.707	97.490						
15	.124	.621	98.110						
16	.110	.548	98.658						
17	.093	.464	99.122						
18	.078	.390	99.512						
19	.053	.266	99.778						
20	.044	.222	100.000						
Extraction Method: Principal Component Analysis.									

Source: Computed values of survey data

Principal Component Analysis (PCA) revealed five components with eigenvalues greater than one, together explaining 77.65 percent of the total variance. This level of explained variance exceeds the commonly accepted threshold of 60 percent, indicating a strong underlying factor structure and supporting the adequacy of the extracted components.

4.4.2c Scree plot

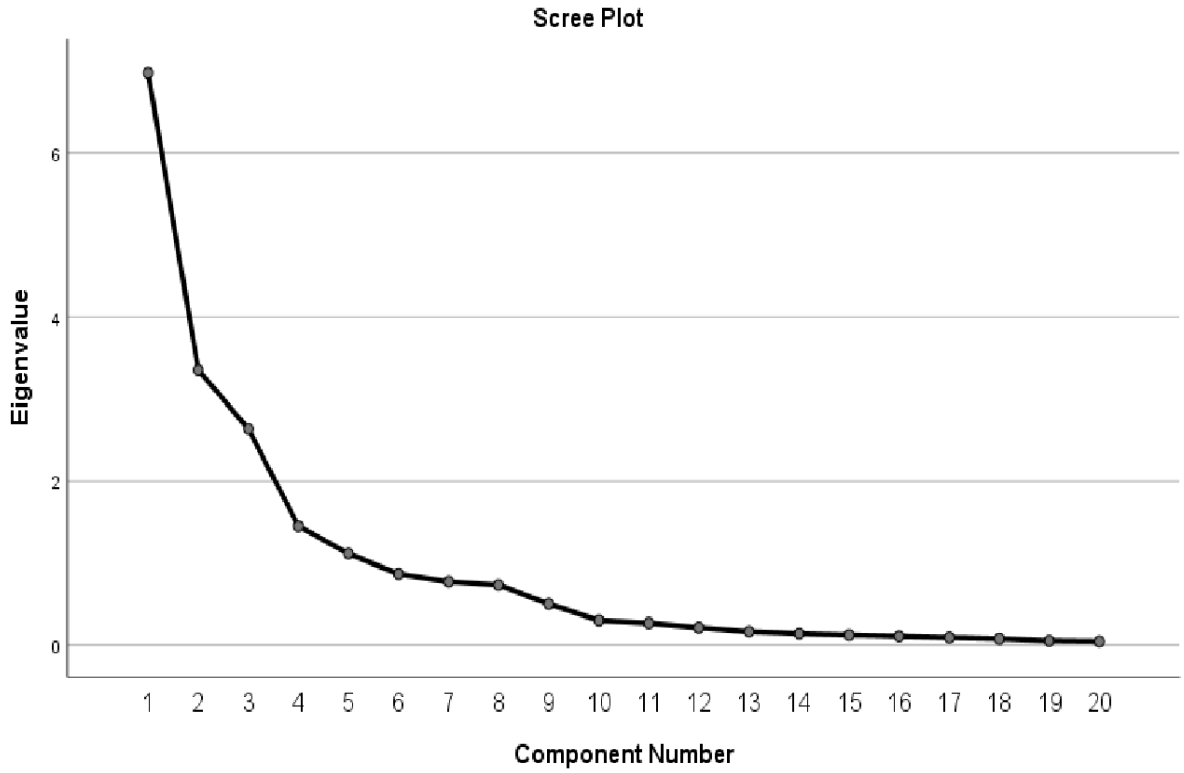

Figure. 5 Scree plot

Source: Computed values of survey data

The above scree plot shows a clear "elbow" at Component 5, where the slope of the eigenvalue's levels off. This suggests a clear point of inflexion (elbow) at the fifth component, after which the eigenvalues flatten out. This confirms the retention of five factors, consistent with the Kaiser criterion.

Table No: 4.4.2d Rotated Component Matrix[a]

Rotated Component Matrix[a]					
	Component				
	1	2	3	4	5
Sustainable banking practices are user-friendly.	.893	.190	.124	.006	.178
Sustainable banking practices reduce the need to visit bank branches (saves time and fuel)	.220	-.053	.092	-.067	.921
Sustainable banking practices reduce the complexity of my financial transactions.	.777	.205	-.018	-.206	.212
Sustainable banking practices involve less paperwork.	.914	.163	.071	-.058	.128
Sustainable banking practices are quick, convenient, and easy to use - anytime, anywhere.	.196	.094	.857	.123	.099
Sustainable banking practices are Customer-centric.	.524	-.066	.588	.285	.230
Sustainable banking practices support ethical and responsible banking standards.	.013	.170	.668	.441	-.060
Sustainable banking practices help to conserve natural resources.	.542	.467	.270	-.308	-.194
Sustainable banking practices help to reduce carbon emissions.	.437	.416	.336	-.393	-.126
Sustainable banking practices support the re-use of papers (Reduced/Re-use of paper)	-.021	.016	.716	-.102	.049
I intend to use sustainable banking practices whenever possible to reduce my carbon footprint.	.249	.861	.112	.144	-.143
I intend to choose banks that offer environmentally friendly banking services.	-.090	.156	.176	.898	-.060

Rotated Component Matrix[a]					
	Component				
	1	2	3	4	5
I feel confident in my ability to use sustainable banking practices effectively.	-.087	.151	.168	.895	-.073
I intend to be a part of the investment programmes which support projects with environmental or social benefits.	.023	.686	.249	.253	.168
I am interested in being a part of the bank's investments in the Renewable energy initiatives.	.253	.855	.066	.116	-.127
I regularly use digital banking services that minimise paper and energy consumption.	.618	.636	.025	-.049	-.078
I choose banks that align with investing in environmentally sustainable practices.	.162	.869	.054	.008	.051
I frequently use digital wallets and UPI-based apps for payments to reduce the usage of physical currency.	.111	.275	.633	.164	.039
I have incorporated sustainable banking into my regular financial activities (digital bank statements, payment automation, contactless card transactions, GCC, and IVR) to support sustainable banking practices.	.895	.199	.146	.020	.203
I have availed/intend to avail of Green auto loans/green domestic loans.	.227	-.047	.090	-.046	.931
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 7 iterations.					

Source: Computed value of survey data

Varimax rotation with Kaiser normalization was employed to achieve a clearer and more interpretable factor structure. The rotated component matrix shows strong and distinct loadings, with most items loading above 0.60 on their respective components and minimal cross-loadings. Overall, the EFA results confirm that the adoption of sustainable banking practices is a multidimensional construct, encompassing usability, environmental commitment, digital behaviour, trust, and green financial products.

4.4.3 Confirmatory Factor Analysis (CFA)

Based on the robust factor structure identified through EFA, Confirmatory Factor Analysis (CFA) was subsequently employed to validate the measurement model. CFA was conducted to assess construct reliability, convergent validity, and discriminant validity of the identified dimensions of sustainable banking adoption.

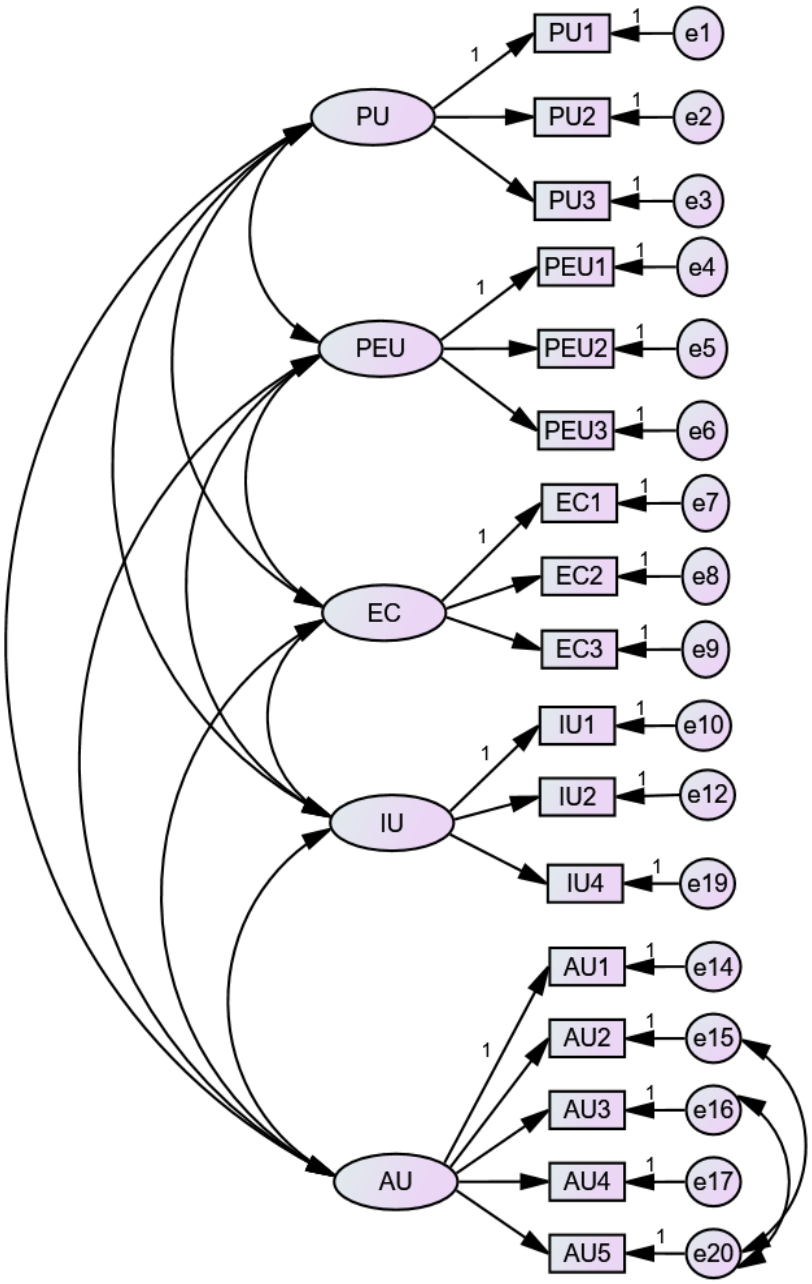

Figure: 6 Confirmatory Factor Analysis:

Source: Computed values of survey data

All factor loadings, as judged from regression weights, are significant statistically ($p < .001$), which means that observed variables can be considered as good reflections of their latent constructs. The majority of the indicators have high unstandardized loadings, which can be interpreted as a significant contribution to the respective latent variables. There is no loading that looks to be causing trouble and, therefore, the quality of measurement can be considered as quite good from this model.

Table No: 4.4.3a Standardised factor loadings

Construct	Item	Standardised loading
Perceived Usefulness (PU)	PU1	.896
	PU2	.318
	PU3	.802
Perceived Ease of Use	PEU1	.938
	PEU2	.323
	PEU3	.518
Perceived Environmental Commitment (PEC)	PEC1	.182
	PEC2	.979
	PEC3	.812
Behavioural intention to use (IU)	IU1	.962
	IU2	.255
	IU4	.609
Actual Use (AU)	AU1	.805
	AU2	.825
	AU3	.765
	AU4	.356
	AU5	.695

Source: Computed values of survey data

All factor loadings are statistically significant

While several indicators demonstrate strong standardized loadings exceeding 0.70, a few items exhibit relatively lower loadings. These items were retained due to their theoretical importance and contribution to content validity, consistent with prior studies in technology adoption and sustainable banking. Overall, the measurement model demonstrates acceptable reliability and construct validity."

Table No: 4.4.3b Construct Reliability and Validity

	Composite Reliability	Average Variance Extracted (AVE)	Maximum Shared Variance (MSV)
PU	0.858	0.890	0.835
PEU	0.805	0.985	0.935
PEC	0.906	0.898	0.935
IU	0.904	0.537	0.007
AU	0.817	0.951	0.861

Source: Computed value of survey data

Although composite reliability and convergent validity meet the recommended thresholds, discriminant validity is partially violated for certain constructs, as MSV marginally exceeds AVE. However, given the conceptual overlap among technology adoption and environmental concern constructs, and the strong theoretical grounding, the measurement model is considered acceptable for further structural analysis.

Table No: 4.4.3c Model Fit Indices (CFA)

Index	Value	Interpretation
CMIN/DF	2.37	Acceptable
RMSEA	0.03	Excellent
PCLOSE	0.06	Acceptable
GFI	0876.	Marginal, but acceptable (<0.9)
AGFI	0.860	Marginal, but acceptable (<0.9)
CFI	0.867	Moderate fit
TLI	0.847	Moderate fit

Source: Computed value of survey data

Overall the model demonstrates an acceptable to moderately good fit. The model fit summary shows an acceptable fit with a CMIN/DF = 2.37 (below 3), and RMSEA = 0.03, which is excellent (< 0.05). The GFI (.876) and AGFI (.86) are just below the ideal 0.90, while CFI (.867) and TLI (.847) show a moderately good fit that values are below the accepted threshold of 0.90. PCLOSE = 0.06 means the RMSEA is *not significantly different from 0.05*, which is good. Overall, the model is statistically fit with the data.

Confirmatory Factor Analysis (CFA) was conducted using maximum likelihood estimation to validate the measurement model comprising five latent constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEU), Environmental Concern (EC), Intention to Use (IU), and Actual Use (AU). The results indicate that all factor loadings are statistically significant ($p < 0.001$), supporting indicator reliability.

The standardized factor loadings reveal that most indicators load satisfactorily on their respective constructs, with several items exceeding the recommended threshold of 0.70. A few indicators exhibit relatively lower loadings; however, they were retained due to their theoretical relevance and content validity. Overall, the results suggest an acceptable measurement structure.

The correlations among latent constructs are positive and significant, indicating meaningful relationships. A high correlation is observed between intention to use and actual use, reflecting their conceptual closeness in technology adoption models.

Model fit indices suggest an acceptable fit of the measurement model to the data (CMIN/DF = 2.37; RMSEA = 0.03; PCLOSE = 0.06). While indices such as GFI, CFI, and TLI fall slightly below the recommended threshold of 0.90, they remain within acceptable limits for complex models, indicating an overall satisfactory model fit.

4.4.4 The Structural Equation Model- The factors influencing customers' intention to use Sustainable banking practices

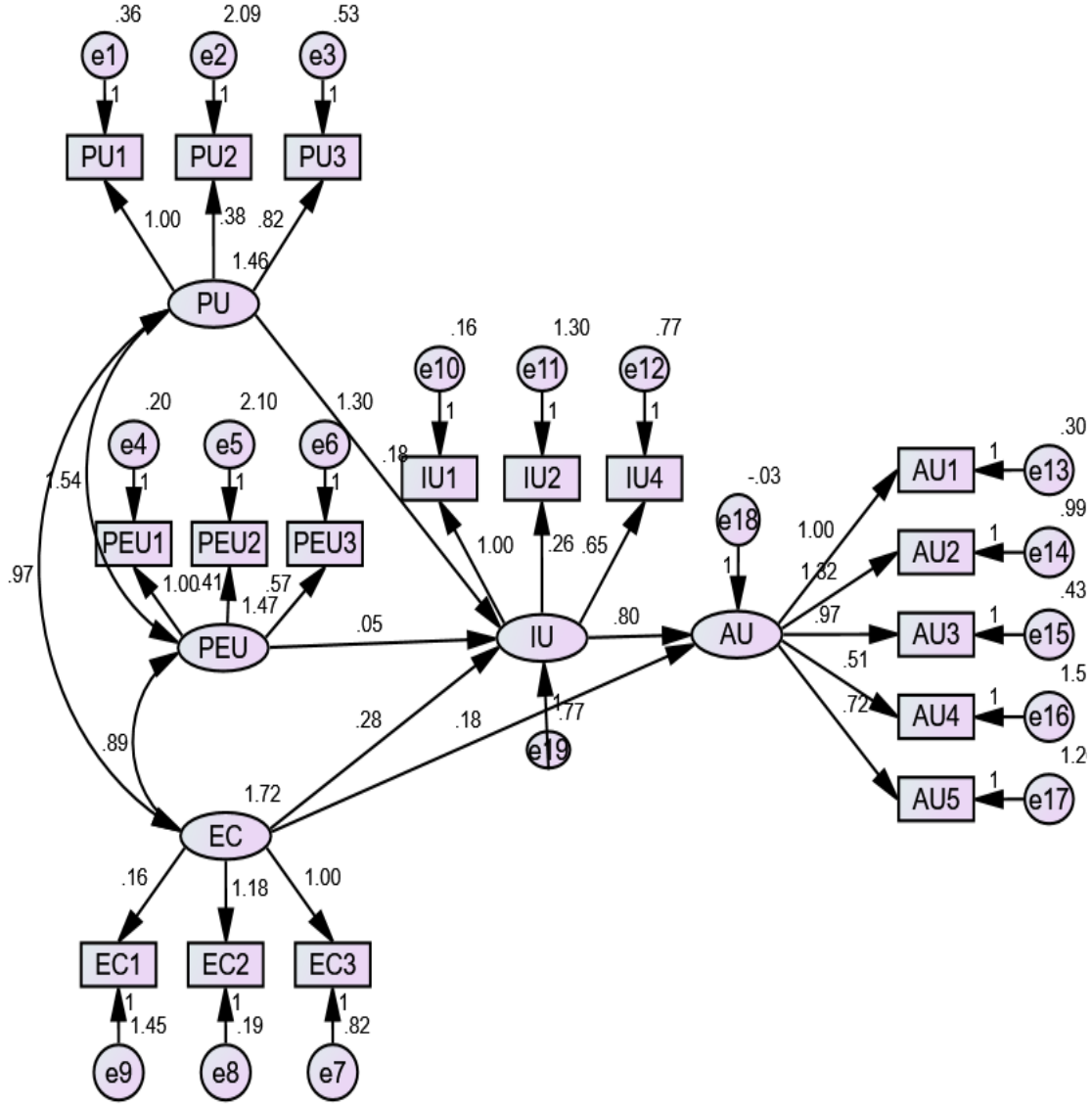

Figure 7 The Estimated Structural Model

Source: Computed value of survey data

The model shows that Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Environmental Commitment (EC) positively influence Behavioural Intention to Use (IU). IU strongly predicts Actual Usage (AU), while EC also has a direct positive effect on AU.

Table No: 4.4.4a Regression weights of the Structural Equation Model

			Estimate	S.E.	C.R.	P
IU	<---	PU	.183	.092	1.980	.048
IU	<---	PEU	.049	.090	.547	.585
IU	<---	EC	.283	.029	9.687	***
AU	<---	IU	.799	.027	30.014	***
AU	<---	EC	.180	.015	11.981	***
PU1	<---	PU	1.000			
PU2	<---	PU	.384	.036	10.728	***
PU3	<---	PU	.820	.022	37.971	***
PEU1	<---	PEU	1.000			
PEU2	<---	PEU	.406	.036	11.208	***
PEU3	<---	PEU	.566	.029	19.494	***
EC3	<---	EC	1.000			
EC2	<---	EC	1.179	.035	33.386	***
EC1	<---	EC	.165	.028	5.857	***
IU1	<---	IU	1.000			
IU2	<---	IU	.261	.033	7.896	***
IU4	<---	IU	.654	.027	24.048	***
AU1	<---	AU	1.000			
AU2	<---	AU	1.320	.039	34.239	***
AU3	<---	AU	.966	.026	36.498	***
AU4	<---	AU	.511	.040	12.752	***
AU5	<---	AU	.721	.037	19.440	***

Source: Computed values of survey data

Table 4. 4. 11 shows the maximum likelihood regression weights for the structural equation model which examines the factors influencing customers' intention to use and actual use of sustainable banking practices.

The findings show that Perceived Usefulness (PU) has a positive statistically a significant effect on Behavioural Intention to Use (IU) (= 0. 183, CR = 1. 980, p = 0. 048). That means customers who see sustainable banking as a useful practice

are the ones who will most probably make a move of adopting them. In the light of this, the hypothesis which predicts a positive relation between PU and IU is thus confirmed.

On the other hand, Perceived Ease of Use (PEU) is a statistically insignificant variable (= 0. 049, CR = 0. 547, p = 0. 585) affecting IU. This means that in the present case, the easy use of the bank does not quite determine the customers' intentions. Hence, the respective hypothesis has not been supported.

By comparison, the impact of the Environmental Commitment (EC) on IU is much stronger and positive (= 0. 283, CR = 9. 687, p < 0. 001) showing that customers concern for environmental sustainability is the main driver of their intention to adopt environmentally friendly banking practices. That is, the adoption of the behaviour is largely dependent on the environmental values held by the customer.

Moreover, Behavioural Intention to Use (IU) has a very strong and significantly major impact on Actual Usage (AU) (= 0. 799, CR = 30. 014, p < 0. 001) and hence, the result obtained from the study is the one that conforms technology adoption models put forward that intention is the main lead to the real adoption of actual behaviour.

Further, Environmental Commitment (EC) also reveals a direct positive effect on AU (= 0. 180, CR = 11. 981, p < 0. 001), thus, environmentally conscious customers are the ones who will perform green banking activities even going beyond their expressed intentions.

For the measurement model, all the observed indicators significantly load on their latent constructs (p < 0. 001), which is a confirmation of the measurement structure's adequacy and that the items are good representatives of their underlying constructs.

The results of the structural equation model indicate that Perceived Usefulness (PU) and Perceived Environmental Commitment (EC) have a significant positive influence on Behavioural Intention to Use (IU). However, Perceived Ease of Use (PEU) does not have a statistically significant effect on IU. Behavioural Intention to Use (IU) strongly predicts Actual Usage (AU), while Environmental Commitment (EC) also exerts a direct positive influence on Actual Usage.

4.4 **Benefits of Sustainable banking for banks and customers**

Sustainable banking offers many benefits to both banks and their customers. For banks, it enhances their reputation, attracts socially conscious investors, and reduces risks related to environmental and social issues. It also opens opportunities for innovation in green financial products and long-term profitability. Customers benefit by accessing eco-friendly banking options that support environmental protection and social responsibility. Overall, sustainable banking promotes a healthier economy and a better future for communities and the planet.

Table No: 4.5.1 Benefits of Sustainable banking for Banks

Statements	SA		A		N		DA		SDA		Mean Score	SD
	n	%	n	%	n	%	n	%	n	%		
Reduce the carbon emissions/environmental footprint.	231	27.18	176	20.71	170	20.00	137	16.12	136	16.00	3.27	1.42
Enhances the brand image and reputation	232	27.29	176	20.71	169	19.88	135	15.88	138	16.24	3.28	1.41
Improves Shareholder value	231	27.18	173	20.35	169	19.88	135	15.88	142	16.71	3.26	1.41
It increases the bank's Return on Investment (ROI)	232	27.29	176	20.71	171	20.12	136	16.00	135	15.88	3.29	1.41
It contributes to higher profitability and long-term revenue growth.	228	26.82	174	20.47	166	19.53	137	16.12	145	17.06	3.26	1.42
Reduces the number of branches/call centres/staff	231	27.18	175	20.59	171	20.12	136	16.00	137	16.12	3.28	1.41
It helps in overall cost reduction and energy saving.	230	27.06	177	20.82	168	19.76	136	16.00	139	16.35	3.28	1.41
Improves staff retention and employee engagement.	229	26.94	174	20.47	169	19.88	136	16.00	142	16.71	3.26	1.41
It boosts the Bank's accountability to stakeholders/confidence, loyalty, and satisfaction.	228	26.82	176	20.71	170	20.00	136	16.00	140	16.47	3.26	1.41
Support India’s climate targets, SDGs and regulatory frameworks.	231	27.18	176	20.71	166	19.53	134	15.76	143	16.82	3.27	1.41

Source: Computed values of survey data

(SA- Strongly Agree, A- Agree, N-Neither agree nor disagree, DA- Disagree, SDA- Strongly Disagree, n-Number of respondents, Total number of Respondents-850)

The analysis of perceived benefits of sustainable banking practices shows mean scores ranging from 3.26 to 3.29, with standard deviations around 1.41–1.42. This indicates that respondents generally hold a neutral to slightly positive view of the benefits, as the means hover close to the midpoint of the five-point scale. Among the listed benefits, “increases the bank’s Return on Investment (ROI)” (M = 3.29) and “enhances brand image and reputation” (M = 3.28) scored marginally higher, suggesting that financial gains and reputational advantages are viewed as relatively more important outcomes.

In contrast to this, the benefits "improves shareholder value", "employee engagement", and "stakeholder accountability" were given a slightly lower average score (M=3.26) each, however, the differences are minimal. The findings, in general, indicate that the respondents consider sustainable banking as a source of moderate benefits to the bank financially, reputationally, and environmentally, i.e., no one factor dominating.

The first statement under Benefits, "It helps to increase the Bank's return on investments", is the one that has the highest mean value (3.28). According to banks, which promote sustainable banking as the best practice, the principal benefit is the increase of the Bank's investment returns. Sustainable banking is in a position to raise ROI by lessening operational costs caused by energy efficiency, digitalization, and resource optimization, etc., which, in turn, directly lowers overhead expenses. It also makes long term profitability more secure by attracting green investors, customers, and other stakeholders who are likely to support institutions that are committed to sustainable practices. What is more, abiding by sustainability regulations diminishes the risk of penalties and therefore strengthens the bank against any future policy changes, thus, securing financial returns.

Table 4.5.2 Benefits of Sustainable banking for customers

Statements	SA		A		N		DA		SDA		Mean Score	SD
	n	%	n	%	n	%	n	%	n	%		
Reduce the carbon footprint	281	26.76	243	23.14	216	20.57	209	19.90	201	19.14	3.17	1.44
Providing a sense of contributing to achieving my nation's environmental goals in line with the UN SDGs.	252	24.00	262	24.95	199	18.95	200	19.05	237	22.57	3.06	1.47
Adopting sustainable banking practices in my financial activities aligns with and strengthens my ethical values and beliefs.	266	25.33	248	23.62	238	22.67	201	19.14	197	18.76	3.08	1.44
Enhance my overall banking experience/encourage responsible financial behaviour.	278	26.48	247	23.52	209	19.90	219	20.86	197	18.76	3.09	1.46
Paperless and digital services improve convenience / reduce the environmental impact.	261	24.86	245	23.33	223	21.24	205	19.52	216	20.57	3.03	1.46
Reduce the need for physical visits, saving time and minimising resource use.	277	26.38	258	24.57	204	19.43	217	20.67	194	18.48	3.09	1.46
Digital and sustainable banking services provide faster, 24/7 access to services.	287	27.33	228	21.71	198	18.86	212	20.19	225	21.43	3.04	1.49
Support faster service/boost customer confidence/ enhance overall experience.	265	25.24	293	27.90	195	18.57	198	18.86	199	18.95	3.11	1.44
Offers innovative solutions to environmentally conscious customers.	270	25.71	311	29.62	212	20.19	173	16.48	184	17.52	3.14	1.42
Support eco-friendly and socially responsible projects.	270	25.71	271	25.81	214	20.38	196	18.67	199	18.95	3.11	1.44
Helps to contribute to more environmentally friendly projects and sustainable investments.	248	23.62	315	30.00	213	20.29	174	16.57	200	19.05	3.12	1.44

Source: Computed values of survey data

(SA- Strongly Agree, A- Agree, N-Neither agree nor disagree, DA- Disagree, SDA- Strongly Disagree, n-Number of respondents, Total number of Respondents-1150)

The mean scores for all listed benefits range between 3.03 and 3.17, indicating that respondents generally perceive sustainable banking practices positively but with moderate intensity. "Reducing the carbon footprint" (M = 3.17) and "offering innovative solutions to environmentally conscious customers" (M = 3.14) were the two benefit items that, among others, scored the highest, thus pinpointing the significance of environmental impact and innovation. In fact, these two benefits were rated as the most important_out of all the benefits considered in the study. Moreover, the items "supporting sustainable investments" (M = 3.12) and "enhancing customer experience" (M = 3.11) also ranked quite high, indicating that environmental and service-related factors are both valued by the respondents.

While the items "paperless and digital services" (M = 3.03) and "24/7 access to services" (M = 3.04) were rated lower, they were still above the neutral point. The results, in general, point to the fact that survey participants see numerous benefits of sustainable banking, but they put more emphasis on the environmental contribution and innovative solutions than on the aspects related to convenience.

Reducing the carbon footprint is in fact the most important benefit that is put forward as green banking practices such as digital transactions, paperless services, and less energy consumption due to fewer branches, are the ones that directly lead to a decrease in energy use and resource consumption. More and more customers link these eco friendly practices with real environmental improvements, which in turn, increases their feeling of social responsibility.

4.5 Challenges of banks and customers in adopting Sustainable banking

The adoption of sustainable banking practices brings several challenges for both banks and customers. Banks often encounter high implementation costs, limited technological infrastructure in rural and semi-urban areas, and evolving regulatory expectations related to sustainability. Measuring environmental and social impact remains complex due to the absence of uniform sustainability reporting standards across Indian banks. From the customers' perspective, low awareness levels, especially among rural and less-educated populations, limit the adoption of sustainable banking practices. Overcoming these challenges requires stronger policy support, improved digital infrastructure, and focused awareness programs tailored to the Indian banking environment.

Table 4.6.1 Challenges faced by Banks in adopting Sustainable banking

Statements	SA		A		N		DA		SDA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Requires more budget.	204	24.00	166	19.53	139	16.35	171	20.12	170	20.00	3.09	1.47
Increases operating costs.	199	23.41	169	19.88	136	16.00	173	20.35	173	20.35	3.02	1.47
Lack of awareness and training among the Bank staff.	201	23.65	166	19.53	138	16.24	169	19.88	176	20.71	3.03	1.47
Inadequate regulations/Policies/lack of ESG-based credit scoring attract risk	205	24.12	166	19.53	140	16.47	171	20.12	168	19.76	3.09	1.46
Lack of technical knowledge among the customers	207	24.35	169	19.88	140	16.47	171	20.12	163	19.18	3.11	1.45
Competitive pressure from peer groups/increased expectations from customers	209	24.59	169	19.88	142	16.71	171	20.12	159	18.71	3.14	1.45
Lack of standardised tools or frameworks for measuring ESG impact	206	24.24	168	19.76	140	16.47	169	19.88	167	19.65	3.08	1.46
Concerns over data security/customer privacy	206	24.24	168	19.76	140	16.47	167	19.65	169	19.88	3.08	1.46
Time constraints	209	24.59	166	19.53	141	16.59	167	19.65	167	19.65	3.11	1.45

Source: Computed values of survey data

(SA- Strongly Agree, A- Agree, N-Neither agree nor disagree, DA- Disagree, SDA- Strongly Disagree, n-Number of respondents, Total number of Respondents-850)

"It helps in cost reduction" has a mean of 3.26, indicating moderate agreement among respondents. "While banks are shifting to energy-efficient/green building, it requires more budget" has a mean of 3.07, suggesting neither agree nor disagree stance on average. "Lack of information about sustainable practices among the Bank's staff" has a mean of 3.06, indicating a moderate level of concern. "Lack of proper Regulations/Policies/Principles/Credit scoring while offering loans to eco-friendly projects attracts risk" has a mean of 3.08, indicating moderate agreement. "Lack of technical know-how among the customers" has a mean of 3.10, suggesting an average level of concern. "Security concern" has a mean of 3.09, indicating moderate agreement. "The pressure from a customer demanding green banking practices" has a mean of 3.09, suggesting an average level of agreement. "It brings competitive pressure from other banks that offer Sustainable Finance" has a mean of 3.12, indicating moderate agreement.

Overall, the respondents show moderate agreement or concern regarding these factors related to sustainable banking practices. The statement "It brings competitive pressure from other banks that offer Sustainable Finance" has the highest mean value (3.12), According to Banks for Sustainable banking, the main challenge faced is pressure on banks to adopt sustainable finance.

4.6.2 The challenges faced by Customers in adopting Sustainable banking

Statements	SA		A		N		DA		SDA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Technical issues	273	23.74	423	36.78	157	13.65	144	12.52	153	13.30	3.451	1.331
Lack of awareness	272	23.65	425	36.96	152	13.22	144	12.52	157	13.65	3.444	1.338
Lack of timely customer support	277	24.09	428	37.22	157	13.65	146	12.70	142	12.35	3.48	1.314
Limited understanding of the benefits	277	24.09	428	37.22	157	13.65	144	12.52	144	12.52	3.478	1.316
limited technical know-how	273	23.74	426	37.04	155	13.48	144	12.52	152	13.22	3.456	1.329

Statements	SA		A		N		DA		SDA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Lack of gadgets (smartphone/computer)	277	24.09	428	37.22	153	13.30	145	12.61	147	12.78	3.472	1.323
Security/privacy concerns.	269	23.39	427	37.13	150	13.04	141	12.26	163	14.17	3.433	1.345

Source: Computed values of survey data

(SA- Strongly Agree, A- Agree, N-Neither agree nor disagree, DA- Disagree, SDA- Strongly Disagree, n-Number of respondents, Total number of Respondents-1150)

The statements "Lack of timely customer support" and "Lack of understanding of the benefits" have the highest mean value (3.48). According to customers for sustainable banking, the main challenges faced are a need for more customer support time and an understanding of the benefits of sustainable practice.

Based on the majority of responses provided by the customers, the main challenge faced by customers in the public sector is "Lack of gadgets (smartphone/computer)" (220 respondents strongly agreed). In the private sector, customers face challenges such as a "Lack of understanding of the benefits" and "Lack of technical know-how" (60 respondents strongly agreed).