

**CHALLENGES AND PROSPECTS OF
ENVIRONMENTAL REPORTING WITH SPECIAL
REFERENCE TO AUTOMOBILE INDUSTRY IN SOUTH INDIA**

Thesis submitted to the
University of Calicut
for the award of the degree of
Doctor of Philosophy in Commerce
Under the Faculty of Commerce and Management Studies

By
REMYA. S

Under the Supervision of
Dr. G. S. SANDHYA NAIR
Associate Professor
Department of Commerce
Sree Vivekananda College, Kunnampalam



**RESEARCH DEPARTMENT OF COMMERCE
ST JOSEPH'S COLLEGE (AUTONOMOUS) IRINJALAKUDA
THRISSUR DISTRICT, KERALA - 680 121**

DECEMBER 2025

Declaration

I hereby declare that the work presented in the thesis entitled “**Challenges and Prospects of Environmental Reporting with Special Reference to Automobile Industry in South India**” is based on the original work done by me under the guidance of Dr. G. S. Sandhya Nair, Associate Professor, Department of Commerce, Sree Vivekananda College, Kunnamkulam, and has not been included in any other thesis submitted previously for the award of any degree. The contents of the thesis have undergone a plagiarism check using iThenticate software at C.H.M.K. Library, University of Calicut, and the similarity index was found within the permissible limit. I also declare that the thesis is free from AI-generated content.



Remya. S

Place: Irinjalakuda
Date: 26 - 12 - 2025



Dr. G. S. Sandhya Nair
(*Research Supervisor*)

Dr. G.S SANDHYA NAIR
M.Com; M.Sc (Psy); MBA; M.Phil; PhD
Associate Professor in Commerce
Sree Vivekananda College, Kunnamkulam
Research Guide & Supervisor
Research Department of Commerce
St. Joseph's College (Autonomous, Irinjalakuda)



SREE VIVEKANANDA COLLEGE
KUNNAMKULAM, THRISSUR
Kerala - 680523

Dr. G. S. Sandhya Nair
Associate Professor
Department of Commerce

Email: sandhyanaairs@gmail.com
Mob: +9847190372

Certificate

This is to certify that the thesis entitled “**Challenges and Prospects of Environmental Reporting with Special Reference to Automobile Industry in South India**” is a record of the bona fide research work done by Ms. Remya. S, Part-time Research Scholar under my supervision and guidance. The thesis is the outcome of her original work and has not formed the basis for the award of any Degree, Diploma, Associateship, Fellowship or any other similar title and is worth submitting for the award of the Degree of Doctor of Philosophy in Commerce under the Faculty of Commerce and Management Studies, University of Calicut. All the relevant corrections and modifications recommended by the Doctoral Committee during the pre-submission seminar have been incorporated in the thesis.


Dr. G. S. Sandhya Nair
(Research Supervisor)

Research Department of Commerce
St Joseph's College (Autonomous), Irinjalakuda
Thrissur District, Kerala-680121

Place: Irinjalakuda
Date: 26 - 12 - 2025

Dr. G.S SANDHYA NAIR
M.Com; M.Sc (Psy); MBA; M.Phil; PhD
Associate Professor in Commerce
Sree Vivekananda College, Kunnamkulam
Research Guide & Supervisor
Research Department of Commerce
St. Joseph's College (Autonomous, Irinjalakuda)



UNIVERSITY OF CALICUT
CERTIFICATE ON PLAGIARISM CHECK

1.	Name of the Research Scholar	REMYA S	
2.	Title of thesis / dissertation	Challenges and Prospects of Environmental Reporting with Special Reference to Automobile Industry in South India	
3.	Name of the Supervisor	Dr G.S Sandhya Nair	
4.	Department/Institution	Centre for Research in Commerce, St Joseph's College (Autonomous) Irinjalakuda 680121	
5.	Similar content (%) identified	Non Core	Core
		Introduction/ Theoretical overview/Review of literature/ Materials & Methods/ Methodology	Analysis/Result/Discussion / Summary/Conclusion/ Recommendations
		5	5
	Acceptable maximum limit (%)	10	10
6.	Software used	iThenticate	
7.	Date of verification	25.10.2025	

**Report on plagiarism check, specifying included/excluded items with % of similarity to be attached*

SEEMA M.V.
Assistant Librarian
University of Calicut
Malappuram - 673 635

(Seal of the University of Calicut with name, designation & signature)

Name and signature of the Researcher **REMYA S**

Name and signature of the Supervisor. **Dr. G.S. Sandhya Nair**

The Doctoral Committee* has verified the report on plagiarism check with the contents of the thesis, as summarized above and appropriate measures have been taken to ensure originality of the Research accomplished herein.

Name & Signature of the HoD/HoI (Chairperson of the Doctoral Committee)

**In case of languages like Malayalam, Tamil etc..on which no software is available for plagiarism check, a manual check shall be made by the Doctoral Committee, for which an additional certificate has to be attached.*



PRINCIPAL IN - CHARGE
ST. JOSEPH'S COLLEGE
(AUTONOMOUS)
IRINJALAKUDA - 680 121
THIRUVARUR DIST., KERALA

5% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography
- Quoted Text
- Cited Text
- Small Matches (less than 10 words)

Exclusions

- 78 Excluded Matches

Match Groups

-  **289** Not Cited or Quoted 5%
Matches with neither in-text citation nor quotation marks
-  **0** Missing Quotations 0%
Matches that are still very similar to source material
-  **0** Missing Citation 0%
Matches that have quotation marks, but no in-text citation
-  **0** Cited and Quoted 0%
Matches with in-text citation present, but no quotation marks

Top Sources

- 4%  Internet sources
- 3%  Publications
- 0%  Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

5% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography
- Quoted Text
- Cited Text
- Small Matches (less than 10 words)

Exclusions

- 29 Excluded Matches

Match Groups

-  **188** Not Cited or Quoted 5%
Matches with neither in-text citation nor quotation marks
-  **0** Missing Quotations 0%
Matches that are still very similar to source material
-  **0** Missing Citation 0%
Matches that have quotation marks, but no in-text citation
-  **0** Cited and Quoted 0%
Matches with in-text citation present, but no quotation marks

Top Sources

- 4%  Internet sources
- 3%  Publications
- 0%  Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Acknowledgement

This thesis would have remained a dream had it not been for the inspiration, constant support and guidance of many people. Reflecting upon the completion of this profound undertaking, I am deeply humbled and sincerely grateful to all those who have been instrumental in the completion of this thesis.

At the forefront of this extensive list, I humbly acknowledge that it was not my will or exertion but God's mercy that led to the completion of this momentous endeavour. I bow my head in deepest reverence to the Lord Almighty for the abundant blessings bestowed upon me throughout the transformative journey of my research work.

I want to express my immense indebtedness and gratitude to my supervising guide, Dr. G. S. Sandhya Nair, Associate Professor, Department of Commerce, Sree Vivekananda College, Kunnankulam for her insightful suggestions, guidance, and constant encouragement. Her invaluable feedback and meticulous attention to detail have played a crucial role in shaping the quality and direction of my research work. Her dedication to diligently reviewing and refining my ideas has been a consistent driving force. I am especially thankful for the trust and confidence she placed in my abilities and am grateful to have had the opportunity to work under her mentorship.

I offer my grateful acknowledgement to Rev. Dr. Sr. Siji. P.D., The Principal of St. Joseph's College (Autonomous), Irinjalakuda for providing the essential facilities within the college and constant support, empathetic understanding and unwavering encouragement which was instrumental in the completion of this remarkable pursuit. I am grateful to the management of St. Joseph's College (Autonomous), Irinjalakuda for the valuable support in providing encouragement and creating a conducive environment that allowed me to dedicate myself to my research work. I thank all my former Principals, Dr. Sr. Isabel, Dr. Sr. Asha and Dr. Sr. Elaiza, for their constant encouragement and for generously providing all the required facilities especially during the initial years of my research.

My heartfelt appreciation to Dr. B. Johnson, Former Dean of the Department of Commerce and Management Studies, Dr. Aparna Sajeev, Expert Member of the Doctoral Committee, University of Calicut, Ms. Sindhu G Nair, V.C. Nominee of the RAC, Dr. Sajith G., Dr. Josheena Jose and all other members of the Doctoral Committee for their invaluable guidance and insightful comments provided during my research work. Their expertise and constructive feedback have significantly contributed to the refinement and direction of my research.

I am profoundly grateful to Dr. Santosh Kumar S., Professor of Finance, School of Management Studies, Cochin University of Science and Technology, Kochi, Kerala, Dr. Anoop K.G., Assistant Professor, Department of Commerce, Sree Vivekananda College, Kunnampulam, Dr. Umesh U., Associate Professor and Research Supervisor, Amal College of Advanced Studies (Autonomous), Myladi, Nilambur, Ms. Santhi Menon P., Retd Assistant Professor, Department of English, St. Joseph's College (Autonomous), Irinjalakuda and Ms. Girija Devi. K., Retd Professor, Department of Commerce, N.S.S College, Nenmara for their empathetic support and trustworthy counsel during my research journey.

I extend my heartfelt gratitude to the entire administrative and library staff of St. Joseph's College (Autonomous) Irinjalakuda, IIM Kozhikode and CHMK Central Library, University of Calicut for their timely assistance and support throughout my research work,

I express my sincere gratitude to Dr Rahul K., Research Officer, Kerala State Planning Board, and Dr. Cecily Shibi Netto, Academic Research Consultant, Research Insights, Kochi for all the statistical support extended for the completion of my thesis.

I sincerely thank Mr. Siby Linson, Assistant Professor, Research Department of Commerce, St. Joseph's College (Autonomous), Irinjalakuda whose unwavering support instilled confidence and strength in me especially during the crucial stage of pre and final submission of my research. I would like to express my heartfelt gratitude to Dr.Sr. Anjana, Vice Principal and Research Director of St. Joseph's College (Autonomous), Irinjalakuda for her co-operation in the completion of my research work,

I deeply acknowledge Mr. Jestin Poulouse P., FCA, Chartered Accountant for his invaluable assistance in collecting data for the research and Mr. Aromal E.S for all the technical help rendered throughout my research that played a significant role in shaping the outcome of this work. I am deeply grateful to all the respondents who participated in my research work and I extend my heartfelt thanks for their patience and wholehearted co-operation.

I extend my sincere gratitude to Dr. Nasirudheen T., Assistant Librarian of CHMK for his assistance and guidance in facilitating the plagiarism checking process for my thesis. Furthermore, I express my deep gratitude to the Director of Research of the University of Calicut and the entire team for all the facilities provided for undertaking the research.

I express my sincere gratitude to my friends and fellow research scholars, Mr. Arun M. S., Ms. Divya Rani R. L., and Ms Nisha P. S., and Ms. Kalarenjini V., Full time Scholar of Centre for Research in Commerce of St. Joseph's College (Autonomous), Irinjalakuda, for all the valuable suggestions and support during my research.

With deep gratitude, I acknowledge Dr. Sr. Elaiza, Dr. Elizabeth Paul C., Ms. Soumya Stephen A., Ms. Jitha Thomas, Mr. Siby Linson, Ms. Amritha Thomas, Ms. Sherline T.I., and Ms. Rupini T.S., my colleagues in the Research Department of Commerce, St. Joseph's College (Autonomous), Irinjalakuda, for their support, encouragement and understanding.

With humble appreciation and due respect, I acknowledge my teachers in the Department of Commerce at Vimala College (Autonomous), Thrissur for shaping my academic foundation and constant encouragement and support. I especially acknowledge the retired faculty members of the Department of Commerce, St. Joseph's College (Autonomous), Irinjalakuda for their moral support and prayers.

I express my heartfelt gratitude to my husband, Mr. Jayesh B., for the spiritual, moral, academic and technical support throughout my journey. I also extend my sincere gratitude to my daughter, Lakshmi. J., for her mature understanding, kind assistance and wholehearted support throughout my research journey. I am grateful to my father Mr. C. R. Subramanian, my mother, Mrs. K. S. Bhagyalakshmi, my in-laws, Mr. T. M. Balasubramanian and Mrs. Chandra. G. for protecting me with their prayers and blessings throughout my research journey. I acknowledge with deep gratitude the compassionate understanding and wholehearted support extended by my sisters Ms. Dhanya. S. and Ms. Vandana. S. Kumar and my brothers Mr. Jithin Jayram and Mr. Ganesh. B. for their loving and prayerful support and guidance in all my endeavours. I thank all my relatives for their support and prayers.

Remya. S

Abstract

Environmental Accounting involves measuring, recording and disclosing the impact of corporate environmental activities on its financial status through specialized accounting systems. Environmental Reporting, on the other hand is the disclosure of environmental information in the annual reports or by some other medium like environmental policy statements or corporate environmental reports. This study examines the challenges and prospects of Environmental Reporting in Automobile industry – a sector playing a dominant role in global economic development, and contributing towards environmental degradation. The respondents of the study include top and middle level employees and chartered accountants and energy auditors. The primary objectives of the study were to identify the determinants of Environmental Disclosure, assess the recent trends of Disclosure and examine the constraints and benefits associated with Environmental Reporting. The study also explored the impact of financial performance on Environmental Reporting. The main reason for selecting South India is due to the presence of large number of automobile manufacturing units. The findings indicate that various determinants significantly influence Environmental Reporting practices of the firms as perceived by the employees and external auditors. The employees viewed CSR report as the most frequent form of disclosure whereas chartered accountants and external auditors reported more frequent use of sustainability reports. The employees demonstrated higher level of perception of Global Reporting Initiative Guidelines whereas chartered accountants and external auditors opined sectoral guidance as the most frequent reporting format. The environmental information was most frequently disclosed in the Director's report. The study observed that financial performance had a significant impact on corporate environmental disclosure and performance practices. The respondents believed that companies with high profitability were more likely to prioritize environmental issues, gain a competitive advantage, and contribute to the welfare of stakeholders. The study pointed out that training programs for employees emerged as a significant predictor of corporate environmental performance, suggesting that investments in employee training will contribute to improved environmental outcomes. The challenges encountered while disclosing environmental information include lack of expertise,

lack of legal requirement, improper enforcement of planning and environmental legislation, huge capital investment and difficulty in comparison when different methods are followed by the firms. Despite these challenges, the firms reported several benefits from proper disclosure of environmental information such as eco efficiency, investor attraction, increase credibility, long term survival of organisation and risk management. The study helps to enhance the understanding of disclosure practices and thereby helps to frame a standardised disclosure index covering all performance indicators. The majority of the automobile manufacturing units in South India disclose environmental information due to stakeholder pressure and to improve the financial performance. The chartered accountants and external auditors perceive higher barriers and favour conservative approach. On the other hand, employees stress on ethical motives and tangible benefits. The proper investment in training, adoption of standardised framework and regular audit of environmental accounts helps to reduce the perception gap of stakeholders, reduce cost and turn Environmental Reporting into a strategic advantage for long term sustainability and investor trust.

The study concluded that Environmental disclosure is becoming an essential part of corporate accountability and sustainable development. Environmental reporting is perceived by many companies as a compliance requirement rather than a strategic tool for stakeholder engagement and long-term value creation. The various concerns like growing public awareness on environmental issues, increasing pressure from investors and regulatory bodies and integration of sustainability are driving greater attention to Environmental Reporting. The recent advancements in digital technology, data analytics and reporting frameworks also provide valuable tools to enhance transparency and comparability. The study underscores the need for stronger regulatory frameworks, capacity building for organisations and collaboration between public and private sectors to fully harness these prospects. The proper disclosure of environmental information is not only important for corporate transparency but also necessary for achieving broader environmental and sustainability goals in the face of climate change and resource degradation.

Keywords: Environmental Accounting-Environmental Reporting-Challenges-Prospects-Disclosure Trends-Corporate Financial Performance-Corporate Environmental Performance

സംഗ്രഹം

പരിസ്ഥിതി അക്കൗണ്ടിംഗ് എന്നത് പ്രത്യേക അക്കൗണ്ടിംഗ് സംവിധാനങ്ങൾ വഴി സ്ഥാപനങ്ങളുടെ പരിസ്ഥിതി പ്രവർത്തനങ്ങൾ അവയുടെ ധനകാര്യ നിലയിൽ ഉണ്ടാക്കുന്ന സ്വാധീനം അളക്കുകയും രേഖപ്പെടുത്തുകയും വെളിപ്പെടുത്തുകയും ചെയ്യുന്നതാണ്. മറുവശത്ത്, പരിസ്ഥിതി റിപ്പോർട്ടിംഗ് എന്നത് വാർഷിക റിപ്പോർട്ടുകൾ വഴിയോ, പരിസ്ഥിതി നയ പ്രസ്താവനകൾ, കോർപ്പറേറ്റ് പരിസ്ഥിതി റിപ്പോർട്ടുകൾ തുടങ്ങിയ മറ്റ് മാധ്യമങ്ങളിലൂടെയോ പരിസ്ഥിതി വിവരങ്ങൾ വെളിപ്പെടുത്തുന്നതിനെ സൂചിപ്പിക്കുന്നു. ആഗോള സാമ്പത്തിക വികസനത്തിൽ പ്രധാന പങ്ക് വഹിക്കുകയും പരിസ്ഥിതി നാശത്തിൽ സംഭാവന നൽകുകയും ചെയ്യുന്ന ഓട്ടോമൊബൈൽ വ്യവസായത്തിലെ പരിസ്ഥിതി റിപ്പോർട്ടിംഗിന്റെ വെല്ലുവിളികളും സാധ്യതകളും ഈ പഠനം പരിശോധിക്കുന്നു. ഈ പഠനത്തിലെ പ്രതികരണക്കാർ ഉന്നതവും മദ്ധ്യനിലയിലുമുള്ള ജീവനക്കാരെയും ചാർട്ടേഡ് അക്കൗണ്ടന്റുമാരെയും എന്നർത്ഥം ഓഡിറ്റർമാരെയും ഉൾക്കൊള്ളുന്നു. പരിസ്ഥിതി വെളിപ്പെടുത്തലിനെ സ്വാധീനിക്കുന്ന ഘടകങ്ങളെ കണ്ടെത്തുക, വെളിപ്പെടുത്തലിലെ പുതിയ പ്രവണതകൾ വിലയിരുത്തുക, പരിസ്ഥിതി റിപ്പോർട്ടിംഗുമായി ബന്ധപ്പെട്ട നിയന്ത്രണങ്ങളും ഗുണങ്ങളും പരിശോധിക്കുക എന്നിവയായിരുന്നു പഠനത്തിന്റെ പ്രധാന ലക്ഷ്യങ്ങൾ. ധനകാര്യ പ്രകടനം പരിസ്ഥിതി റിപ്പോർട്ടിംഗിനെ എങ്ങനെ സ്വാധീനിക്കുന്നു എന്നതും ഈ പഠനം പരിശോധിച്ചു. ദക്ഷിണ റന്ത്യയിൽ വലിയ തോതിൽ ഓട്ടോമൊബൈൽ നിർമ്മാണ യൂണിറ്റുകൾ സ്ഥിതിചെയ്യുന്നതാണ് ഈ പ്രദേശം പഠനത്തിനായി തിരഞ്ഞെടുക്കാനുള്ള പ്രധാന കാരണം. ജീവനക്കാരുടെയും ബാഹ്യ ഓഡിറ്റർമാരുടെയും അഭിപ്രായപ്രകാരം, വിവിധ ഘടകങ്ങൾ സ്ഥാപനങ്ങളുടെ പരിസ്ഥിതി റിപ്പോർട്ടിംഗ് രീതികളെ ഗണ്യമായി സ്വാധീനിക്കുന്നതായി കണ്ടെത്തലുകൾ സൂചിപ്പിക്കുന്നു. ജീവനക്കാർ CSR റിപ്പോർട്ടുകളെയാണ് ഏറ്റവും പതിവായ വെളിപ്പെടുത്തൽ രൂപമായി കണക്കാക്കിയതെങ്കിലും, ചാർട്ടേഡ് അക്കൗണ്ടന്റുമാരും ബാഹ്യ ഓഡിറ്റർമാരും സന്തോഷിതരായി റിപ്പോർട്ടുകളാണ് കൂടുതൽ ഉപയോഗിക്കുന്നതായി റിപ്പോർട്ട് ചെയ്തത്. ഗ്ലോബൽ റിപ്പോർട്ടിംഗ് റിൻഷിയേറ്റീവ് (GRI) മാർഗനിർദ്ദേശങ്ങളെക്കുറിച്ച് ജീവനക്കാർക്ക് ഉയർന്ന ബോധ്യമുണ്ടായിരുന്നപ്പോൾ, ചാർട്ടേഡ് അക്കൗണ്ടന്റുമാരും ബാഹ്യ ഓഡിറ്റർമാരും മേഖലാതല മാർഗനിർദ്ദേശങ്ങളെയാണ് ഏറ്റവും പതിവായ റിപ്പോർട്ടിംഗ് ഫോർമാറ്റായി വിലയിരുത്തിയത്. പരിസ്ഥിതി വിവരങ്ങൾ കൂടുതലായി വെളിപ്പെടുത്തിയത് ഡയറക്ടർ റിപ്പോർട്ടിലൂടെയായിരുന്നു. ധനകാര്യ പ്രകടനം കോർപ്പറേറ്റ് പരിസ്ഥിതി വെളിപ്പെടുത്തലിലും പ്രകടന രീതികളിലും ഗണ്യമായ സ്വാധീനം ചെലുത്തുന്നുവെന്ന് പഠനം നിരീക്ഷിച്ചു. ഉയർന്ന ലാഭം കൈവരിക്കുന്ന കമ്പനികൾ പരിസ്ഥിതി വിഷയങ്ങൾക്ക് കൂടുതൽ മുൻഗണന നൽകുകയും, മത്സരാധികൃത നേടുകയും, സ്റ്റേക്ക്ഹോൾഡർമാരുടെ ക്ഷേമത്തിന് സംഭാവന നൽകുകയും ചെയ്യുമെന്ന് പ്രതികരണക്കാർ വിശ്വസിച്ചു. ജീവനക്കാർക്കുള്ള പരിശീലന പരിപാടികൾ കോർപ്പറേറ്റ് പരിസ്ഥിതി പ്രകടനത്തെ ഗണ്യമായി പ്രവചിക്കുന്ന ഘടകമായി ഉയർന്നുവന്നതായും, അതുവഴി പരിസ്ഥിതി ഫലങ്ങൾ മെച്ചപ്പെടുമെന്നും പഠനം ചൂണ്ടിക്കാട്ടുന്നു.

പരിസ്ഥിതി വിവരങ്ങൾ വെളിപ്പെടുത്തുന്നതിനിടെ നേരിടുന്ന വെല്ലുവിളികളിൽ വിദഗ്ദ്ധരുടെ കുറവ്, നിയമപരമായ നിർബന്ധത്തിന്റെ അഭാവം, പദ്ധതിയിടലിന്റേയും പരിസ്ഥിതി നിയമങ്ങളുടെയും ശരിയായ നടപ്പാക്കൽ പ്ലാജ, വലിയ മൂലധന നിക്ഷേപം, വിവിധ സ്ഥാപനങ്ങൾ വ്യത്യസ്ത രീതികൾ പിന്തുടരുന്നതിനാൽ താരതമ്യം ചെയ്യുന്നതിലെ ബുദ്ധിമുട്ട് എന്നിവ ഉൾപ്പെടുന്നു. ഈ വെല്ലുവിളികൾക്കിടയിലും, റേക്കോഫിഫിഷ്യൻസി, നിക്ഷേപകരെ ആകർഷിക്കൽ, വിശ്വാസ്യത വർദ്ധിപ്പിക്കൽ, സ്ഥാപനത്തിന്റെ ദീർഘകാല നിലനിൽപ്പ്, റിസ്ക് മാനേജ്മെന്റ് തുടങ്ങിയ നിരവധി ഗുണങ്ങൾ പരിസ്ഥിതി വിവരങ്ങളുടെ ശരിയായ വെളിപ്പെടുത്തലിലൂടെ സ്ഥാപനങ്ങൾ റിപ്പോർട്ട് ചെയ്യും. ഈ പഠനം വെളിപ്പെടുത്തൽ രീതികളെക്കുറിച്ചുള്ള ബോധം വർദ്ധിപ്പിക്കുകയും, എല്ലാ പ്രകടന സൂചികകളും ഉൾക്കൊള്ളുന്ന ഒരു മാനദണ്ഡീകരിച്ച വെളിപ്പെടുത്തൽ സൂചിക രൂപപ്പെടുത്തുന്നതിനും സഹായിക്കുന്നു. ദക്ഷിണ ന്യൂയിലെ ഭൂരിഭാഗം ഓട്ടോമൊബൈൽ നിർമ്മാണ യൂണിറ്റുകളും സ്റ്റേക്ക്ഹോൾഡർമാരുടെ സമ്മർദ്ദം മൂലവും ധനകാര്യ പ്രകടനം മെച്ചപ്പെടുത്തുന്നതിനുമായി പരിസ്ഥിതി വിവരങ്ങൾ വെളിപ്പെടുത്തുന്നു. ചാർട്ടേഡ് അക്കൗണ്ടന്റുമാരും ബാഹ്യ ഓഡിറ്റർമാരും കൂടുതൽ തടസ്സങ്ങൾ അനുഭവപ്പെടുന്നതായി കാണുകയും സംയമിത സമീപനത്തെ അനുകൂലിക്കുകയും ചെയ്യുന്നു. മറുവശത്ത്, ജീവനക്കാർ നൈതിക പ്രേരണകളും വ്യക്തമായ ഗുണഫലങ്ങളും ഊന്നിപ്പറയുന്നു. പരിശീലനത്തിൽ ശരിയായ നിക്ഷേപം, മാനദണ്ഡീകരിച്ച ഫ്രെയിംവർക്ക് സ്വീകരിക്കൽ, പരിസ്ഥിതി അക്കൗണ്ടുകളുടെ സ്ഥിരമായ ഓഡിറ്റ് എന്നിവ സ്റ്റേക്ക്ഹോൾഡർമാരുടെ അഭിപ്രായ വ്യത്യാസം കുറയ്ക്കാനും ചെലവ് കുറയ്ക്കാനും പരിസ്ഥിതി റിപ്പോർട്ടിംഗിനെ ദീർഘകാല സുസ്ഥിരതക്കും നിക്ഷേപക വിശ്വാസത്തിനും സഹായിക്കുന്ന തന്ത്രപരമായ നേട്ടമായി മാറ്റാനും സഹായിക്കുന്നു.

പരിസ്ഥിതി വെളിപ്പെടുത്തൽ കോർപ്പറേറ്റ് ഉത്തരവാദിത്വത്തിന്റെയും സുസ്ഥിര വികസനത്തിന്റേയും അവിഭാജ്യ ഘടകമായി മാറിക്കൊണ്ടിരിക്കുകയാണെന്ന് പഠനം നിഗമനം ചെയ്യുന്നു. പല കമ്പനികളും പരിസ്ഥിതി റിപ്പോർട്ടിംഗിനെ സ്റ്റേക്ക്ഹോൾഡർ പങ്കാളിത്തത്തിന്റേയും ദീർഘകാല മൂല്യ സൃഷ്ടിയുടെയും തന്ത്രപരമായ ഉപകരണമായി കാണുന്ന തിനേക്കാൾ നിയമാനുസരണ ബാധ്യതയായി മാത്രമാണ് കാണുന്നത്. പരിസ്ഥിതി വിഷയങ്ങളോടുള്ള പൊതുജന ബോധവൽക്കരണം വർദ്ധിപ്പിക്കുന്നത്, നിക്ഷേപകരുടെയും നിയന്ത്രണ ഏജൻസികളുടെയും സമ്മർദ്ദം, സുസ്ഥിരതയുടെ സംയോജനം എന്നിവ പരിസ്ഥിതി റിപ്പോർട്ടിംഗിന് ലേക്കുള്ള കൂടുതൽ ശ്രദ്ധയ്ക്ക് കാരണമാകുന്നു. ഡിജിറ്റൽ സാങ്കേതികവിദ്യ, ഡാറ്റ അനലിറ്റിക്സ്, റിപ്പോർട്ടിംഗ് ഫ്രെയിംവർക്കുകൾ എന്നിവയിലെ പുതിയ പുരോഗതികൾ സുതാര്യതയും താരതമ്യേനയും മെച്ചപ്പെടുത്തുന്നതിനുള്ള മൂല്യവത്തായ ഉപകരണങ്ങൾ നൽകുന്നു. ശക്തമായ നിയമപരമായ ചട്ടക്കൂടുകൾ, സ്ഥാപനങ്ങൾക്ക് ശേഷി വർദ്ധിപ്പിക്കൽ, പൊതുസ്വകാര്യ മേഖലകളിലേക്കുള്ള സഹകരണം എന്നിവയുടെ ആവശ്യകത ഈ പഠനം ഊന്നിപ്പറയുന്നു. കാലാവസ്ഥാ മാറ്റവും വിഭവ ക്ഷയവും നേരിടുന്ന സാഹചര്യത്തിൽ, പരിസ്ഥിതി വിവരങ്ങളുടെ ശരിയായ വെളിപ്പെടുത്തൽ കോർപ്പറേറ്റ് സുതാര്യതയ്ക്ക് മാത്രമല്ല, വിശാലമായ പരിസ്ഥിതിസുസ്ഥിരത ലക്ഷ്യങ്ങൾ കൈവരിക്കാനും അനിവാര്യമാണ്.

മുഖ്യപദങ്ങൾ: പരിസ്ഥിതി അക്കൗണ്ടിംഗ് - പരിസ്ഥിതി റിപ്പോർട്ടിംഗ് - വെല്ലുവിളികൾ - സാധ്യതകൾ - വെളിപ്പെടുത്തൽ പ്രവണതകൾ - കോർപ്പറേറ്റ് സാമ്പത്തിക പ്രകടനം - കോർപ്പറേറ്റ് പരിസ്ഥിതി പ്രകടനം

Contents

<i>Abstract English</i>	i
<i>Abstract Malayalam</i>	iii
<i>List of Tables</i>	xiii
<i>List of Figures</i>	xxi
<i>List of Abbreviations</i>	xxii

Chapter 1

INTRODUCTION..... 01 – 70

1.1 Introduction.....	02
1.2 Environmental Accounting and Environmental Reporting	05
1.3 Background of the Study	10
1.4 Significance of the Study.....	12
1.5 Statement of the Problem	16
1.6 Research Questions	19
1.7 Research Objectives	20
1.8 Major Hypotheses of the Study	20
1.9 Scope of the Study	23
1.10 Research Methodology	24
1.10.1 Research Design.....	25
1.10.2 Selection of the area	25
1.10.3 Data collection	26
1.10.4 Sample Design	27
1.10.4.1 Population	27
1.10.4.2 Sample Frame.....	27
1.10.4.3 Sampling Unit.....	29
1.10.4.4 Sampling Technique	30
1.10.4.5 Fixation of Sample Size	34
1.10.5 Designing of the Questionnaire.....	35
1.10.6 Feasibility study	39
1.10.7 Scale Reliability	40
1.10.8 Validity Test.....	41
1.10.9 Normality Test	42
1.10.10 Tools for Data Analysis	61
1.11 Operational Definitions	61
1.12 Limitations of the Study	67
1.13 Structure of the Thesis.....	67
1.14 Summary.....	70

Chapter 2

REVIEW OF LITERATURE	71 – 150
2.1 Introduction.....	72
2.2 Overview of Environmental Accounting and Reporting.....	72
2.3 Significance of Environmental Accounting and Reporting.....	75
2.4 Definition of Environmental Accounting and Disclosure.....	76
2.5 Determinants of Environmental Reporting.....	77
2.5.1 Stakeholder Pressure	77
2.5.2 Environmental Awards and Certification.....	80
2.5.3 Disclosure Practices	83
2.5.4 Auditor type/Quality.....	86
2.5.5 Pollution Propensity	90
2.5.6 Political Exposure	93
2.5.7 Media Exposure	94
2.5.8 Board Size.....	96
2.5.9 Board Independence	98
2.5.10 Gender Diversity	100
2.5.11 Board Meetings	103
2.5.12 Environmental Committee.....	105
2.5.13 Size of the Firm.....	107
2.5.14 Age of the Company.....	108
2.5.15 Number of Years Listed	110
2.5.16 Nature of Industry	111
2.5.17 Uncertainty Avoidance.....	112
2.6 Trends of Environmental Accounting and Reporting in Automobile Industry.....	113
2.7 Environmental Reporting and Corporate Financial Performance.....	118
2.7.1 Financial Performance Parameters.....	123
2.7.1.1 Return on Capital Employed (ROCE).....	123
2.7.1.2 Earning Per Share (EPS).....	124
2.7.1.3 Return on Assets.....	126
2.7.1.4 Leverage.....	127
2.7.1.5 Debt Equity Ratio	129
2.7.1.6 Current Ratio	131
2.7.1.7 Quick Ratio	132
2.7.2 Environmental Reporting Parameters.....	132
2.7.2.1 Energy Intensity.....	133
2.7.2.2 Emission Intensity	134
2.7.2.3 Water Intensity	135
2.7.2.4 Waste Intensity	136
2.7.2.5 Environmental Reporting Completeness Ratio	137
2.8 Environmental Reporting and Corporate Environmental Performance	138
2.9 Challenges and Prospects of Environmental Reporting	143

2.10 Summary of Outcome of Literature	148
2.11 Gaps in Existing Literature.....	149
2.12 Summary	150

Chapter 3

THEORETICAL FRAMEWORK 151 – 182

3.1 Introduction.....	152
3.2 Definition.....	152
3.3 Evolution of Environmental Reporting	153
3.4 Traditional Theories Related to Environmental Reporting	154
3.4.1 Stakeholder Theory	155
3.4.2 Agency Theory.....	158
3.4.3 Legitimacy Theory	160
3.4.4 Political Economy Theory	162
3.4.5 Decision Usefulness Theory.....	162
3.5 Contemporary Theories of Environmental Reporting.....	163
3.5.1 Institutional Theory	163
3.5.2 Signaling Theory.....	167
3.5.3 Political Cost Theory.....	169
3.5.4 Theory of Voluntary Disclosure	170
3.5.5 Cultural Dimension Theory	172
3.5.6 Profitability Theory	177
3.6 Modern Theories of Environmental Reporting.....	179
3.6.1 Integrated Reporting Theory.....	179
3.6.2 Triple Bottom Line Approach.....	180
3.7 Conceptual Model	181
3.8 Summary.....	182

Chapter 4

DETERMINANTS OF ENVIRONMENTAL DISCLOSURE IN AUTOMOBILE MANUFACTURING COMPANIES IN SOUTH

INDIA..... 183 – 238

4.1 Introduction.....	184
4.2 Demographic Profile of Respondents	185
4.2.1 Employees	185
4.2.2 External Auditors	188
4.3 Analysis of Variables and Testing of Hypothesis.....	190
4.3.1 Measurement Scale Validation	191
4.3.1.1 Exploratory Factor Analysis	191
4.3.1.2 Confirmatory Factor Analysis.....	197
4.3.2 Data Analysis of Determinants of Environmental Disclosure	199
4.3.2.1 Stake Holder Pressure.....	199
4.3.2.2 Environmental Awards and Certification	201

4.3.2.3	Disclosure Practices	202
4.3.2.4	Auditor Type/Quality	203
4.3.2.5	Pollution Propensity	205
4.3.2.6	Political Exposure	206
4.3.2.7	Media Exposure	208
4.3.2.8	Board Size.....	209
4.3.2.9	Board Independence	210
4.3.2.10	Gender Diversity.....	212
4.3.2.11	Board Meeting.....	213
4.3.2.12	Environmental Committee	215
4.3.2.13	Size of the Firm	216
4.3.2.14	Age of the Firm	218
4.3.2.15	Number of Years Listed.....	219
4.3.2.16	Type of Industry	221
4.3.2.17	Uncertainty Avoidance	222
4.3.2.18	Employees' and External Auditors' Perceptions on Determinants of Environmental Disclosure	224
4.3.2.19	SEM	228
4.4	Summary.....	236

Chapter 5

DISCLOSURE TRENDS AND EFFECT OF FINANCIAL PERFORMANCE ON ENVIRONMENTAL REPORTING..... 239 – 325

5.1	Introduction.....	240
5.2	Analysis of Variables and Testing of Hypothesis.....	241
5.2.1	Type of Environmental Information Disclosed	242
5.2.2	Length of Environmental Disclosure	243
5.2.3	Frequency of Publishing Environmental Information.....	244
5.2.4	Key Environmental Metrics of Disclosure	246
5.2.5	Format of Environmental Disclosure	247
5.2.6	Verification of Environmental Information Disclosed.....	249
5.2.7	Setting of Long-Term Environmental Targets in Disclosure	250
5.2.8	General Trend of Environmental Disclosure.....	251
5.2.9	Trend of Commitment of Companies to Reduce Vehicle Emission	253
5.2.10	Frequency of Reports Published by the Companies together with Annual Reports	255
5.2.11	Frequency of Reporting Formats	259
5.2.12	Medium of Environmental Disclosure	267
5.2.13	Exploratory Factor Analysis	271
5.2.14	Confirmatory Factor Analysis.....	277
5.2.15	Environmental Management and Governance.....	279

5.2.16	Environmental Management and Governance between Employees and External Auditors.....	280
5.2.17	Environmental Performance and Impact.....	281
5.2.18	Environmental Performance and Impact between Employees and External Auditors.....	282
5.2.19	Environmental Accounting and Reporting.....	283
5.2.20	Environmental Accounting and Reporting between Employees and External Auditors.....	284
5.3	Analysis of Variables and Testing of Hypothesis.....	290
5.3.1	Financial Performance.....	291
5.3.2	Financial Performance between External Auditors and Employees	294
5.3.3	Corporate Environmental Disclosure.....	295
5.3.4	Corporate Environmental Disclosure between External Auditors and Employees.....	298
5.3.5	Measurement Scale Validation of the effect of Financial Performance on Corporate Environmental Disclosure.....	299
5.3.6	Exploratory Factor Analysis.....	299
5.3.7	Confirmatory Factor Analysis	306
5.3.8	SEM.....	309
5.3.9	Correlation and Regression	311
5.4	Summary.....	325

Chapter 6

EFFECT OF ENVIRONMENTAL REPORTING ON CORPORATE ENVIRONMENTAL PERFORMANCE AND MODERATING ROLE OF FINANCIAL PERFORMANCE AS WELL AS THE MEDIATING ROLES OF ENVIRONMENTAL POLICY, SEPARATE ENVIRONMENTAL DEPARTMENT, ENVIRONMENTAL MANAGEMENT SYSTEM AND EMPLOYEE TRAINING IN LINKING THE RELATIONSHIP BETWEEN ENVIRONMENTAL REPORTING AND ENVIRONMENTAL PERFORMANCE.....	326 – 392
--	------------------

6.1	Introduction.....	327
6.2	Analysis of Variables and Testing of Hypothesis.....	328
6.3	Effect of Environmental Reporting on Corporate Environmental Performance.....	329
6.3.1	Measurement Scale Validation	329
6.3.1.1	Exploratory Factor Analysis	330
6.3.1.2	Confirmatory Factor Analysis.....	336
6.3.2	Data Analysis.....	338
6.3.2.1	Environmental Disclosure.....	338
6.3.2.2	Environmental Disclosure between Employees and External Auditors	340

6.3.2.3	Corporate Environmental Performance	342
6.3.2.4	Corporate Environmental Performance between Employees and External Auditors.....	343
6.3.2.5	Environmental Reporting and Environmental Performance (Employees).....	344
6.3.2.6	Environmental Reporting and Environmental Performance (External Auditors)	347
6.3.2.7	Performance Indicators.....	349
6.3.2.8	Performance Indicators between Employees and External Auditors	350
6.3.2.9	Effect of Environmental Disclosure on Environmental Performance Indicators.....	353
6.3.2.10	Performance Indicators on Environmental Performance	357
6.4	Moderating role of Financial Performance and Mediating role of Environmental Policy, Separate Environmental Department, Environmental Management System and Employee Training in linking Environmental Reporting with Environmental Performance.....	361
6.4.1	Employees (Top and Middle Level)	361
6.4.1.1	Financial Performance as Moderating Variables (Employees)	361
6.4.1.2	Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (Employees).....	363
6.4.1.3	Antecedents of Environmental Reporting (Employees).....	366
6.4.1.4	Antecedents of Environmental Reporting (Employees) with Moderating Variables	370
6.4.2	External Auditors	376
6.4.2.1	Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variables (External Auditors)	376
6.4.2.2	Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (External Auditors)	379
6.4.2.3	Antecedents of Environmental Reporting (External Auditors).....	382
6.4.2.4	Antecedents of Environmental Reporting (External Auditors) with Moderating Variables.....	385
6.5	Summary.....	392

Chapter 7**CONSTRAINTS AND BENEFITS ASSOCIATED WITH ENVIRONMENTAL REPORTING.....393 – 445**

7.1	Introduction.....	394
7.2	Analysis of Variables and Testing of Hypothesis.....	394
7.3	Constraints related to Environmental Reporting in Automobile Industry.....	396
7.3.1	Measurement Scale Validation	396
7.3.1.1	Exploratory Factor Analysis	396
7.3.1.2	Confirmatory Factor Analysis.....	402
7.3.2	Data Analysis	404
7.3.2.1	Internal Constraints	404
7.3.2.2	Internal Constraints between Employees and External Auditors	407
7.3.2.3	External Constraints	408
7.3.2.4	External Constraints between Employees and External Auditors	411
7.3.2.5	Technical and Financial Constraints	412
7.3.2.6	Technical and Financial Constraints between Employees and External Auditors.....	415
7.3.2.7	Structural Equation Modelling (SEM)	416
7.4	Benefits of Environmental Reporting in Automobile Industry	422
7.4.1	Measurement Scale Validation	422
7.4.1.1	Exploratory Factor Analysis	422
7.4.1.2	Confirmatory Factor Analysis.....	430
7.4.2	Data Analysis	433
7.4.2.1	Economic and Financial Benefits.....	433
7.4.2.2	Regulatory and Risk Management Benefits	435
7.4.2.3	Social and Organizational Image benefits	436
7.4.2.4	Future Benefits	437
7.4.2.5	Structural Equation Modelling (SEM)	438
7.5	Summary.....	445

Chapter 8**FINDINGS, SUGGESTIONS, IMPLICATIONS OF RESEARCH, CONCLUSION, AND SCOPE FOR FURTHER RESEARCH.....446 – 485**

8.1	Introduction.....	447
8.2	Findings of the Study	447
8.2.1	Findings on Determinants of Environmental Disclosure in Automobile Industry	448
8.2.2	Findings on Present Environmental Disclosure Practices of Selected Automobile Manufacturing Companies	455

8.2.3 Findings on the effect of Financial Performance on Corporate Environmental Disclosure	460
8.2.4 Findings on the effect of Environmental Disclosure on Corporate Environmental Performance and Moderating role of Financial Performance and Mediating role of Environmental Policy, Separate Environmental Department, Environmental Management System and Employee Training.....	463
8.2.5 Findings on Problems and Prospects of Environmental Reporting in Selected Automobile Manufacturing Companies in South India.....	469
8.3 Suggestions	473
8.3.1 Suggestions to Automobile Manufacturing Companies.....	473
8.3.2 Suggestions to Policymakers	478
8.3.3 Suggestions to External Auditors.....	479
8.3.4 Suggestions to Lower-Level Employees	479
8.4 Implications of the Study.....	480
8.4.1 Theoretical Implications	480
8.4.2 Practical Implications	481
8.5 Conclusion	482
8.6 Scope for Further Research	484
Chapter 9	
RECOMMENDATIONS	486 - 489
9.1 Introduction.....	487
9.2 Recommendations for Future Research	487
9.3 Conclusion	489
BIBLIOGRAPHY	490 - 519
APPENDICES.....	520 - 553
Appendix I - Questionnaire	521 - 531
Appendix II - Company Extracts	532 - 553

List of Tables

Table No	Title	Page No.
1.1	Advantages of Automobile Industry in India	04
1.2	Automobile Production in India	05
1.3	Assumptions of Environmental Disclosure.....	09
1.4	Classification of Respondents	29
1.5	Selection of Automobile Manufacturing Companies from each South Indian State.....	31
1.6	Classification of Eligible Employees from each State.....	32
1.7	Determination of Final Sample Size (Employees)	32
1.8	Classification of Eligible External Auditors from each State.....	33
1.9	Determination of Final Sample Size (External Auditors)	34
1.10	Final Sample Size of Employees and External Auditors	34
1.11	Constructs Applied in the Study.....	37
1.12	Nature of Variables.....	38
1.13	Reliability Analysis Based on the Pilot Study Comprising a Sample of 100 Respondents using Cronbach's Alpha among Seventeen Constructs	40
1.14	One Sample Kolmogorov-Smirnov Test of Normality	43
1.15	Skewness and Kurtosis Results	51
1.16	Tools for Data Analysis	61
2.1	Influence of Board Characteristics on Environmental Reporting.....	104
2.2	Industry Specific Trends in Environmental Reporting and Profitability	122
2.3	Interpretation of Energy Intensity.....	133
2.4	Interpretation of Emission Intensity	134
2.5	Interpretation of Water Intensity	135
2.6	Interpretation of Waste Intensity	136
2.7	Interpretation of Environmental Reporting Completeness Ratio.....	137
3.1	Key Themes and Signaling Mechanisms	169
4.1	Demographic Profile of Employees.....	186
4.2	Demographic Profile of External Auditors	188
4.3	KMO and Bartlett's Test -Determinants of Environmental Disclosure.....	192
4.4	Communalities-Determinants of Environmental Disclosure.....	192
4.5	Total Variance Explained-Determinants of Environmental Disclosure.....	193
4.6	Component Matrix-Determinants of Environmental Disclosure.....	195
4.7	Rotated Component Matrix-Determinants of Environmental Disclosure.....	196

Table No	Title	Page No.
4.8	Model Fit Indices-Determinants of Environmental Disclosure.....	198
4.9	Summary of Scale Validation-Determinants of Environmental Disclosure.....	198
4.10	Comparative Analysis of Employees' and External Auditors' Perceptions on Stakeholder Pressure-Independent Sample T Test	200
4.11	Comparative Analysis of Employees' and External Auditors' Perceptions on Environmental Awards and Certification-Independent Sample T Test	201
4.12	Comparative Analysis of Employees' and External Auditors' Perceptions on Disclosure Practices-Independent Sample T Test	202
4.13	Comparative Analysis of Employees' and External Auditors' Perceptions on Auditor Type/Quality -Independent Sample T Test	204
4.14	Comparative Analysis of Employees' and External Auditors' Perceptions on Pollution Propensity -Independent Sample T Test	205
4.15	Comparative Analysis of Employees' and External Auditors' Perceptions on Political Exposure -Independent Sample T Test	207
4.16	Comparative Analysis of Employees' and External Auditors' Perceptions on Media Exposure-Independent Sample T Test	208
4.17	Comparative Analysis of Employees' and External Auditors' Perceptions on Board Size -Independent Sample T Test	209
4.18	Comparative Analysis of Employees' and External Auditors' Perceptions on Board Independence -Independent Sample T Test	211
4.19	Comparative Analysis of Employees' and External Auditors' Perceptions on Gender Diversity -Independent Sample T Test	212
4.20	Comparative Analysis of Employees' and External Auditors' Perceptions on Board Meeting -Independent Sample T Test	214
4.21	Comparative Analysis of Employees' and External Auditors' Perceptions on Environmental Committee -Independent Sample T Test	215
4.22	Comparative Analysis of Employees' and External Auditors' Perceptions on Size of the Firm-Independent Sample T Test	217
4.23	Comparative Analysis of Employees' and External Auditors' Perceptions on Age of the Firm -Independent Sample T Test	218
4.24	Comparative Analysis of Employees' and External Auditors' Perceptions on Number of Years Listed -Independent Sample T Test	220
4.25	Comparative Analysis of Employees' and External Auditors' Perceptions on Type of Industry -Independent Sample T Test	221
4.26	Comparative Analysis of Employees' and External Auditors' Perceptions on Uncertainty Avoidance -Independent Sample T Test	223
4.27	Employees' and External Auditors' Perceptions on Determinants of Environmental Disclosure-One Way ANOVA	225
4.28	Model Fit Indices-Determinants of Environmental Disclosure (Employees).....	229
4.29	Testing of Hypothesis -Determinants of Environmental Disclosure (Employees)	231

Table No	Title	Page No.
4.30	Model Fit Indices-Determinants of Environmental Disclosure (External Auditors).....	233
4.31	Testing of Hypothesis -Determinants of Environmental Disclosure (External Auditors).....	235
5.1	Type of Environmental Information Disclosed.....	242
5.2	Length of Environmental Disclosure.....	243
5.3	Frequency of Publishing Environmental Information	245
5.4	Key Environmental Metrics of Disclosure.....	246
5.5	Format of Environmental Disclosure.....	248
5.6	Verification of Environmental Information Disclosed	249
5.7	Setting of Long-Term targets in Disclosure.....	250
5.8	General Trend of Environmental Disclosure.....	252
5.9	Trend of Environmental Disclosure.....	253
5.10	Trend of Commitment of Companies to Reduce Vehicle Emission.....	254
5.11	Trend of Commitment of Companies to Reduce Vehicle Emission (Weighted Average Mean Score)	255
5.12	Frequency of Reports Published by Companies together with Annual Reports.....	256
5.13	Frequency of Reports Published by Companies together with Annual Reports-Comparison between Employees and External Auditors.....	257
5.14	Frequency of Reports Published by Companies together with Annual Reports-Independent Sample T Test.....	258
5.15	Frequency of Reporting Formats.....	259
5.16	Frequency of Reporting Formats-Comparison between Employees and External Auditors	260
5.17	Frequency of Reporting Formats-Independent Sample T Test.....	261
5.18	Model Fit Indices-Frequency of Reporting Formats-Employees	263
5.19	Testing of Hypothesis-Frequency of Reporting Formats-Employees.....	264
5.20	Model Fit Indices-Frequency of Reporting Formats – External Auditors.....	265
5.21	Testing of Hypothesis-Frequency of Reporting Formats-External Auditors.....	266
5.22	Medium of Environmental Disclosure.....	267
5.23	Medium of Environmental Disclosure-Comparison between Employees and External Auditors	268
5.24	Medium of Environmental Disclosure-Independent Sample T Test.....	270
5.25	KMO and Bartlett's Test: Actual Disclosure Practices of Automobile Manufacturing Companies.....	271

Table No	Title	Page No.
5.26	Communalities- Actual Disclosure Practices of Automobile Manufacturing Companies.....	272
5.27	Total Variance Extracted- Actual Disclosure Practices of Automobile Manufacturing Companies.....	273
5.28	Component Matrix- Actual Disclosure Practices of Automobile Manufacturing Companies.....	275
5.29	Rotated Component Matrix- Actual Disclosure Practices of Automobile Manufacturing Companies.....	276
5.30	Model Fit Indices- Actual Disclosure Practices of Automobile Manufacturing Companies.....	278
5.31	Summary of Scale Validation- Actual Disclosure Practices of Automobile Manufacturing Companies.....	278
5.32	Environmental Management and Governance	279
5.33	Environmental Management and Governance between Employees and External Auditors-Independent Sample T Test	280
5.34	Environmental Performance and Impact.....	281
5.35	Environmental Performance and Impact between Employees and External Auditors-Independent Sample T Test	282
5.36	Environmental Accounting and Reporting.....	283
5.37	Environmental Accounting and Reporting between Employees and External Auditors-Independent Sample T Test	284
5.38	Model Fit Indices-Disclosure Practices-Employees	286
5.39	Testing of Hypothesis-Disclosure Practices-Employees	286
5.40	Model Fit Indices-Disclosure Practices-External Auditors.....	288
5.41	Testing of Hypothesis-Disclosure Practices-External Auditors	289
5.42	Financial Performance-Employees and External Auditors	291
5.43	Financial Performance	293
5.44	Financial Performance between External Auditors and Employees.....	294
5.45	Corporate Environmental Disclosure-Employees and External Auditors.....	296
5.46	Corporate Environmental Disclosure.....	297
5.47	Corporate Environmental Disclosure between External Auditors and Employees.....	298
5.48	KMO and Bartlett's Test-Effect of Financial Performance on Corporate Environmental Disclosure.....	300
5.49	Communalities- Effect of Financial Performance on Corporate Environmental Disclosure.....	300
5.50	Total Variance Explained- Effect of Financial Performance on Corporate Environmental Disclosure.....	302
5.51	Component Matrix- Effect of Financial Performance on Corporate Environmental Disclosure.....	303

Table No	Title	Page No.
5.52	Rotated Component Matrix- Effect of Financial Performance on Corporate Environmental Disclosure.....	305
5.53	Model Fit Indices- Effect of Financial Performance on Corporate Environmental Disclosure.....	307
5.54	Summary of Scale Validation- Effect of Financial Performance on Corporate Environmental Disclosure.....	308
5.55	Model Fit Indices-Financial Performance on Corporate Environmental Disclosure-Structural Equation Modelling.....	310
5.56	Testing of Hypothesis- Financial Performance on Corporate Environmental Disclosure-Structural Equation Modelling.....	310
5.57	Descriptive Statistics.....	311
5.58	Correlation Analysis	313
5.59	Regression Model Justification on the Impact of Financial Metrics on Energy Intensity (KWH)	316
5.60	Regression Analysis on the Impact of Financial Metrics on Energy Intensity (KWH).....	317
5.61	Regression Model Justification on the Impact of Financial Metrics on Greenhouse Gas Emission.....	318
5.62	Regression Analysis on the Impact of Financial Metrics on Greenhouse Gas Emission	318
5.63	Regression Model Justification on the Impact of Financial Metrics on Water Intensity	319
5.64	Regression Analysis on the Impact of Financial Metrics on Water Intensity.....	320
5.65	Regression Model Justification on the Impact of Financial Metrics on Waste Intensity	321
5.66	Regression Analysis on the Impact of Financial Metrics on Waste Intensity.....	321
5.67	Regression Model Justification on the Impact of Financial Metrics on Environmental Reporting Completeness Ratio	322
5.68	Regression Analysis on the Impact of Financial Metrics on Environmental Reporting Completeness Ratio	323
5.69	Summary Result of Hypotheses	324
6.1	KMO and Bartlett's Test- Effect of Environmental Disclosure on Corporate Environmental Performance	330
6.2	Communalities- Effect of Environmental Disclosure on Corporate Environmental Performance.....	331
6.3	Total Variance Explained- Effect of Environmental Disclosure on Corporate Environmental Performance	332
6.4	Component Matrix- Effect of Environmental Disclosure on Corporate Environmental Performance.....	333

Table No	Title	Page No.
6.5	Rotated Component Matrix- Effect of Environmental Disclosure on Corporate Environmental Performance	335
6.6	Summary of Scale Validation-Effect of Environmental Disclosure on Corporate Environmental Performance	338
6.7	Environmental Disclosure- Employees and External Auditors	339
6.8	Environmental Disclosure between Employees and External Auditors.....	341
6.9	Corporate Environmental Performance-Employees and External Auditors	342
6.10	Corporate Environmental Performance between Employees and External Auditors.....	344
6.11	Model Fit Indices- Environmental Reporting and Environmental Performance (Employees).....	345
6.12	Testing of Hypothesis- Environmental Reporting and Environmental Performance (Employees).....	346
6.13	Model Fit Indices- Environmental Reporting and Environmental Performance (External Auditors).....	348
6.14	Testing of Hypothesis- Environmental Reporting and Environmental Performance (External Auditors).....	348
6.15	Performance Indicators	249
6.16	Performance Indicators between Employees and External Auditors.....	351
6.17	Model Fit Indices- Effect of Environmental Disclosure on Environmental Performance Indicators- Structural Equation Modelling	354
6.18	Testing of Hypotheses- Effect of Environmental Disclosure on Corporate Environmental Performance	356
6.19	Model Summary- Performance Indicators on Environmental Performance	358
6.20	ANOVA- Performance Indicators on Environmental Performance	359
6.21	Coefficients- Performance Indicators on Environmental Performance	360
6.22	Model Fit Indices- Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (Employees)	362
6.23	Testing of Hypothesis- Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (Employees)	363
6.24	Model Fit Indices- Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (Employees).....	364
6.25	Testing of Hypothesis- Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (Employees).....	365

Table No	Title	Page No.
6.26	Model Fit Indices- Antecedents of Environmental Reporting (Employees)	368
6.27	Testing of Hypothesis- Antecedents of Environmental Reporting (Employees)	368
6.28	Model Fit Indices- Antecedents of Environmental Reporting with Benefits, Financial Performance and Challenges as Moderating Variables (Employees).....	373
6.29	Testing of Hypothesis- Antecedents of Environmental Reporting with Benefits, Financial Performance and Challenges as Moderating Variables (Employees).....	374
6.30	Model Fit Indices- Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (External Auditors)	377
6.31	Testing of hypothesis- Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (External Auditors)	378
6.32	Model Fit Indices- Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (External Auditors).....	380
6.33	Testing of Hypothesis- Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (External Auditors).....	381
6.34	Model Fit Indices- Antecedents of Environmental Reporting (External Auditors)	383
6.35	Testing of Hypothesis- Antecedents of Environmental Reporting (External Auditors).....	384
6.36	Model Fit Indices- Antecedents of Environmental Reporting (External Auditors)	388
6.37	Testing of Hypothesis- Antecedents of Environmental Reporting with Benefits, Financial Performance and Challenges as Moderating Variables (External Auditors)	389
7.1	KMO and Bartlett's Test- Problems of Environmental Reporting.....	396
7.2	Communalities- Problems of Environmental Reporting.....	397
7.3	Total Variance Explained- Problems of Environmental Reporting	398
7.4	Component Matrix- Problems of Environmental Reporting	399
7.5	Rotated Component Matrix- Problems of Environmental Reporting	400
7.6	Model Fit Indices- Problems of Environmental Reporting	403
7.7	Summary of Scale Validation-Problems of Environmental Reporting.....	403
7.8	Internal Constraints.....	405

Table No	Title	Page No.
7.9	Internal Constraints-Employees and External Auditors.....	407
7.10	Internal Constraints between Employees and External Auditors	408
7.11	External Constraints.....	409
7.12	External Constraints-Employees and External Auditors.....	410
7.13	External Constraints between Employees and External Auditors	411
7.14	Technical and Financial Constraints.....	413
7.15	Technical and Financial Constraints-Employees and External Auditors	414
7.16	Technical and Financial Constraints between Employees and External Auditors	416
7.17	Model Fit Indices- Problems of Environmental Reporting – SEM	417
7.18	Testing of Hypotheses- Problems of Environmental Reporting (Employees).....	418
7.19	Model Fit Indices- Constraints of Environmental Reporting (External Auditors)	420
7.20	Constraints of Environmental Reporting (External Auditors)- Testing of Hypothesis	421
7.21	KMO and Bartlett's Test- Benefits	422
7.22	Communalities- Benefits.....	423
7.23	Total Variance Explained- Benefits.....	424
7.24	Component Matrix- Benefits.....	427
7.25	Rotated Component Matrix- Benefits.....	429
7.26	Model Fit Indices- Confirmatory Factor Analysis- Benefits.....	432
7.27	Summary of Scale Validation-Benefits.....	432
7.28	Comparative Analysis of Employees' and External Auditors' Perceptions on Economic and Financial Benefits- Independent Sample T Test	434
7.29	Comparative Analysis of Employees' and External Auditors' Perceptions on Regulatory and Risk Management Benefits- Independent Sample T Test	435
7.30	Comparative Analysis of Employees' and External Auditors' Perceptions on Social/ organizational Image Benefits- Independent Sample T Test.....	436
7.31	Comparative Analysis of Employees' and External Auditors' Perceptions on Future Benefits- Independent Sample T Test	437
7.32	Model Fit Indices- Benefits of Environmental Reporting.....	439
7.33	Benefits of Environmental Reporting (Employees)- Testing of Hypothesis.....	441
7.34	Model Fit Indices- Benefits of Environmental Reporting (External Auditors)	442
7.35	Benefits of Environmental Reporting (External Auditors)- Testing of Hypothesis.....	444

List of Figures

Figure No	Title	Page No.
3.1	Stakeholder Based Model of Environmental Disclosure.....	158
3.2	Conceptual Model.....	181
4.1	Determinants of Environmental Disclosure.....	194
4.2	CFA-Determinants of Environmental Disclosure.....	197
4.3	Determinants of Environmental Disclosure (Employees)	230
4.4	Determinants of Environmental Disclosure (External Auditors).....	234
5.1	Frequency of Reporting Formats- Employees	262
5.2	Frequency of Reporting Formats- External Auditors.....	265
5.3	Actual Disclosure Practices of Automobile Manufacturing Companies	274
5.4	CFA- Actual Disclosure Practices of Automobile Manufacturing Companies	277
5.5	Disclosure Practices- Employees	285
5.6	Disclosure Practices- External Auditors.....	288
5.7	Effect of Financial Performance on Corporate Environmental Disclosure	303
5.8	CFA- Effect of Financial Performance on Corporate Environmental Disclosure.....	307
5.9	Financial Performance on Corporate Environmental Disclosure- SEM.....	309
6.1	Effect of Environmental Disclosure on Corporate Environmental Performance.....	333
6.2	CFA- Effect of Environmental Disclosure on Corporate Environmental Performance.....	337
6.3	Environmental Reporting and Environmental Performance (Employees)	245
6.4	Environmental Reporting and Environmental Performance (External Auditors).....	347
6.5	Effect of Environmental Disclosure on Corporate Environmental Performance Indicators.....	355
6.6	Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (Employees)	361
6.7	Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (Employees).....	364

Figure No	Title	Page No.
6.8	Antecedents of Environmental Reporting (Employees).....	367
6.9	Antecedents of Environmental Reporting with Moderating Variables (Employees).....	372
6.10	Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variables (External Auditors)	377
6.11	Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (External Auditors)	379
6.12	Antecedents of Environmental Reporting (External Auditors)	383
6.13	Antecedents of Environmental Reporting with Moderating Variables (External Auditors)	388
7.1	Problems of Environmental Reporting.....	399
7.2	CFA- Problems of Environmental Reporting	402
7.3	Constraints of Environmental Reporting (Employees)	418
7.4	Constraints of Environmental Reporting (External Auditors).....	420
7.5	Benefits	426
7.6	CFA- Benefits.....	431
7.7	Benefits of Environmental Reporting (Employees).....	440
7.8	Benefits of Environmental Reporting (External Auditors).....	443

List of Abbreviations

ACMA	Automotive Component Manufacturers Association of India
AI	Artificial Intelligence
ANOVA	Analysis of Variance
BEE	Bureau of Energy Efficiency
BRR	Business Responsibility Reports
BRSR	Business Responsibility and Sustainability Reporting
BSE	Bombay Stock Exchange
CA	Chartered Accountant
CDSB	Climate Disclosure Standards Board
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CFO	Chief Financial Officer
CPCB	Central Pollution Control Board
CPSE	Central Public Sector Enterprises
CREP	Corporate Responsibility for Environment Protection
CSR	Corporate Social Responsibility
DPE	Department of Public Enterprises
EFA	Exploratory Factor Analysis
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EPS	Earnings Per Share
ESG	Environmental Social Governance
EV	Electric Vehicle
FDI	Foreign Direct Investment
FMCG	Fast Moving Consumer Goods
GCI	Global Compact Initiative
GDP	Gross Domestic Product
GFI	Goodness of Fit Index
GHG	Green House Gas
GMM	Generalised Method of Moments
GNP	Gross National Product
GRI	Global Reporting Initiative
GST	Goods and Service Tax
ICAI	Institute of Chartered Accountants of India
IFRS	International Financial Reporting System

IoT	Internet of Things
ISAR	International Standards of Accounting and Reporting
ISO	International Organization for Standardization
Kg	Kilogram
KL	Kilo Litres
KMO	Kaiser- Meyer-Olkin
K-S	Kolmogorov Smirnov
KWH	Kilo Watt Hour
MD	Managing Director
NATRIP	National Automotive Testing and Research and Development Infrastructure Project Centres
NEERI	National Environmental Engineering Research Institute
NFI	Normed Fit Index
NGO	Non-Governmental Organization
NNP	Net National Product
NPC	National Productivity Council
NVG	National Voluntary Guidelines
OEM	Original Equipment Manufacturers
PCA	Principal Component Analysis
PLI	Production Linked Incentive
RMSEA	Root Mean Square Error of Approximation
ROA	Return on Assets
ROCE	Return on Capital Employed
ROE	Return on Equity
SASB	Sustainable Accounting Standard Board
SDG	Sustainable Development Goals
SEBI	Securities and Exchange Board of India
SEEA	System of Integrated Environmental and Economic Accounting
SEM	Structural Equation Modelling
SIAM	Society of Indian Automobile Manufacturers
SME	Small and Medium Sized Enterprises
SWOT	Strengths Weaknesses Opportunities and Threats
TCFD	Task Force on Climate Related Financial Disclosures
TLI	Tucker-Lewis Index

Chapter 1

INTRODUCTION

1.1	Introduction	2
1.2	Environmental Accounting and Environmental Reporting	5
1.3	Background of the Study	10
1.4	Significance of the Study	12
1.5	Statement of the Problem	16
1.6	Research Questions	19
1.7	Research Objectives	20
1.8	Major Hypotheses of the Study	20
1.9	Scope of the Study	23
1.10	Research Methodology	24
1.11	Operational Definitions	61
1.12	Limitations of the Study	67
1.13	Structure of the Thesis	67
1.14	Summary	70

Chapter 1

INTRODUCTION

1.1 Introduction

The Indian automobile industry is a significant contributor to greenhouse gas emissions, resource consumption, waste generation and overall environmental degradation. Transparency in environmental practices is essential for building public trust, complying with environmental regulations and addressing the climate crisis. Positioned at the intersection of technological innovation, economic development and environmental responsibility, the industry has a critical role to play in advancing sustainable growth. The entire operations of the automobile sector from raw material extraction and manufacturing to vehicle usage and eventual disposal has numerous environmental implications. The key environmental disclosures in this sector typically include data on carbon emissions, energy efficiency, resource utilization, waste management and compliance with environmental regulations. The consumers, investors and policy makers have felt the need for environmental disclosure in this sector which led to the adoption of sustainability reporting frameworks like the Global Reporting Initiative (GRI) and adherence to standards such as Task Force on Climate related Financial Disclosures (TCFD). The role of environmental disclosure is twofold: first, it ensures accountability and regulatory compliance; second, it offers a strategic advantage. The former one enables companies to ensure compliance with Environmental regulations at the same time ensuring accountability for their environmental impacts. The latter enables the companies to gain competitive advantage, enhanced reputation, customer loyalty and improved access to green financing. In the automobile sector, it is not merely a regulatory requirement but also a tool to align business operations with global sustainability goals. This sector transitions towards electric vehicles, sustainable supply chains and carbon neutrality.

The automobile industry contributes around 6.4 percent of India's Gross Domestic Product and 35 percent of manufacturing GDP. It is the leading employment provider. The embryonic stage of the Indian automobile industry began in the 1940s.

Hindustan Motors was launched in 1942, followed by Premier in 1944 and the emergence of Fiat products in India in 1960. Mahindra & Mahindra was established in 1945. An import substitution programme was introduced in 1953, leading to restrictions on the import of fully built-up cars, thereby encouraging domestic production.

The automobile industry is one of the key drivers of India's economic growth and they are the major contributors to gross domestic product, employment and technological advancement. The utilities of the automobile industry begin from cost effective production, a skilled workforce, a vast customer base and increasing foreign investments. Government initiatives such as the 'Make in India' campaign, the Production Linked Incentive scheme and electric vehicle policies have significantly boosted the growth potential of the Indian automobile industry. India has also emerged as a global export hub for vehicles and automotive components, enhancing its competitiveness in international markets. The following table highlights key advantages of the automobile industry in India.

Table 1.1

Advantages of Automobile Industry in India

Growing Demand	Opportunities	Rising Investment	Policy Support
Increase in middle class income. Increase of youth in population. Total production of passenger vehicles, three wheelers and two wheelers constituted 1557238 units.	Leader in shared mobility by 2030. Opportunity for electric and autonomous vehicles. Shift to electric vehicles to reduce emissions. 5 crore job opportunities will be created by the electric vehicle industry by 2030.	Cumulative FDI Inflow of US\$33.77 billion during April 2000 and September 2022. The government of India expects the automobile sector to attract US\$ 8-10 billion in local foreign investment by 2020.	The Indian government issued notification regarding the PLI scheme for automobile and auto components worth Rs 25938 crore. Mutual initiative by Government of India and Indian automotive industry for laying down the road map for the development of industry named as Automotive Mission Plan.

Source: Indian Brand Equity Foundation ibef.org/industry/India-automobiles

Passenger vehicles are among the major contributors to air pollution. In the year 2013 more than half of the pollutants emitted into air contributed by transportation. The lead starter battery is responsible for major use of lead in the world. Lead pollution gets into air, water and soil and may be polluted from the disposal of batteries. It has an adverse impact on human health. Indian automobile industry entered into a new journey in 1991 with delicensing of the sector. 100 percent FDI was opened up. The growth of the Indian middle class with increasing purchasing power along with strong growth of the economy have attracted the major auto manufacturers to the Indian market. The increase in income level and decline in tax and interest rates have helped to increase personal disposable income. The product innovations of domestic firms like Tata Motors and Bajaj Auto are the fruits of indigenization and protection policies of regulatory phases. Despite economic slowdown, the Indian automobile sector has recorded phenomenal growth in the passenger car segment.

The Automobile industry in India is the world's fourth largest manufacturer of cars and seventh largest manufacturer of commercial vehicles in 2018. Indian automotive industry is expected to reach Rs 16.16 to 18.18 trillion by 2026. The government aims to develop India as a global manufacturing as well as research and development hub. It has set up National Automotive Testing and Research and Development Infrastructure Project centers (NATRIP). Under this, five testing and research centers have been established in the country since 2015. The Indian government has also set up an ambitious target of having only electric vehicles being sold in the country.

India's automobile production has seen significant growth from 2020 to 2025. This upward trend reflects the rapid expansion of the automotive industry, driven by increasing domestic demand and a surge in export opportunities. The following table presents the annual automobile production figures in India from 2020 to 2025.

Table 1.2*Automobile Production in India*

Year	Total Vehicle Production (Numbers)
2020	17,36,855
2021	41,34,047
2022	56,17,246
2023	58,51,507
2024	63,00,000
2025	68,00,000

Source: ceicdata.com.autobei.com

India's vehicle production is consistently dominated by two wheelers maintaining a substantial majority share throughout the years. The passenger vehicles show a gradual increase in production share thereby reflecting consumer demand and economic growth. The commercial vehicles experience slight fluctuations which are influenced by infrastructure development and economic activities. Three wheelers maintain a relatively stable share and they serve specific market needs particularly in urban and semi urban areas. India's automobile exports have shown resilience and adaptability. The export segments are led by passenger vehicles and two wheelers. The efforts of manufacturers coupled with strategic market expansions have contributed to the industry's robust export performance during this period. The Maruti Suzuki is India's top passenger vehicle exporter for four consecutive fiscal years (autocarpro.in) and the second largest exporter of passenger vehicle is Hyundai Motor India (team-bhp.com).

1.2 Environmental Accounting and Environmental Reporting

Accounting is the process of identifying, recording, measuring and communicating financial information to diversified stakeholders. The modern trend in accounting is mainly concerned with fulfilling the information of both external and internal stakeholders' and to provide quantitative information which is primarily financial in nature about economic activities. At the macro level, Environmental Accounting is a method of accounting that incorporates changes in environmental resources to assess their impact on Gross National Product and Net National Product

thereby providing a more accurate measure of a nation's true income that can be sustainably consumed. At corporate level, Environmental Accounting is regarded as subset of social accounting thereby communicating the social and environmental effects of an organisations' economic action to particular interest groups within the society. Environmental Accounting is also known as Green Accounting that measure, record and disclose the impact of corporate environmental activities on its financial status through a set of accounting systems.

Environmental Reporting is the disclosure of environmental information in the annual reports or by some other medium like environmental policy statements or corporate environmental reports. It provides information on environmental risks, impacts, policies, strategies, targets and costs that has significant implications for global sustainability. It is expressed as Triple Bottom line where data on financial results, environmental performance and social impact come together and is generally called sustainability report. It is the responsibility of the company towards society that arises as a result of activities having a negative impact on the environment. It covers the preparation and provision of information by management for the use of stakeholders. The information is provided on environmental status and environmental performance of the company. This information is provided in separate environmental reports. In the case of corporate Environmental Reporting, environment protection initiatives undertaken by an enterprise and adverse impact of production process both in quantitative and qualitative terms are included. The main objective of preparing environmental report is to provide information about environmental impact and operational performance to wide variety of stakeholders. The various environmental stakeholders include investors, employees, lenders, suppliers, customers, government and public at large.

At macro level, Environmental Accounting can be explained as "one of the methods of accounting that takes into account environmental resources and services and changes there in and measures their effects on GNP and NNP to reveal true maximum income which a nation can consume, while maintaining a sustainable development and growth without jeopardising the interests of present and future

generations as well as our neighbours” (Oza, 2012). Environmental accounting is the process of communicating the social and environmental impact of an organisation’s economic activities to particular segments of society or to the entire society (Gray et al., 1987).

Environment Agency UK defined “Environmental Accounting is the collection and analysis of environmental and financial performance data, which has been obtained from business management information system”. Schaltegger and Burritt (2000) explains environmental accounting as a branch of methods, activities and systems that includes recording, analysis and reporting of environmental impacts and ecological impacts of a well-defined economic system. It is also known as Green Accounting which is used to measure, record and disclose the impacts of corporate environmental activities and a fundamental tool for understanding the role played by natural environment in an economy.

Environmental Reporting is the process of communicating the social and environmental effects of economic actions to particular interest groups within society and to society at large. It involves extending the accountability of organisations. It is a measure of sustainable income level that can be secured without affecting the stock of natural assets. It is a tool for measuring the costs and benefits of projects considering the environmental impact. Environmental reporting covers the preparation and presentation of information by management for the use of multiple stakeholder groups both internal and external. The information on environmental status and environmental performance is disclosed. This information is disclosed separately in the form of environmental report or in other forms of reporting such as financial and social reporting.

Environmental reporting is commonly used to describe the disclosure of environmental related data by the entity. The main items disclosed are data relating to environmental risks, its impacts, policies, strategies, targets and costs. The environment related information is reported in the annual report, accounts package, a standalone corporate environmental performance report, environmental statement

in other mediums like staff newsletter, video and CDs (ICAI). Kolk (2004) defined “Environmental Reporting is a key component of CSR, allowing firms to communicate their environmental actions and policies to the public and other stakeholders”.

Gray (2006) highlighted that “Environmental Accounting and Reporting is not limited to financial accounts but includes the reporting of non-financial aspects such as environmental impacts, resources consumed and waste produced”. According to Burritt et al. (2002) “Environmental Management Accounting aims to improve environmental performance by providing management with more relevant environmental information for decision-making”. Owen (2008) defines environmental disclosure as "the process of reporting the environmental impacts of an organization's operations, including the efforts and measures taken to manage these impacts."

The steps involved in Environmental Reporting model includes identification of parameters of reporting, defining the parameters, specifying the targets to be achieved, developing environmental performance indicators, measuring them and reporting the results of environmental performance to various stakeholders namely investors, employees, lenders, suppliers, government and public. The main costs involved in Environmental Reporting includes cost of reporting (direct cost) and cost of non-reporting (indirect cost). The direct costs of reporting include cost of installing Environmental Management System (EMS), cost of hiring experts and external verifiers, cost of publication, distribution and website design. The indirect costs of reporting include poor environmental profile as against competitors, potential loss of investors and loss of foregoing benefits. The external stakeholders of Environmental information include government agencies, Non-Governmental organisations (NGO's) and general public, and the internal stakeholders include shareholders and employees. In order to make the process of accounting and reporting more feasible, the reported environmental data is based on certain underlying assumptions. The assumptions pertaining to Environmental Reporting is presented below in the form of table.

Table 1.3*Assumptions of Environmental Disclosure*

Underlying Assumptions	Meaning
The entity assumption	There should be proper separation between the transactions pertaining to business and owner. The information disclosed should be specific and relate to distinct reporting units.
The accrual basis of accounting	Environmental revenue should be recognised only when it is actually earned and environmental expenses will be recognised when it is paid.
The going concern assumption	According to going concern concept, the business has no plan to close down or liquidate in the near future. The company being financially stable can meet its environmental regulations for a long period.
The Precautionary Principle	Preventive action should be initiated by the firm in case of uncertainty. The environmental report should ensure that firm is not indulging in any activities that are harmful to environment and there is increase in the participation of public in decision making.
The concept of Materiality of Significance	The activities which have a significant impact on environment should be disclosed. Those issues which require more attention that is more relevant to decision making should be considered.

Source: FEE. Discussion paper towards a Generally Accepted Framework for Environmental Reporting 1999

The primary types of Environmental Reporting can be categorized under three heads namely Involuntary reporting, Mandatory reporting and Voluntary reporting.

a) Involuntary reporting

The reporting of information about Environmental Performance of an organization without any deliberate intention or consent is involuntary reporting. It arises from external sources namely third-party reports, media coverage, public data and accidental releases. Organizations have no control over such reporting and negative information is reported that highlights the environmental risks which may damage a company's reputation.

b) Mandatory reporting

The compulsory reporting of information related to Environmental Performance, its impacts and its compliance to environmental laws is referred as Mandatory reporting. The enforcement of such report's vests with government, regulatory agencies and international bodies with a view to promote transparency and accountability. They follow strict guidelines to ensure consistency, accuracy and comparability of information across various organizations. The areas covered under mandatory reporting includes data on pollution, emission, energy resource consumption, waste management practices and environmental risks.

c) Voluntary Reporting

The reporting of environmental information intentionally for demonstrating transparency is referred as voluntary reporting. The main motive for adopting such type of disclosure is to build stakeholder's trust, enhance reputation, attract investors and align with broader sustainability related goals. This includes environmental commitments, goals and strategies for addressing challenges and the organizations have control over the contents and frequency of such reports.

1.3 Background of the Study

Due to growing legal and social concerns surrounding natural calamities and other environmental issues, there is an increasing need to incorporate environmental considerations into a company's financial statements. This shift has given rise to new discipline known as Environmental Accounting. The United Nations Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting began focusing on Environmental Accounting and Reporting in the late 1980s. Since then, there has been a tremendous growth of interest in environmental accounting.

Environmental reporting has become an essential element in an organization's environmental responsibility. International Standards of Accounting and Reporting and various supranational bodies, such as the European Union have issued guidelines on Environmental accounting and reporting from 1989. Additionally, professional

accounting bodies have recognised the importance of incorporating environmental data into traditional accounting systems. The legal authorities, standard setting bodies and other regulators have not developed a uniform opinion on key definitions and methodologies. The significant developments were made in the Indian economy for Environmental Accounting and Reporting in the early 1990's. There has been considerable increase in its adoption by Indian companies especially as they expand their investments abroad.

To promote international trade in environmental goods and services, it is essential to introduce the concept of clean technologies, sustainable vision and sustainable business. Environmental indicators have to be calculated for appraising various activities and projects related to environment and their disclosure in annual reports is essential for the benefits of stakeholders. International companies disclose detailed non-financial information including environmental information and Indian companies are also under pressure to do the same. The Environmental issues are becoming a matter of concern among investors too. Economic development without environmental considerations cause damage to the environment and impairs the quality of life of present and future generations. Therefore, incorporating environmental information into financial accounting has become an urgent necessity.

The adoption of environmental reporting standards reduce the manipulation of accounts, ensure consistency and enable fair representation of environmental costs. If there are no standard, industry guidelines and internal mechanisms can be used as a basis for bifurcation of expenses. Management can segregate expenses at its discretion depending on the information requirements. The success of environmental reporting does not depend merely on correct classification of cost but also making available the relevant information to those who need it.

The proper separation and allocation of environmental costs from general overheads allow managers, cost analysts and engineers to get a clear picture of true cost of production and to target cost reduction activities that improve environmental quality. Identification of environmental expenditures illustrate the commitment of

organisation to sustainability and promote both financial and non-financial decision making.

Environmental Reporting serves as solid evidence that the company is not merely engaging in window dressing, but is actively taking measures to protect and improve the environment resulting in tangible financial and other benefits. As environmental issues and their related costs continue to rise, accounting profession should be able to capture their effect on company's financial disclosures and annual reports. There is an urgent need to integrate environmental data into financial systems particularly in the automobile sector which is prone to pollution. Although GRI guidelines and TCFD exist, there is a lack of industry specific framework tailored to the unique environmental challenges and activities of the automobile sector.

Addressing the challenges of disclosure requires research into best practices, the development of standardized frameworks, and collaboration between industry stakeholders and policy makers to enhance the quality and impact of environmental disclosures in the automobile sector. It is essential to explore what type of environmental information will be considered by stakeholders as most valuable and the influence of them on decision making.

Due to increasing relevance of environmental issues, the accountants and auditors need to be aware of them and should consider their influence on both internal and external reporting. For the highly polluting automobile sector, studying the benefits and challenges of environmental reporting is not only relevant but essential for achieving sustainable growth and long-term accountability.

1.4 Significance of the Study

The automobile sector in India plays a crucial role in India's economy, industrial growth and social development. The industry is the significant generator of tax revenue for both central and state governments through excise duty, GST, road tax and registration charges. Being the largest job creator in India, the industry directly employs over 8 million people and indirectly supports jobs through ancillary

industries. India is the world's third largest automobile market and is the global hub for small cars and leading exporter of two- wheelers, three-wheelers and passenger cars. Automobiles and auto components are a major source of foreign exchange earnings and exports to over 100 countries. Research and development, Innovation and adoption of advanced technologies such as electric vehicles (EVs), hybrid engines, AI-driven driving systems and green technologies are some highlighting trends in automobile sector.

Despite of this, the industry is also one of the largest contributors to air pollution, greenhouse gas emission and environmental degradation. Transport is the major cause of urban air pollution in India and they also emit carbon dioxide contributing to climate change. Poor maintenance of vehicles contribute to noise pollution affecting public health. The increased consumption of steel, rubber, glass, plastic and energy pose waste management challenges. The dependence on petroleum contribute to fossil fuel depletion.

The majority of the most polluted cities are in India. Therefore, the development of an environmental accounting and reporting system helps to reduce environmental costs and minimize damage to the environment. The extraction of raw materials, production processes, and transportation are often under-reported, making it essential to assess supply chain sustainability, which can be incorporated into environmental disclosure frameworks. Conventional financial accounting fails to provide separate information about environmental issues. The environment is an important factor for the survival, growth and establishment of an entity. Therefore, there is ample justification for conducting research on challenges and prospects of Environmental Reporting in Automobile sector.

The relevance of the current study can be examined through four key dimensions. First, the study centers on the interactions between internal employees and external auditors on Environmental reporting in automobile sector that has practical, regulatory and strategic implications. Top level managers formulate corporate strategies and middle level managers are involved in the execution. A thorough understanding of their perception of Environmental Reporting highlights

how seriously companies integrate sustainability into business models. If they perceive environmental reporting as value adding, the firms are more likely to invest in eco efficiency, green research and development and sustainable mobility. The external auditors mainly chartered accountants conducting statutory audit and external experts involved in energy audit in the company play a key role as independent auditors to verify the accuracy and credibility of reports thereby ensuring compliance with laws and evaluating whether the reports genuinely reflect corporate environmental performance and not involved in green washing. Their perception reflects the ability of the company in balancing profitability with environmental responsibility and reveals whether the environmental reporting is seen as compliance burden or reputation enhancing strategy. Studying the view of both insiders (Top and middle management employees) and outsiders (External auditors) highlight the scope for standardisation and assurance in sustainability reporting.

Secondly, the study is conducted in automobile industry which is a resource intensive sector contributing significantly to the emission of carbon which adversely affects the life of the people. The emission occurs across the full life cycle of an automobile, beginning from manufacturing and continuing until the stage of disposal. The five states in South India -Tamil Nadu, Karnataka, Andhra Pradesh, Telangana and Kerala are well known for hosting major automobile manufacturing plants. Automobile sector boosts up by creating more employment opportunities, improving productivity and facilitating consumers in travelling. Hence this study on challenges and prospects of Environmental Reporting in Automobile industry is of prime importance.

Thirdly, the study provides both internal and external relevance for Automobile manufacturing companies. The study enables to estimate the true cost of producing a product, thus leading to improvements in pricing and, consequently an overall improvement in the profitability of the concern. There is proper allocation of environmental costs to different products and processes that in turn enhance the awareness of managers. The transparent disclosure of environmental information promotes cost reduction initiatives, improve environmental quality and reinforce

quality principles. Employee motivation by adopting innovative methods to reduce environmental costs and waste thereby ensuring optimum utilisation of resources is another significant advantage of adopting proper disclosure. Employees' awareness on occupational hazards, health and safety issues will be increased as a result of disclosure.

The competitive advantage of the company that embrace environmental transparency becomes stronger and the products and services of such firms will receive great acceptance from environmentally conscious customers. The evolving demand of stakeholders and suppliers can be fulfilled, thereby fostering trust and long-term partnerships. The company's commitment to sustainability and reputation can be signaled by adopting systematic disclosure. A robust disclosure framework improves the corporate EMS, attracts more investment, enhance opportunities to access wider markets and helps to identify areas for operational efficiency and cost savings.

Fourthly, the study aims to examine the factors leading to adoption of environmental reporting in Automobile industry, one of the crucial yet under researched area. The breadth and methods of reporting in Automobile sector are heterogeneous across firms (BMW Group, 2024) where original equipment manufacturers disclose more complete metrics and mid -tier firms disclose inconsistent information. The empirical studies indicated that the quality of disclosure is positively correlated with firm size, international market exposure, foreign ownership and regulatory pressure (Zhao & Wang, 2022). The pollution is a central concern in the automobile industry and the environmental reporting serves as a tool to disclose, manage and mitigate emissions and wastes. The proper examination of various determinants of disclosure acts as a guide to regulators and policymakers in designing effective norms of disclosure. The sustainability and competitiveness in automobile sector increase, thereby improving managerial decision making on environmental strategies.

Lastly, the study seeks to explore the effect of Environmental Disclosure on Environmental Performance of a company. The Environmental Performance examines how the efforts of the company are effectively utilised to reduce pollution, conserve resources and promote sustainability. The proper linking of reporting with Environmental Performance aligns the corporate practices with Sustainable Development Goals (SDG) and strengthens the case for standardised reporting norms. The companies can focus on integrating reporting into strategic decision making which in turn enhance eco efficiency, reduce costs and maintain long term competitiveness in Automobile sector.

Environmental accounting and reporting are useful not only for a company but also to various stakeholders like customers, employees, government and society. Environmental information published in annual reports of the company will be used by the government to ensure optimum utilization of resources by making changes in budgets. The International Monetary Fund, the World Bank and other such organizations review environmental information before providing assistance to a country. Ethical investment movements are prevailing in various countries and ethical investors mainly institutional investors require environmental information from the companies. It also helps in disclosing unsound production processes and excessive use of natural resources, which in turn leads to conservation of energy and materials and ensures their optimum use.

1.5 Statement of the Problem

The automobile sector plays a dominant role in global economic development, yet it remains a major contributor to environmental degradation. In response to this, stakeholders are increasingly demanding transparency and accountability regarding the environmental impacts of the automobile sector. The current environmental disclosure is inconsistent, insufficient and non-standardized across industry. This lack of clarity hampers the path of smooth decision making, erodes stakeholders trust and undermines the effectiveness of environmental policies aimed at combating climate change and promoting sustainability. Furthermore, inadequate disclosure also impedes the progress of industry towards sustainable development and reduction

of ecological footprint. There is a pressing need to identify the barriers and opportunities associated with comprehensive environmental disclosure to establish a framework that ensures reliable, consistent and actionable reporting in the automobile sector.

Over the past few decades, the purpose of accounting has undergone a significant transformation. Modern accounting is no longer confined to record-keeping and reporting information to investors. It now plays a broader role emphasizing social responsibility and addressing the expectations of wide range of stakeholders. Accounting has evolved into a service activity with its basic function extending beyond providing quantitative information of financial nature to including qualitative ecological, social and environmental information to meet the expectations of society. Since the late 1980s, growing concern over the environmental impact of industrial activities – such as oil spills, chemical discharges, atmospheric pollution and depletion of natural resources has heightened the awareness of the need for sustainable practices. The companies are facing pressure from government and society to reduce the adverse impact on the environment.

In response to rapid changes in legal regulations, and increasing emphasis on environmental concerns, companies are now required to evaluate the environmental impact of their operations. Today an organization's performance is judged not only by its financial results but also by its efforts to improve and protect the environment. Environmental considerations now play a significant role in shaping financial and investment decisions. Therefore, it is essential to assess the company's environmental performance and understand its significant impact on the trading results and financial position. In this evolving context, the need for environmental accounting and reporting has become increasingly evident. The proper accounting of environmental matters and their transparent disclosure--whether through annual reports or other communication channels has become an integral component of modern corporate accounting and reporting practices.

There is a growing emphasis on environmentally sustainable industrial development. The proper accounting of environmental costs, benefits, assets and liabilities of the concern is essential to accurately measure an organization's environmental impact. Increasing social and legal pressures along with rising judicial intervention have heightened the demand for transparent disclosure of a company's environmental policies, practices and performance. Environmental pollution remains one of the most critical challenges faced today with detrimental effect on employee health and performance, organizational productivity and societal well-being. Incorporating environmental costs into business reporting can provide more reliable and actionable information for decision makers. The development of environmental accounting and reporting is largely influenced by prevailing accounting standards and the approaches adopted in environmental management. The implementation of environmental audit can significantly enhance the environmental performance of an organisation. Furthermore, allocating a portion of corporate funds towards environment protection and ecological initiatives is essential for promoting long term sustainability.

Proper accounting and recording of environmentally harmful substances are essential. The companies must adopt firm environmental policies, implement steps for pollution control, comply with the rules and regulations and disclose relevant environmental information in the financial statements. The Automobile industry particularly prone to lead and air pollution and contributes significantly to emissions of Carbon dioxide and Sulphur dioxide, causing respiratory diseases from petrol and diesel vehicles. Environmental reporting is essential to reduce emissions and adverse impact of pollution and to ensure consistency, accountability and sustainability.

The rationale for selecting South India comprising Tamil Nadu, Karnataka, Andhra Pradesh, Telangana and Kerala for the study is due to its high concentration of automobile manufacturing units and suppliers. This region hosts major global and domestic Original Equipment Manufacturers and play a key role in India's sustainable mobility transition. Chennai in Tamil Nadu known as "Detroit of Asia", Bengaluru in Karnataka as "EV capital of India" and "Innovation Hub for mobility",

Hyderabad in Telangana as “Mobility valley”, Anantapur in Andhra Pradesh as “Kia City” and Kerala as “Green Mobility Hub of India” collectively represent the automotive and innovation powerhouse of South India. They mainly contribute to India’s transition towards sustainability and technologically advanced eco systems making more significant for the study.

1.6 Research Questions

Based on the identified problem, the study seeks to address the following primary concerns:

- 1) What are the determinants of Environmental Reporting in Automobile manufacturing industry?
- 2) What is the prevailing trend of Environmental Reporting among selected Automobile companies?
- 3) Is there any significant relationship between a company’s Financial Performance and its Environmental Reporting?
- 4) Is there any significant impact of Environmental Reporting on Environmental Performance indicators of a company?
- 5) Is there any impact of Environmental Performance indicators on Environmental performance of a company?
- 6) Does Environmental Policy, Separate Environmental Department, Environmental Management System and Training to employees serve as mediating factors in the relationship between Environmental Reporting and Environmental Performance?
- 7) Is there any moderating role played by Financial Performance of a company in strengthening the relationship between Environmental Reporting and Environmental Performance?
- 8) What are the major constraints and benefits associated with Environmental Reporting in Automobile industry?

1.7 Research Objectives

The present study entitled “Challenges and Prospects of Environmental Reporting with special reference to Automobile Industry in South India” was carried out with the following specific objectives.

- 1) To identify the determinants of Environmental Reporting in Automobile Industry.
- 2) To assess the trend of Environmental Reporting practices in selected companies.
- 3) To analyse the impact of Corporate Financial Performance on Environmental Reporting in Automobile Sector.
- 4) To examine the effect of Environmental Reporting on Corporate Environmental performance and moderating role of Financial Performance as well as the mediating roles of Environmental Policy, Separate Environmental Department, Environmental Management System and Employee Training in linking the relationship between Environmental Reporting and Environmental Performance.
- 5) To examine the constraints and benefits associated with Environmental Reporting in Automobile Industry.

1.8 Major Hypotheses of the Study

The following key hypotheses were developed in the present study.

- H1:** Employees’ and External auditors’ perceptions of determinants of Environmental Disclosure differ significantly.
- H2:** The various determinants have significant impact on Environmental Disclosure.
- H3:** Employees’ and External auditors’ perceptions of the type of reports published by the companies differ significantly.
- H4:** Employees’ and External auditors’ perceptions of the type of reporting formats adopted by the companies differ significantly.

- H5:** Employees' and External auditors' perceptions of medium of disclosure adopted by the companies differ significantly.
- H6:** The different types of reporting format have significant impact on the level of agreement on the type of reporting format adopted by the companies.
- H7:** Employees' and External auditors' mean scores of actual disclosures adopted by the companies differ significantly.
- H8:** The actual disclosures made by the company have significant impact on the trend of disclosure practices adopted by the companies.
- H9:** Return on Capital Employed (ROCE) positively impacts Energy Intensity.
- H10:** Earning Per Share (EPS) negatively impacts Energy Intensity.
- H11:** Return on Assets (ROA) negatively impacts Energy Intensity.
- H12:** Leverage negatively impacts Energy Intensity.
- H13:** Debt Equity Ratio negatively impacts Energy Intensity.
- H14:** Current Ratio negatively impacts Energy Intensity.
- H15:** Quick Ratio negatively impacts Energy Intensity.
- H16:** Return on Assets (ROA) positively impacts Greenhouse gas emission.
- H17:** Return on Capital Employed (ROCE) negatively impacts Greenhouse gas emission.
- H18:** Earning Per Share (EPS) negatively impacts Greenhouse gas emission.
- H19:** Leverage positively impacts Greenhouse gas emission.
- H20:** Debt Equity Ratio positively impacts Greenhouse gas emission.
- H21:** Return on Capital Employed (ROCE) positively impacts Water Intensity.
- H22:** Return on Assets (ROA) negatively impacts Water Intensity.
- H23:** Leverage negatively impacts Water Intensity.
- H24:** Debt Equity Ratio negatively impacts Water Intensity.
- H25:** ROA negatively impacts Environmental Reporting Completeness Ratio.

- H26:** Debt Equity Ratio positively impacts Environmental Reporting Completeness Ratio.
- H27:** ROCE negatively impacts Environmental Reporting Completeness Ratio.
- H28:** ROA negatively impacts Environmental Reporting Completeness Ratio.
- H29:** EPS positively impacts Environmental Reporting Completeness Ratio.
- H30:** Leverage positively impacts Environmental Reporting Completeness Ratio.
- H31:** Current Ratio positively impacts Environmental Reporting Completeness Ratio.
- H32:** Quick Ratio negatively impacts Environmental Reporting Completeness Ratio.
- H33:** The various Performance indicators significantly impact Environmental Performance.
- H34:** Environmental Reporting significantly impacts various Performance Indicators.
- H35:** Employees' and External auditors' perceptions of various constraints affecting Environmental Reporting differ significantly.
- H36:** Employees' and External auditors' perceptions of various benefits arising from Environmental Reporting differ significantly.

Mediation Hypothesis

- MEH1:** Environmental Policy, Separate Environmental Department, Environmental Management System and Employees Training jointly mediate the relationship between Environmental Reporting and Environmental Performance.

Moderation Hypothesis

- MOH1:** Financial Performance significantly moderates the relationship between Environmental Reporting and Environmental Performance.

1.9 Scope of the Study

The geographical scope of the study is confined to South India, focusing specifically on the automobile manufacturing companies operating in five states namely Tamil Nadu, Karnataka, Andhra Pradesh, Telangana and Kerala. These states are selected for the study due to the significant presence of automobile manufacturing companies, industrial zones and supporting infrastructure. The South India has evolved into major automobile hub supported by progressive government policies, availability of skilled labour, well-developed logistics networks and the presence of domestic and international manufacturers.

The content scope of the study involves investigating the extent and quality of Environmental disclosures in automobile manufacturing industry and analysing its relationship with corporate financial performance. The main dependent variable of the study is Environmental Reporting and the independent variables comprise of determinants of reporting namely stakeholder pressure, environmental awards and certification, disclosure practices, auditor type/quality, pollution propensity, political exposure, media exposure, board size, board independence, gender diversity, board meetings, environmental committee, size of the firm, age of the firm, number of years listed, type of industry and uncertainty avoidance. The constraints and benefits of Environmental Reporting and trends of disclosure and disclosure index also considered as independent variables of disclosure. The study further examines how internal environmental mechanisms such as Environmental policy, separate environmental department, EMS and training to employees mediate the relationship between Environmental Reporting and Environmental Performance. The financial performance of the company acts as moderating variable strengthening this relationship. The key financial indicators include ROCE, ROA, EPS, Leverage, Debt Equity ratio, Current ratio and Quick ratio. The Environmental metrics include Energy intensity, Emission intensity, Water intensity, Waste intensity and Environmental reporting completeness ratio.

The theoretical scope of the study encompasses the application of various theories associated with Environmental Disclosure. Stakeholder theory emphasises

that organization should address the interests of stakeholders and Environmental Reporting can be used as a tool to demonstrate responsible practices thereby serving the best interest of stakeholders. Institutional theory highlights how organizations conform to societal norms, rules and expectations and proper reporting serves as a tool for compliance and best practice adoption. Agency theory focuses on Principal Agent relationship between Principal (Shareholders) and agents (managers) and transparent, comparable and reliable data reduces information gap between stakeholders and managers. The Legitimacy theory points out that organizations must align with societal expectations and regular reporting demonstrates alignment with societal values and thereby promote sustainability and corporate responsibility. Cultural dimension theory explores the influence of cultural factors on the nature and extent of reporting. Signalling theory considers reporting as a strategic move to reduce uncertainty, build credibility and differentiate themselves in the market place. Profitability theory emphasises that more profitable firms are better positioned to report their environmental performance thereby enhancing reputation since they have more resources to invest in sustainability initiatives. The Voluntary disclosure theory explains why the companies choose to disclose Environmental data without legal mandates, thereby aiming for competitive and reputational gains.

The sample scope of the study focuses on Automobile manufacturing companies located across five states in South India. These companies are categorized into three segments: original equipment manufacturing company, tyre manufacturing company and other spareparts manufacturing company. The respondents are selected on the basis of defined criteria and grouped into two categories- internal stakeholders comprising of top and middle level employees and external stakeholders represented by chartered accountants doing statutory audit and external agencies involved in energy and green audit of the companies.

1.10 Research Methodology

The research methodology begins with selecting the sampling frame, method of study, followed by developing a structured questionnaire. A pilot study was conducted to test and refine the questionnaire. After finalising the questionnaire,

researcher proceeded to administer the survey and analysed the collected data through data examination, input matrix selection, model evaluation and goodness of fit assessment. The final stage involved interpreting results and reporting the study's findings.

1.10.1 Research Design

The study entitled “**Challenges and Prospects of Environmental Reporting with special reference to Automobile Industry in South India**”. adopted a research design combining both descriptive and analytical approaches. The study accurately describes the characteristics of Environmental reporting portraying variables through stakeholder observations and direct interviews. It further explores the relationship between various variables of Environmental reporting through appropriate statistical tools and Hypothesis testing. The researcher gathered responses from top-level and middle level employees working in the selected companies and external auditors involved in statutory audit and green audit of these companies across South India.

1.10.2 Selection of the Area

The current study is related to five states in South India namely Tamil Nadu, Karnataka, Andhra Pradesh, Telangana and Kerala. Chennai in Tamil Nadu known as the “Detroit of Asia” and the automobile capital of India hosts global and Indian manufacturers like Hyundai, Nissan, Renault, Ashok Leyland and TVS. It is now emerging as one of the top 10 Global Automobile manufacturing hubs. Bangalore in Karnataka referred to as the “EV capital of India” is a key hub for automobile manufacturing and research and development and home for global automotive giants like Bosch and Volvo. The government incentives for EVs and green energy sectors encourage investment in automobile sector and focus on sustainable vehicle production. Andhra Pradesh has emerged as an attractive destination for automobile manufacturing companies in India due to its strategic location, government initiatives and rapidly developing infrastructure. The government subsidies, tax exemptions and single window clearance encourage investment in the automotive

sector. With access to solar and wind energy, smart and green vehicle manufacturing is promoted. Telangana is emerging as a significant contributor to India's automobile sector driven by growing ecosystem and auto components. Hyderabad in Telangana has emerged as a hub for EV manufacturing and battery production thereby attracting both domestic and international investors. Kerala is actively promoting the adoption and manufacturing of EVs through its Electric Vehicle Policy that encourages investments in assembly parts and battery production. The government provided incentives for green vehicles and local manufacturing for investment in smart cities and mobility solutions.

1.10.3 Data collection

The scale of items for measuring each dimension of the construct was incorporated in the study after establishing conceptual framework and formulating hypothesis. These measurement scales helped to ensure the reliability and validity of data.

Sources of Data

The study adopted a combination of primary and secondary sources for data collection to ensure the fulfilment of research objectives.

a) Primary Data

The study aimed to explore the challenges and prospects of Environmental Reporting among Automobile companies in South India. In order to attain this objective, a validated and well-structured questionnaire was administered to selected respondents. The researcher also conducted discussions and interviews with professional chartered accountants, certified auditors involved in green sustainability and energy audit, CEOs, and top and middle level employees of the company for gathering supportive information for the study. The questionnaire was distributed through both online mode (google forms, e-mail and LinkedIn) and offline mode (direct visits to companies and audit firms).

b) Secondary Data

An extensive collection of secondary data was gathered from a wide range of reputable published sources to supplement the primary data. Annual reports,

sustainability reports and CSR disclosures of selected automobile companies were examined to gain insights into the environmental reporting practices and sustainability initiatives of the company. Global reporting Initiative (GRI) and Global Compact Initiative (GCI) guidelines provided thorough framework for assessing the quality and validity of disclosures made by the company. The industry reports published by regulatory bodies, government agencies and automobile associations including ACMAI (Automotive Component Manufacturers Association of India) were explored to understand specific trends and policy frameworks relevant to environment sustainability. The academic journals, books, research dissertations and theses on environmental reporting and corporate sustainability were also assessed to gain in-depth knowledge of investigations conducted by other scholars.

1.10.4 Sample Design

The sample design involves the procedures adopted by the researcher to select a representative sample from the population namely defining the target population, constructing a sampling frame, identifying the sampling unit, selecting an appropriate sampling technique depending on the nature of population and fixing an adequate sample size. A multi stage proportionate random sampling technique was employed for selecting the required number of respondents for analysing the challenges and prospects of environmental reporting in automobile sector.

1.10.4.1 Population

The population of the study comprises of top level and middle level employees as well as external auditors involved in statutory, green and energy audit, who meets the prescribed criteria, who are employed/associated with the selected automobile manufacturing companies located in the South Indian states of Tamil Nadu, Karnataka, Andhra Pradesh, Telangana and Kerala meeting the criteria of schedule VII of Company's Act, 2013.

1.10.4.2 Sample Frame

The sampling frame for employees was prepared using a list of top and middle level employees working in the selected automobile manufacturing companies in

South India who met the specified criteria. Similarly, the chartered accountants to be included in the frame was compiled from the list of professionals working in the firm who is responsible for conducting statutory audits for the companies fulfilling the required criteria. The external experts involved in conducting green and energy audit of the company was obtained from the list of BEE, Government of India auditors and ISO certification bodies.

a) Criteria for the inclusion of company in the sampling frame

- The company must have a manufacturing plant.
- The company must be engaged in the manufacturing of key automobile components for two wheelers, three wheelers or four wheelers, tyres, or other spare parts or accessories.
- The company must be involved in CSR activities.

b) Criteria for the inclusion of employee in the sampling frame

- The employee must hold a managerial position or higher designation within the company.
- The employee must have minimum of 5 years and a maximum of 25 years of experience with the company.

c) Criteria for the inclusion of external auditors in the sampling frame

- The statutory auditor can be an independent practitioner or affiliated with a firm conducting statutory audit for the company and must possess a minimum qualification of CA Inter and having a minimum of 5 years and a maximum of 25 years of audit experience with the company.
- The non-financial auditor must be an accredited expert of BEE certified energy auditors or ISO certification bodies or environmental consultants having a minimum of 5 years and a maximum of 25 years of audit experience with the company.

1.10.4.3 Sampling Unit

The respondents of the study were classified into two categories namely employees and external auditors. Each employee of the selected automobile manufacturing company and each external auditor engaged in the statutory, and energy and green audit of these companies with a minimum of five years and maximum of twenty-five years of work experience with the company constitute the sampling unit of the study. The employees of the company included middle and top-level personnel specifically those holding the designation of manager and above and the external auditors included professionals with at least a CA Intermediate qualification who are actively engaged in the statutory audits for the company and non-financial auditors engaged in conducting green, energy and sustainability audits of the companies. The classification of respondents is summarised in the following table:

Table 1.4

Classification of respondents

Internal respondents (Employees)	External respondents (External auditors)
CEO, CFO	Statutory auditors engaged in the audit of these selected companies
Managing Director	BEE certified energy auditors
Board of directors	Environmental consultants
Vice President	Auditors of ISO certification bodies
General Manager. Deputy Manager	Members of Government recognised institutions- National Productivity Council (NPC), National Environmental Engineering Research Institute (NEERI) responsible for conducting green, energy and sustainability audits in the company.
Chief/Senior Accountant	
Functional Managers of different departments	
Internal Auditor	
Junior Accountant	

Source: Compiled by the researcher

1.10.4.4 Sampling Technique

A multi stage proportionate random sampling method was used to obtain representative sample of the population. The entire sampling process was divided into eleven stages.

a) **Automobile manufacturing companies**

In the first stage, the total number of automobile manufacturing companies engaged in CSR activities across five states in South India was identified. The initial list obtained from ACMA and Society of Indian Automobile Manufacturers (SIAM) was used for identifying the sample population but it was incomplete as it included only those companies that were members of these organizations. Therefore, to supplement the data, an approximate list of automobile manufacturing companies in South India engaged in CSR was compiled using information available through google search. According to the provisions of Companies Act 2013, the companies having a Net worth of Rs 500 crore or more or Turnover of Rs 1000 crore or more or Net Profit of Rs 5 crore or more during any financial year are required to undertake CSR activities. Furthermore, all activities relating to Environmental sustainability are required to be disclosed under Schedule VII of companies Act 2013. As per the list prepared by the researcher, there are 301 automobile manufacturing companies in Tamil Nadu, 209 in Karnataka, 81 in Andhra Pradesh, 57 in Telangana and 21 companies in Kerala.

In the second stage, the selected companies were further classified into three distinct groups namely original equipment manufacturers (OEM), tyre manufacturing companies and component part manufacturing companies. The selected companies specialise in various aspects of vehicle production and modification including main body of vehicle, tyre, brake, fuel, engine, electric equipment and music systems.

In the third stage of the study, Systematic Random Sampling was employed to select sample companies from each state. Every 10th company on the consolidated list was chosen to ensure unbiased sampling. The table below presents the number of companies selected from each state providing an overview of the geographic distribution of the sample.

Table 1.5*Selection of Automobile Manufacturing Companies from each South Indian State*

State	Total number of companies	Interval used	Number of companies selected
Tamil Nadu	301	Every 10 th	30
Karnataka	209	Every 10 th	20
Andhra Pradesh	81	Every 10 th	8
Telangana	57	Every 10 th	5
Kerala	21	Every 10 th	2
Total	669	-	65

Source: Compiled by the researcher

A sample of 65 companies were selected for the study from a total of 669 automobile manufacturing companies across five South Indian states.

The fourth stage of the study involves categorizing respondents into groups: employees and external auditors. The perceptions of those working inside the organisation and outside the organisation contribute to incorporate diverse viewpoints to the study.

b) Employees

In the fifth stage, the employees were divided into two hierarchical groups namely top-level and middle level personnel. The top-level group included decision makers comprising of CEO, CFO, Board of Directors, Vice President, Managing director, General manager, Deputy manager, Chief accountant and Senior accountant. The middle level group included Internal auditors, Junior accountants and managers of functional departments. The designation title varied across the selected companies reflecting differences in organizational structure. The top-level employees were primarily responsible for formulating policies while middle level employees played a crucial role in executing and implementing those policies within their respective domain.

In the sixth stage, list of total number of employees working in the selected companies was obtained from the official website of the respective companies and total list of employees satisfying the criteria of having 5 to 25 years of experience

and holding the position of manager or above was prepared. The table 1.6 presents the state wise classification of employees who satisfied the prescribed criteria.

Table 1.6

Classification of eligible employees from each state

State	Total number of employees	Total number of eligible employees
Tamil Nadu	140191	22427
Karnataka	36718	5874
Andhra Pradesh	16809	2689
Telangana	2280	365
Kerala	1520	245
Total	197518	31600

Source: Compiled by the researcher

In the seventh stage, Proportionate stratified sampling method was adopted by the researcher to allocate the total sample size of 400 employees across five South Indian states. The total number of eligible employees in each state was divided into distinct strata and samples were drawn proportionately from each stratum based on the total number of eligible employees in each state.

The eighth stage involves the allocation of sample of 400 respondents proportionately to each state based on the number of eligible employees as depicted in table 1.7. This ensured that the representation of each state in the sample accurately reflected its share of the eligible population.

Table 1.7

Determination of final sample size (Employees)

State	Total number of eligible employees	Sample size calculation	Sample size
Tamil Nadu	22427	$400 * (22427/31600) = 283.89$	284
Karnataka	5874	$400 * (5874/31600) = 74.35$	74
Andhra Pradesh	2689	$400 * (2689/31600) = 34.04$	34
Telangana	365	$400 * (365/31600) = 4.62$	5
Kerala	245	$400 * (245/31600) = 3.10$	3
Total	31600	-	400

Source: Compiled by the researcher

a) External auditors

In the ninth stage, the researcher compiled a comprehensive list of audit firms involved in the statutory audit of the selected companies. This information was obtained from the official website and directors report of the company and number of chartered accountants with in these firms who are involved in the statutory audit of these companies specifically those meeting the eligibility criteria of having 5 to 25 years of professional experience was identified. The list of accredited members of NPC and NEERI conducting energy, sustainability and green audit having 5 to 25 years of experience was prepared by the researcher. The table 1.8 presents the state wise classification of external auditors satisfying the prescribed criteria.

Table 1.8

Classification of eligible external auditors from each state

State	Total number of external auditors in the companies	Total number of eligible external auditors
Tamil Nadu	521	462
Karnataka	260	230
Andhra Pradesh	165	126
Telangana	72	59
Kerala	25	20
Total	1043	897

Source: Compiled by the researcher

In the tenth stage, the researcher employed Proportionate stratified sampling method to allocate the total sample size of 400 external auditors across five South Indian states. The eligible external auditors in each state were first grouped into strata and samples were drawn proportionately from each stratum based on the relative number of eligible external auditors in each state.

The eleventh stage involves the allocation of sample of 400 respondents proportionately to each state based on the number of eligible external auditors as depicted in table 1.9

Table 1.9*Determination of final sample size (External Auditors)*

State	Total number of external auditors	Sample size calculation	Sample size
Tamil Nadu	462	$400 * (462/897) = 206.02$	206
Karnataka	230	$400 * (230/897) = 102.56$	103
Andhra Pradesh	126	$400 * (126/897) = 56.19$	56
Telangana	59	$400 * (59/897) = 26.31$	26
Kerala	20	$400 * (20/897) = 8.92$	9
Total	897	-	400

Source: Compiled by the researcher

The total number of employees and external auditors selected from each state in South India is presented in table 1.10

Table 1.10*Final sample size of employees and external auditors*

State	Employees	External auditors
Tamil Nadu	284	206
Karnataka	74	103
Andhra Pradesh	34	56
Telangana	5	26
Kerala	3	9
Total	400	400

Source: Compiled by the researcher

Systematic random sampling was applied for the selection of the automobile manufacturing companies as it gives equal chance of selection for each company. The proportionate stratified sampling method adopted for the selection of employees and external auditors fulfilling the criteria ensured representativeness and addressed the heterogeneity of population since there was variation in the number of employees and external auditors across the states.

1.10.4.5 Fixation of Sample Size (Cochran W.G .1977)

The size of sample was fixed by setting a margin of error at 5 percent and estimated proportion (p) estimated to be 0.5 ensuring the maximum required sample

size from a pilot study conducted among 50 employees and 50 external auditors. The sample size was calculated using the following formula.

$$n_0 = \frac{z^2 \times p \times q}{e^2}$$

$Z=1.96$ (at a confidence level of 95 percent)

$p=0.5$ (estimated proportion of the population for maximum variability)

$e=0.05$ (desired margin of error at 5 percent)

After adjusting the finite population correction factor, the formula is as under

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} \text{ (Cochran, 1977)}$$

n denotes adjusted sample size for finite population

N denotes total size of the population

n_0 denotes sample size from Cochran's original formula

$n_0 = 1.96 * 1.96 * 0.5 * 0.5 / 0.5 * 0.5 = 0.9604 / 0.0025 = 384$ (constant)

Sample size for employees ($N=31600$) $384 / 1.01212 = 380$

The sample size of employees 380 rounded off to **400**

Sample size for external auditors ($N=897$) $384 / 1.4270 = 269$

The sample size for external auditors is 269. but in order to make the sample more representative, to reduce the sampling errors and to equalize with the sample size of employees, the sample size of chartered accountants is also taken as **400**.

Employees $n=400$

External auditors $n=400$

The study fulfils the criteria of the minimum sample size for application of various statistical tests. The sample size of 400 each for employees and external auditors were considered adequate by the researcher for application of Structural Equation Modelling (SEM).

1.10.5 Designing of the Questionnaire

The researcher collected primary data from a sample of employees and external auditors of the selected automobile companies through a well-structured questionnaire.

The questionnaire was reviewed by a panel of eight experts comprising two CFOs of automobile companies, two independent chartered accountants, one expert in energy audit, two academicians and one statistician. The viewpoints of experts in the field of research and top-level managers of automobile companies were also considered by the researcher for finalization of the questionnaire. The validity and reliability of the questionnaire was ensured by conducting a pilot study among 50 employees and 50 external auditors of various automobile manufacturing companies in South India. The final draft of questionnaire was developed after incorporating the suggestions of respondents of pilot study and experts' opinion.

The researcher personally visited certain automobile companies and CA firms conducting audit of the companies and distributed printed copies of questionnaire for data collection. In respect of those companies which could not be visited by the researcher personally, google forms were forwarded to their mail ID or LinkedIn ID. Telephonic interviews were also made for collecting data. The top officials and HR managers of the companies were approached by the researcher to get the complete list of employees and external auditors to ensure the accuracy of data available in the official website of these companies. The study specifically covered top and middle level employees and external auditors engaged in the financial and non-financial audit of these companies having five to twenty-five years of work experience. The data collection period was from February 2024 to July 2024.

In order to collect relevant information, five sections of questionnaire have been designed. (Appendix 1).

Section A contained questions relating to demographic profile of employees and external auditors.

Section B of the questionnaire is related to the determinants of Environmental disclosure and contains 17 determinants which were rated on a Five-point Likert Scale starting from Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and ending with Strongly Agree (5).

Section C of the questionnaire contains statements relating to the trend of disclosure practices and financial performance and environmental reporting and identified the perception of respondents.

Section D contains questions relating to effect of environmental disclosure on Environmental performance which were rated on Five Point Likert Scale.

Section E final section contains statements relating to constraints and benefits of Environmental disclosure which were rated on a Five-point Likert Scale starting from Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) to Strongly Agree (5).

The questionnaire was prepared based on the structured and validated questionnaires from existing literatures that analysed the environmental reporting practices among various sectors. The table 1.11 presented below gives an overview of variables that are applied in the study and the number of statements against them.

Table 1.11

Constructs Applied in the Study

Constructs Applied	Number of items
Organizational characteristics	7
Sustainability and risk management	3
Stakeholders influence	2
Governance and assurance	5
Environmental management and governance	5
Environmental performance and impact	6
Environmental accounting and reporting	7
Corporate environmental Performance	6
Environmental Reporting	9
Financial performance	7
Corporate Environmental reporting	7
Internal constraints	5
External constraints	4
Technical/financial constraints	5
Economic& financial benefits	9
Regulatory & risk management benefits	5
Social & image benefits	4
Future benefits	6

Source: Compiled by the researcher

The various determinants effecting Environmental Reporting and its constraints and benefits were measured by a 5- point Likert scale starting from “Strongly Disagree” and ending with “Strongly Agree”. The mediation and moderation effect of Environmental Reporting on Environmental Performance was also measured using a 5-point Likert Scale. The actual disclosure practices of the company were rated using Likert scale ranging from “Very rarely” to “Very Frequently” showing how frequently these items in the disclosure index actually reported by the company. The study analysed the differences in the perception levels of top and middle level employees and external auditors. The various demographic variables examined by the researcher for the study include Age, Gender, Level of Experience, Marital status and designation of respondents.

The nature of variables employed in the study for each of the objectives of the study based on predictive analysis is depicted in table 1.12 below.

Table 1.12

Nature of Variables

Independent Variables	Dependent Variables	Mediating Variables	Moderating Variables
Determinants of reporting			
Disclosure trends	Environmental Reporting	-	-
Constraints			
Benefits			
Performance indicators	Environmental performance	-	-
Environmental Reporting	Performance Indicators	Environmental policy, Separate environmental department, EMS, Employee training	Financial Performance
Financial performance parameters	Environmental reporting parameters	-	-

Source: Compiled by the researcher

The above table depicts the nature of variables employed in the study based on the predictive analysis. The independent variables applied in the study include determinants of reporting, disclosure trends, constraints and benefits of reporting with Environmental reporting as dependent variable. The various performance indicators included in the study namely environmental policy, separate environmental department, EMS, ISO 14001 certificate, environmental statements, audit of environmental statements, recognition of social costs, training to employees, internal reward system, environmental awards and voluntary steps taken for environment protection are considered as independent variables with environmental performance as dependent variable. The financial performance of the company acts as moderating variable strengthening the relationship between environmental reporting and environmental performance. The mediating variables of the study are environmental policy, environmental department, EMS and employee training. The financial performance parameters including ROCE, ROA, EPS, Leverage, Debt equity ratio, current ratio and quick ratio considered as independent variable of the study with environmental reporting parameters as dependent variable. The various Environmental Reporting Parameters employed in the study include energy intensity, emission intensity, water intensity, waste intensity and environmental completeness ratio.

1.10.6 Feasibility study

A pilot study was conducted involving a sample of 50 employees and 50 external auditors from selected automobile companies. The selected sample represented key decision makers and financial and non-financial experts within the industry. The respondents were asked to fill the questionnaire and provide suggestions and feedback to enhance the validity and clarity of the contents. They were also encouraged to report any difficulties encountered during the process. Based on their input and outcomes of the study, necessary changes were made and final draft of questionnaire was finalized with great accuracy for formal data collection

1.10.7 Scale Reliability

Reliability tool measures the degree to which measurement tool consistently measures a construct across time, items or raters. The scale reliability ensures that there are no inconsistencies in the measurement process and variations arise due to actual difference in the construct. An internal consistency test was conducted applying Cronbach's alpha in pre testing to evaluate the reliability of eighteen constructs applied in the study. The scale reliability was tested among a sample of 100 respondents to measure the accuracy and consistency of each measurement items within eighteen constructs in the study. The table 1.13 presents the results of internal consistency reliability for a sample size of 100 respondents.

Table 1.13

Reliability analysis based on the pilot study comprising a sample of 100 respondents using Cronbach's alpha among eighteen constructs

Sl No	Constructs/Factors	No. of items	Cronbach's alpha	Overall Cronbach's alpha
1	Organizational Characteristics	7	.920	.910
2	Sustainability and Risk Management	3	.910	
3	Stakeholders Influence	2	.980	
4	Governance and Assurance	5	.840	
5	Environmental Management and Governance	5	.890	.960
6	Environmental Performance and Impact	6	.910	
7	Environmental Accounting and Reporting	7	.960	
8	Corporate Environmental Performance	6	.918	.857
9	Environmental Reporting	9	.875	
10	Financial Performance	7	.898	.824
11	Corporate Environmental Reporting	7	.857	
12	Internal Constraints	5	.970	.941
13	External Constraints	4	.910	
14	Technical & Financial Constraints	5	.930	
15	Economic& Financial Benefits	9	.930	.920
16	Regulatory & Risk Management Benefits	5	.920	
17	Social & Organizational image Benefits	4	.950	
18	Future Benefits	6	.910	

Source: Primary Data

There was strong reliability across all constructs since Cronbach's alpha exceeded the minimum threshold limit of 0.70 that ensured internal consistency. Nunnally (1978) pointed out that minimum alpha value of .70 can be applied for early stage of research and 0.80 or higher value becomes applicable for established scales. All the constructs exceeded alpha value of 0.8. The researcher was very much confident about the internal consistency of data and proceeded with further data collection on the assumption that the selected constructs will yield the same reliable results for the entire study.

1.10.8 Validity Test

The validity test is employed in research for determining whether a tool or instrument measures what it intends to measure and evaluates the accuracy and appropriateness of a measurement. Validity is a body of evidence gathered to support interpretation and use of test scores Sireci & Sukin (2013). The validity of an instrument is ensured using systematic and logical approach and thereby conclusions drawn are credible and meaningful. Convergent and discriminant validity are examined by the researcher in the study.

a) Convergent Validity

Convergent validity refers to the extent to which a test is correlated with other measures that assess the same (or similar) constructs. Convergent validity in the behavioural sciences refers to the degree to which two theoretically related measures are empirically associated. Convergent validity, along with discriminant validity, is a subtype of construct validity. It was observed that all the variable loadings on the latent constructs exceeded the threshold of 0.5 and were statistically significant at $p < 0.05$ indicating that the observed variables adequately represented their underlying constructs.

b) Discriminant Validity

In psychology "Discriminant validity tests whether concepts or measurements that are not supposed to be related are actually unrelated". Campbell and Fiske (1959) introduced the concept of discriminant validity within their discussion on

evaluating test validity. Discriminant validity was identified by checking correlations between the variables. Generally, a 0.85 correlation or higher indicates absence of discriminant validity in structural equation modelling (David 1998). In the present study, all inter construct correlations were below this threshold, suggesting that adequate discriminant validity was established.

1.10.9 Normality Test

Kolmogorov-Smirnov test is generally performed to verify whether the data involved in the research follows a normal distribution. The test measures the largest vertical distance between the empirical and theoretical cumulative distribution functions (Massey.1951). A normality test was conducted to determine whether a sample data has been drawn from a normally distributed population. The table 1.14 represents the results of Kolmogorov-Smirnov test for verifying the normality of data.

Table 1.14

One-Sample Kolmogorov-Smirnov test of Normality

	Mean	Std. Deviation	P Value
The company should consider stakeholders interest	4.6337	.75520	.000
Disclosure helps to avoid employee's disappointment	4.4000	.77184	.000
Managers perception is core element influencing company's environmental policy	4.2775	.81475	.000
Internal stakeholders support Environmental Disclosure and external stakeholders' impulse pressure to disclose information	4.2012	.85683	.000
Major company shareholders are affected by good Environmental reputation and production efficiency	4.1662	.88010	.000
Awards encourage companies to take care of environment and disclose more environmental information	4.5725	.84595	.000
Companies with ISO 14000 show more commitment to Environment policy	4.3575	.82798	.000
Firm shows continuous improvement in Environmental performance	4.2875	.83559	.000
Provide ethical conduct for customers and minimize harmful impacts to environment	4.2438	.83379	.000

	Mean	Std. Deviation	P Value
Help to prevent pressure from stakeholders and competitors	4.2213	.83706	.000
Qualitative environmental information is included in directors report	4.3650	1.04912	.000
Statutorily required information on Conservation of Energy is included in the report	4.0888	.94445	.000
Organizations commitment towards social goals are highlighted	4.0825	.95621	.000
Large companies give Environmental information in detail in Chairman's statement as per Global Reporting Initiative guidelines	3.8588	.99626	.000
Firms that fail to meet environmental expectations try to mitigate negative effects by disclosing more	4.0013	.95781	.000
High quality auditors can better assess the environmental impact of firm's business operations	4.3088	1.24714	.000
They produce more high-quality environmental information	4.0050	1.13428	.000
Auditors recommend clients to report Environmental information	3.9350	1.10671	.000
High corporate moral values of the company affect the selection and quality of the auditor	3.9350	1.11347	.000
Larger firms appoint Big 4 accounting firms as auditors to gain international recognition	4.1587	1.19492	.000
Environmental information announcement reduces pollution emissions and promotes low carbon development of enterprise	4.4650	.91915	.000
Governments pollution control policy improves atmospheric environment	4.1075	.82115	.000
Environmental tax reduces pollution emissions per unit of output	3.9350	.84656	.000
Tax subsidies for clean companies help to reduce Environmental pollution	3.9887	.83785	.000
Firms in more polluting industry reporting its toxic waste disclose more to avoid adverse actions of stakeholders	4.0500	.83868	.000
Society has higher expectations for environmental performance of large firms	4.3613	1.13572	.000
Political connection helps firms to obtain government resources. attract more media attention and increase firm's visibility	4.0100	1.03016	.000
Politically exposed firm are expected to take more social responsibility	3.9650	1.02229	.000

	Mean	Std. Deviation	P Value
They have higher level of compliance with law and social norms	3.8962	1.04372	.000
High political cost compel management to disclose more Environmental information and to engage in environmentally friendly activities	3.9275	1.03855	.000
Increase public attention on social problems and Inform stakeholders how much company concerns on environment	4.6150	.69453	.000
Encourage managers to expose company's environmental activities and stakeholders get access to what they want	4.2350	.64054	.000
Increased media coverage increases the role of NGO's	4.1837	.65614	.000
Media exposure has greater frequency than yearly reports	4.0500	.77346	.000
The firms having high media exposure disclose more Environmental information	4.1513	.71695	.000
Provide diversity in terms of expertise having financial or accounting background	4.6000	.80518	.000
Difficult to maintain coordination between board members and weaker decision making	4.2900	.74605	.000
Larger the size of board. more will be Environmental disclosure and unanimous decision can be taken	4.2413	.75582	.000
Agency conflict between managers and shareholders having different perspectives. values. and ideas	4.0787	.82819	.000
Strong board communicate with all stakeholders	3.9463	.89965	.000
Monitor managers and consider interest of stakeholder groups	4.5950	.83026	.000
Independent directors in board increase firm value and protect interest of stakeholders	4.3250	.76328	.000
Independent directors contribute their skills. connections and contact and help in achieving strategic goals and disclosing more environmental information	4.3575	.77971	.000
Encourage top management to incorporate social considerations	4.2038	.80346	.000
Personal and professional relationship with the firm	3.8363	1.00906	.000
Favors problem solving by considering different perspectives and ideas	4.6100	.77856	.000
Women and men differ in communication style. educational background. commitment and expertise	4.3312	.78727	.000
Female directors more stakeholders oriented and they enhance board effectiveness	4.1112	.94868	.000

	Mean	Std. Deviation	P Value
Positive impact on organizations socially responsible behavior and increase the propensity of disclosure	4.2087	.85210	.000
Women are more concerned than men in environmental issues and well-being of society and take actions to reduce perceived environmental risks	4.0787	1.01061	.000
Meeting frequency affects firms' performance and promotes idea sharing and knowledge and more disclosure	4.5875	.77659	.000
Provide opportunity to discuss strengths and weaknesses affecting firms' earnings	4.2075	.73322	.000
Deal with issues relating to low performance	4.1300	.73911	.000
Alert stakeholders to problems or conflicts of business operation	4.1350	.73140	.000
Major actions and decisions of the company taken in board meeting	3.7625	.98097	.000
Environmental issues can be addressed and ensure better quality of Environmental disclosure	4.6863	.62714	.000
Manage conflict between stakeholder groups and improve company's commitment towards sustainability	4.2713	.61290	.000
Plan. implement and review sustainability policies and activities	4.2175	.62904	.000
Enhance the awareness of employees of environmental aspects of the job and make them responsible for minimizing environmental risks	4.2200	.65737	.000
Adequate communication with external stakeholders	4.1125	.75369	.000
Big companies face more pressure from public to disclose more information	4.6587	.72833	.000
Interested to disclose information to attract more investors and influence employees	4.2812	.67098	.000
Cost of reporting environmental information is very high and small firms cannot afford	4.2313	.68619	.000
Disclosing more information reduce agency cost and creates confidence among stakeholders	4.1900	.74471	.000
Minimize public criticism and pressure from government, more accountable for environmental issues and firm become aware of maintaining good corporate reputation	4.1638	.74507	.000
Older firms must influence perception about their business and perform on new policies to sustain their business	4.6813	.66724	.000
As company matures, reputation increases and involvement in environmental protection activities also increase	4.2587	.63624	.000

	Mean	Std. Deviation	P Value
Companies that have established for a long time disclose more information about environmental activities to reduce environmental costs and to improve quality	4.2425	.67027	.000
Old firms face more political pressure	4.1425	.78770	.000
Old firms have up to date information about recent developments and changes in the society	4.1688	.78965	.000
The firm listed in stock market need to comply disclosure requirements and publish annual reports on environmental risks faced	4.7256	.62054	.000
Promotes stakeholder engagement	4.2657	.62736	.000
Improve communication with stakeholders	4.3020	.61579	.000
Listed companies have more sustainability related goals and targets to strengthen risk management	4.1817	.76025	.000
Listed companies demonstrate their sustainability objectives	4.0977	.83251	.000
Environmental sensitive industries activities affect environment directly and comply with environmental regulations	4.4919	1.02579	.000
The emission effect of their activities is more and face greater societal, NGO and environmental groups pressure	4.0726	1.35345	.000
Manufacturing firms disclose more environment related information to get high attention from community and to maintain healthy relationship between company and investment community	3.9937	.96620	.000
Public sector companies disclose more environmental information to get more exposure	3.9224	1.02914	.000
Public sector companies follow stringent rules	3.7997	1.75718	.000
Society wishes to avoid risk and want to maintain more relaxed atmosphere	4.2175	.97153	.000
Short term orientation focuses on social status	3.7950	.68816	.000
Long term-oriented firms disclose more environmental information	3.6525	.76647	.000
Individualistic firms want to maintain less secrecy	3.7163	.73410	.000
People share common beliefs and ideas and extent of disclosure more in collectivistic societies	3.7887	.75653	.000
Environmental objectives	3.841	1.1080	.000
Environmental management system	3.8250	1.11621	.000
Environmental auditing	3.8325	1.12184	.000

	Mean	Std. Deviation	P Value
Environment management certificate of ISO 140001	3.8425	1.11434	.000
Environmental budget	3.8375	1.12146	.000
Waste Management	3.8612	1.10839	.000
Tree plantation and other environment CSR activities	3.8612	1.11065	.000
Pollution control measures	3.8563	1.10436	.000
Conservation of natural resources	3.8500	1.10636	.000
Measures regarding use and efficiency of electricity, water, CO2 emissions, waste management and fuels	3.8475	1.11728	.000
Impact of organizational activities on the environment	3.8512	1.10256	.000
Significant accounting and reporting practices	3.8612	1.10839	.000
Value of intangible environmental investments (e.g. research and development expenditures. emission permits)	3.8563	1.10436	.000
Expenditure (e.g. fines paid for disregarding environmental norms)	3.8512	1.11610	.000
Contributions to Environmental fund	3.8500	1.10862	.000
Cost for controlling environmental impact (e.g. preventing pollution, noise, educating employees, designing new environmental-friendly products)	3.8400	1.10948	.000
Awards obtained for Environmental protection	3.8637	1.10304	.000
Cost for controlling environmental impact like preventing pollution, noise, cost for educating employees, designing new environmentally friendly products etc.	3.8725	1.28289	.000
Priority given to economic demands in case of low profitability	4.2750	.77951	.000
More Commitment of top management towards addressing environmental issues in case of high profitability	4.2725	.78039	.000
Gaining competitive advantage results in increase in profitability	4.2575	.81056	.000
Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure	4.2637	.79999	.000
Profitable firms exposed to high social pressures but have necessary funds for disclosure	4.2675	.79324	.000
Profitable companies more trusted by the public to increase stakeholder expectations and attract investors	4.2700	.78923	.000
Profitability is an indicator in managing firms' environmental assets	4.2563	.79301	.000

	Mean	Std. Deviation	P Value
Disclosure of environmental costs creates awareness among investors	4.0776	.95591	.000
Cost of environmental deterioration of its own activities and waste collection reduce profit	4.0751	.96134	.000
Proper disposal of waste generates revenue	4.0776	.95984	.000
Employee health and safety cost increase knowledge of employees, profit increases	4.0788	.95908	.000
Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases	4.0663	.96264	.000
Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability	4.0701	.96172	.000
Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability	4.0663	.96394	.000
Audit of environmental management system improves environmental performance, makes an estimate of environmental cost and more disclosure	4.1100	.95736	.000
Verification of environmental reports checks its accuracy, credibility, validity and useful in decision making	4.0987	.95794	.000
Ensure compliance of environmental laws	4.1300	.94431	.000
Respond to pressures from regulatory authorities	4.1250	.93299	.000
Reduce wastage of energy, cost and time	4.1175	.94859	.000
Environmental risk should be assessed in environmental audit	4.1250	.94763	.000
Very expensive and time consuming	4.1250	.94631	.000
Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set	4.1250	.94895	.000
Identify problems and improve corporate image	4.1250	.94895	.000
Superior performers have proactive energy and want to convey their performance to general public	4.0700	.90478	.000
Poor performers face more political pressure, disclose all information to reduce negative impacts	4.0538	.91619	.000
Investors will be attracted due to disclosure	4.0525	.91010	.000
Environmental liabilities are less for good performers	4.0425	.91883	.000
Meeting environmental performance is the key aspect of CSR	4.0488	.92463	.000

	Mean	Std. Deviation	P Value
Guarantees that stakeholders are aware of the environmental responsibilities	4.0675	.90911	.000
Organisations lack the expertise to produce and disclose such information	3.6975	1.24114	.000
Management feels that such information is not important for stakeholders	3.6950	1.23749	.000
Lack of consciousness about Environmental Disclosure	3.6612	1.25038	.000
Difficult to measure environmental costs and benefits	3.6725	1.24888	.000
Cost of obtaining external advice/assurance and setting up environmental management systems high	3.6775	1.25517	.000
No legal requirement/obligation to report	3.6838	1.25028	.000
Lack of clear-cut government policy	3.6825	1.25046	.000
Lack of coordination with different stakeholders	3.6600	1.25254	.000
Improper enforcement of planning and environmental legislation and inactive enterprise participation	3.6612	1.25438	.000
Cost of disclosure (producing, printing & distributing) the report is high	3.6788	1.25500	.000
Capital investment in pollution control equipment is high	3.6812	1.24864	.000
There is no standard method of estimating social value of environmental goods and services and industry data is not available	3.6750	1.26050	.000
Cannot compare two firms when methods used by both firms different	3.6812	1.24964	.000
Avoid providing sensitive and confidential information to competitors	3.6738	1.25171	.000
Better estimates of total cost of producing a product	3.4900	1.15027	.000
Long term survival of the organization	3.4100	1.18146	.000
Reduction of cost of capital	3.4100	1.17288	.000
Increase credibility of information	3.4400	1.19189	.000
Attract investors	3.4700	1.19304	.000
Helps management in decision making and improves profitability	3.4300	1.19979	.000
Reduction in environmental and pollution cost	3.5200	1.15014	.000
Eco efficiency	3.5200	1.14133	.000
Increased sales and employee satisfaction	3.5600	1.14874	.000
Respond to pressures from regulatory authorities	3.7100	.96708	.000

	Mean	Std. Deviation	P Value
Compliance with environmental laws	3.7000	.98985	.000
Risk management possible	3.6800	.97318	.000
Guarantee accuracy of environmental reports	3.6900	.99184	.000
Improved CSR	3.7400	.96001	.000
Improve quality and productivity of staff	3.4200	1.12079	.000
Enhanced environmental image	3.4000	1.11010	.000
Improved corporate reputation	3.4100	1.12900	.000
New application for non-hazardous waste	3.2600	1.13369	.000
Integration with financial reporting	3.8800	1.08507	.000
Wider adoption of global standard	3.8600	1.07327	.000
Make disclosure mandatory	3.9300	1.02745	.000
Focus of carbon disclosure	3.9300	1.06605	.000
Stakeholder centric reporting	3.8600	1.07327	.000
International recognition	3.9300	1.08484	.000

Source: Primary Data

The results of the K-S test revealed that all the variables had a p-value of 0.000, which indicated that the null hypothesis of normality was rejected. This suggested that the data was not normally distributed. However, it is worth noting that the K-S test is sensitive to sample size, and with large sample sizes, even small deviations from normality can result in the rejection of the null hypothesis. However, the large sample size ($n > 30$) mitigated concerns regarding normality assumptions. Since the test indicates non-normality, skewness and kurtosis were applied to assume data normality. The table 1.15 depicts the results of skewness and kurtosis for the data used in the study.

Table 1.15*Skewness and Kurtosis results*

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
The company should consider stakeholders' interest.	-2.794	.086	8.855	.173
Disclosure helps to avoid employee's disappointment.	-1.971	.086	5.638	.173
Managers perception is core element influencing company's environmental policy.	-1.412	.086	2.786	.173
Internal stakeholders support Environmental Disclosure and external stakeholders' impulse pressure to disclose information.	-1.380	.086	2.603	.173
Major company shareholders are affected by good Environmental reputation and production efficiency.	-1.114	.086	1.411	.173
Awards encourage companies to take care of environment and disclose more environmental information.	-2.516	.086	6.572	.173
Companies with ISO 14000 show more commitment to Environment policy.	-1.875	.086	4.591	.173
Firm shows continuous improvement in Environmental performance.	-1.729	.086	4.083	.173
Provide ethical conduct for customers and minimize harmful impacts to environment.	-1.703	.086	4.110	.173
Help to prevent pressure from stakeholders and competitors.	-1.564	.086	3.523	.173
Qualitative environmental information is included in directors report.	-1.704	.086	1.937	.173
Statutorily required information on Conservation of Energy is included in the report.	-1.322	.086	1.655	.173
Organizations commitment towards social goals are highlighted.	-1.302	.086	1.582	.173
Large companies give Environmental information in detail in Chairman's statement as per Global Reporting Initiative guidelines.	-.803	.086	.286	.173
Firms that fail to meet environmental expectations try to mitigate negative effects by disclosing more.	-1.159	.086	1.204	.173

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
High quality auditors can better assess the environmental impact of firm's business operations.	-1.772	.086	1.793	.173
They produce more high-quality environmental information.	-1.475	.086	1.546	.173
Auditors recommend clients to report Environmental information.	-1.365	.086	1.375	.173
High corporate moral values of the company affect the selection and quality of the auditor.	-1.415	.086	1.478	.173
Larger firms appoint Big 4 accounting firms as auditors to gain international recognition.	-1.540	.086	1.413	.173
Environmental information announcement reduces pollution emissions and promotes low carbon development of enterprise.	-1.952	.086	3.451	.173
Governments pollution control policy improves atmospheric environment.	-1.316	.086	2.625	.173
Environmental tax reduces pollution emissions per unit of output.	-.931	.086	1.350	.173
Tax subsidies for clean companies help to reduce Environmental pollution.	-1.028	.086	1.622	.173
Firms in more polluting industry reporting its toxic waste disclose more to avoid adverse actions of stakeholders.	-1.179	.086	2.082	.173
Society has higher expectations for environmental performance of large firms.	-1.867	.086	2.534	.173
Political connection helps firms to obtain government resources, attract more media attention and increase firm's visibility.	-1.507	.086	2.269	.173
Politically exposed firm are expected to take more social responsibility.	-1.417	.086	2.061	.173
They have higher level of compliance with law and social norms.	-1.268	.086	1.526	.173
High political cost compel management to disclose more Environmental information and to engage in environmentally friendly activities.	-1.353	.086	1.797	.173
Increase public attention on social problems and inform stakeholders how much company concerns on environment.	-2.821	.086	11.511	.173

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Encourage managers to expose company's environmental activities and stakeholders get access to what they want.	-1.745	.086	8.708	.173
Increased media coverage increases the role of NGO's.	-1.224	.086	4.819	.173
Media exposure has greater frequency than yearly reports.	-1.079	.086	2.867	.173
The firms having high media exposure disclose more Environmental information.	-1.478	.086	5.001	.173
Provide diversity in terms of expertise having financial or accounting background.	-2.642	.086	7.866	.173
Difficult to maintain coordination between board members and weaker decision making.	-1.560	.086	4.433	.173
Larger the size of board, more will be Environmental disclosure and unanimous decision can be taken.	-1.356	.086	3.431	.173
Agency conflict between managers and shareholders having different perspectives, values. and ideas.	-1.049	.086	1.840	.173
Strong board communicates with all stakeholders.	-.577	.086	.203	.173
Monitor managers and consider interest of stakeholder groups.	-2.665	.086	7.776	.173
Independent directors in board increase firm value and protect interest of stakeholders.	-1.911	.086	6.435	.173
Independent directors contribute their skills, connections and contact and help in achieving strategic goals and disclosing more environmental information.	-2.084	.086	7.171	.173
Encourage top management to incorporate social considerations.	-1.749	.086	5.269	.173
Personal and professional relationship with the firm.	-.620	.086	.330	.173
Favors problem solving by considering different perspectives and ideas.	-2.722	.086	8.933	.173
Women and men differ in communication style, educational background, commitment and expertise.	-1.862	.086	5.756	.173

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Female directors more stakeholders oriented and they enhance board effectiveness.	-1.334	.086	2.294	.173
Positive impact on organizations socially responsible behavior and increase the propensity of disclosure.	-1.751	.086	4.698	.173
Women are more concerned than men in environmental issues and well-being of society and take actions to reduce perceived environmental risks.	-1.165	.086	1.385	.173
Meeting frequency affects firms' performance and promotes idea sharing and knowledge and more disclosure.	-2.817	.086	10.343	.173
Provide opportunity to discuss strengths and weaknesses affecting firms' earnings.	-2.083	.086	9.112	.173
Deal with issues relating to low performance.	-1.796	.086	7.223	.173
Alert stakeholders to problems or conflicts of business operation.	-1.831	.086	7.597	.173
Major actions and decisions of the company taken in board meeting.	-.435	.086	.421	.173
Environmental issues can be addressed and ensure better quality of Environmental disclosure.	-3.004	.086	12.726	.173
Manage conflict between stakeholder groups and improve company's commitment towards sustainability.	-1.478	.086	7.609	.173
Plan, implement and review sustainability policies and activities.	-1.384	.086	6.535	.173
Enhance the awareness of employees of environmental aspects of the job and make them responsible for minimizing environmental risks.	-1.486	.086	6.401	.173
Adequate communication with external stakeholders.	-1.103	.086	3.174	.173
Big companies face more pressure from public to disclose more information.	-2.882	.086	9.603	.173
Interested to disclose information to attract more investors and influence employees.	-1.521	.086	5.645	.173

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Cost of reporting environmental information is very high and small firms cannot afford.	-1.405	.086	4.808	.173
Disclosing more information reduce agency cost and creates confidence among stakeholders.	-1.379	.086	3.877	.173
Minimize public criticism and pressure from government, more accountable for environmental issues, and firm become aware of maintaining good corporate reputation.	-1.275	.086	3.407	.173
Older firms must influence perception about their business and perform on new policies to sustain their business.	-2.775	.086	9.193	.173
As company matures, reputation increases and involvement in environmental protection activities also increase.	-1.276	.086	5.012	.173
Companies that have established for a long time disclose more information about environmental activities to reduce environmental costs and to improve quality.	-1.327	.086	4.546	.173
Old firms face more political pressure.	-.966	.086	1.606	.173
Old firms have up to date information about recent developments and changes in the society.	-1.287	.086	3.086	.173
The firm listed in stock market need to comply disclosure requirements and publish annual reports on environmental risks faced.	-3.210	.087	13.447	.173
Promotes stakeholder engagement.	-1.462	.087	7.355	.173
Improve communication with stakeholders.	-1.232	.087	5.529	.173
Listed companies have more sustainability related goals and targets to strengthen risk management.	-1.108	.087	2.635	.173
Listed companies demonstrate their sustainability objectives.	-.786	.087	.898	.173
Environmental sensitive industries activities affect environment directly and comply with environmental regulations.	-2.276	.086	4.325	.173
The emission effect of their activities is more and face greater societal, NGO and environmental groups pressure.	10.506	.086	227.209	.173

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Manufacturing firms disclose more environment related information to get high attention from community and to maintain healthy relationship between company and investment community.	-1.483	.086	2.393	.173
Public sector companies disclose more environmental information to get more exposure.	-1.137	.086	1.118	.173
Public sector companies follow stringent rules.	13.771	.086	310.152	.173
Society wishes to avoid risk and want to maintain more relaxed atmosphere.	-1.432	.086	2.082	.173
Short term orientation focuses on social status.	-1.973	.086	6.384	.173
Long term-oriented firms disclose more environmental information.	-1.123	.086	2.564	.173
Individualistic firms want to maintain less secrecy.	-1.250	.086	3.147	.173
People share common beliefs and ideas and extent of disclosure more in collectivistic societies.	-1.193	.086	3.075	.173
Environmental objectives	-.641	.086	-.749	.173
Environmental management system	-.614	.086	-.809	.173
Environmental auditing	-.653	.086	-.723	.173
Environment management certificate of ISO 140001	-.638	.086	-.774	.173
Environmental budget	-.648	.086	-.766	.173
Waste Management	-.691	.086	-.646	.173
Tree plantation and other environment CSR activities	-.669	.086	-.723	.173
Pollution control measures	-.664	.086	-.709	.173
Conservation of natural resources	-.657	.086	-.724	.173
Measures regarding use and efficiency of electricity, water, CO2 emissions, waste management and fuels	-.668	.086	-.707	.173
Impact of organizational activities on the environment	-.658	.086	-.710	.173
Significant accounting and reporting practices	-.675	.086	-.708	.173

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Value of intangible environmental investments (e.g. research and development expenditures, emission permits)	-.669	.086	-.681	.173
Expenditure (e.g. fines paid for disregarding environmental norms)	-.663	.086	-.730	.173
Contributions to Environmental fund	-.651	.086	-.738	.173
Cost for controlling environmental impact (e.g. preventing pollution, noise, educating employees, designing new environmental-friendly products)	-.640	.086	-.755	.173
Awards obtained for Environmental protection	-.676	.086	-.687	.173
Priority given to economic demands in case of low profitability.	-1.031	.086	1.187	.173
More Commitment of top management towards addressing environmental issues in case of high profitability.	-1.008	.086	1.100	.173
Gaining competitive advantage results in increase in profitability.	-1.110	.086	1.403	.173
Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure.	-1.069	.086	1.256	.173
Profitable firms exposed to high social pressures but have necessary funds for disclosure.	-1.043	.086	1.129	.173
Profitable companies more trusted by the public to increase stakeholder expectations and attract investors.	-1.023	.086	1.081	.173
Profitability is an indicator in managing firm's environmental assets.	-1.018	.086	1.084	.173
Disclosure of environmental costs creates awareness among investors.	-1.001	.086	.563	.173
Cost of environmental deterioration of its own activities and waste collection reduce profit.	-.999	.086	.527	.173
Proper disposal of waste generates revenue.	-.999	.086	.535	.173
Employee health and safety cost increase knowledge of employees, profit increases.	-1.004	.086	.549	.173
Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases.	-.978	.086	.476	.173

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability.	-.979	.086	.482	.173
Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability.	-.975	.086	.460	.173
Audit of environmental management system improves environmental performance makes an estimate of environmental cost and more disclosure.	-1.328	.086	1.824	.173
Verification of environmental reports checks its accuracy, credibility, validity and useful in decision making	-1.286	.086	1.676	.173
Ensure compliance of environmental laws	-1.352	.086	1.971	.173
Respond to pressures from regulatory authorities	-1.308	.086	1.878	.173
Reduce wastage of energy, cost and time	-1.321	.086	1.849	.173
Environmental risk should be assessed in environmental audit	-1.349	.086	1.930	.173
Very expensive and time consuming	-1.344	.086	1.931	.173
Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set	-1.344	.086	1.906	.173
Identify problems and improve corporate image	-1.335	.086	1.883	.173
Superior performers have proactive energy and want to convey their performance to general public.	-.809	.086	.474	.173
Poor performers face more political pressure, disclose all information to reduce negative impacts.	-.782	.086	.354	.173
Investors will be attracted due to disclosure.	-.783	.086	.400	.173
Environmental liabilities are less for good performers.	-.802	.086	.486	.173
Meeting environmental performance is the key aspect of CSR.	-.811	.086	.417	.173
Guarantees that stakeholders are aware of the environmental responsibilities.	-.825	.086	.532	.173

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Organisations lack the expertise to produce and disclose such information.	-.695	.086	-.582	.173
Management feels that such information is not important for stakeholders.	-.692	.086	-.570	.173
Lack of consciousness about Environmental Disclosure	-.648	.086	-.664	.173
Difficult to measure environmental costs and benefits	-.664	.086	-.636	.173
Cost of obtaining external advice/assurance and setting up environmental management systems high.	-.672	.086	-.653	.173
No legal requirement/obligation to report	-.680	.086	-.621	.173
Lack of clear-cut government policy	-.680	.086	-.623	.173
Lack of coordination with different stakeholders	-.651	.086	-.661	.173
Improper enforcement of planning and environmental legislation and inactive enterprise participation	-.668	.086	-.635	.173
Cost of disclosure (producing, printing & distributing) the report is high.	-.683	.086	-.621	.173
Capital investment in pollution control equipment is high.	-.675	.086	-.632	.173
There is no standard method of estimating social value of environmental goods and services and industry data is not available.	-.671	.086	-.655	.173
Cannot compare two firms when methods used by both firms different.	-.688	.086	-.604	.173
Avoid providing sensitive and confidential information to competitors.	-.674	.086	-.629	.173
Better estimates of total cost of producing a product	-.199	.241	-1.144	.478
Long term survival of the organization	-.099	.241	-1.293	.478
Reduction of cost of capital	-.086	.241	-1.262	.478
Increase credibility of information	-.220	.241	-1.069	.478
Attract investors	-.219	.241	-1.169	.478

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Helps management in decision making and improves profitability	-.208	.241	-1.108	.478
Reduction in environmental and pollution cost	-.233	.241	-1.120	.478
Eco efficiency	-.258	.241	-1.089	.478
Increased sales and employee satisfaction	-.293	.241	-1.079	.478
Respond to pressures from regulatory authorities	-.479	.241	-.678	.478
Compliance with environmental laws	-.383	.241	-.839	.478
Risk management possible	-.388	.241	-.785	.478
Guarantee accuracy of environmental reports	-.353	.241	-.870	.478
Improved CSR	-.432	.241	-.693	.478
Improve quality and productivity of staff	-.059	.241	-1.400	.478
Enhanced environmental image	-.036	.241	-1.383	.478
Improved corporate reputation	-.051	.241	-1.425	.478
New application for non-hazardous waste	.106	.241	-1.337	.478
Integration with financial reporting	-.628	.241	-.875	.478
Wider adoption of global standard	-.616	.241	-.851	.478
Make disclosure mandatory	-.713	.241	-.580	.478
Focus of carbon disclosure	-.726	.241	-.685	.478
Stakeholder centric reporting	-.616	.241	-.851	.478
International recognition	-.827	.241	-.390	.478

Source : Primary Data

In this study, the researcher used skewness and kurtosis to assume whether the data follow normality or not. All the variables in the construct ‘fall under “Kurtosis value of 10 and skewness value of 3, suggesting Kurtosis and Skewness was not problematic in this study” (Hair. Black. Babin. Anderson. & Tatham. 2006). Therefore, the data were appropriate for parametric tests.

1.10.10 Tools for Data Analysis

The various tools applied for analysing the data are outlined in table 1.16.

Table 1.16

Tools for Data Analysis

Objective	Tools for Data Analysis
1 To identify the determinants of Environmental Reporting in Automobile Industry.	Descriptive Statistics: Mean and Standard Deviation Inferential statistics: Independent Sample t-test, SEM
2 To assess the trend of Environmental Reporting practices in Selected Companies.	Descriptive Statistics: Mean, Standard Deviation and Percentage Analysis Inferential statistics: Independent Sample t-test, Path Analysis
3 To analyse the impact of Corporate Financial Performance on Environmental Reporting in Automobile Sector.	Descriptive Statistics: Mean, Median, Mode and Standard Deviation Inferential statistics: Independent Sample t-test, Path Analysis, Correlation and Regression
4 To examine the mediating roles of Environmental Policy, Separate Environmental Department, Environmental Management System and Employee Training as well as the moderating role of Financial Performance in linking the relationship between Environmental Reporting and Environmental Performance.	Descriptive Statistics: Mean and Standard Deviation Inferential statistics: Mediation analysis
5 To examine the constraints and benefits associated with Environmental Reporting in Automobile Industry.	Descriptive Statistics: Mean and Standard Deviation Inferential statistics: Independent Sample t-test, SEM

Source: Compiled by Researcher

1.11 Operational Definitions

- 1. Environmental Accounting:** - is the process of identifying, measuring and reporting of the costs arising from a company's activities that affect the environment namely pollution control, waste management, energy use and other sustainability initiatives as well as the economic benefits arising from eco-friendly practices.

2. **Environmental Reporting/Environmental Disclosure:** - is the process by which an organization discloses information about how its activities affect the environment. It involves communicating the usage of energy, water and raw materials, the production of waste, emissions or pollution including the steps taken to reduce its impact and sustainability initiatives undertaken by the organization to various stakeholders including regulators, investors, customers and general public. The term Environmental disclosure has been used synonymously in the study.
3. **Automobile Manufacturing Industry:** - is the sector of economy engaged in the design, development and large-scale production of motor vehicles and their related parts and components located in South India. It includes cars, buses, trucks, two-wheelers and three-wheelers. The term Automobile sector is synonymously used in the study.
4. **Automobile Manufacturing Companies:** - are the firms engaged in the design, development and large-scale production of motor vehicles and their component parts including original equipment and tyres in South India. It comprises of Original Equipment Manufacturers (OEMs), Tyre manufacturers and other component parts manufacturers. The term Manufacturing companies and Manufacturers are used synonymously in the study.
5. **Other Component parts manufacturers:** - are the companies engaged in the manufacture of mechanical, electrical and structural parts, assemblies and accessories either produced or assembled that are used in the construction of a vehicle including engines, brakes, electrical systems, batteries, interiors and emission control systems.
6. **Tyre Manufacturers:** - are the companies engaged in the manufacture of rubber-based wheels (tyres) including tyres for commercial and passenger vehicles, two wheelers and three wheelers.
7. **Employees:** - the employees at top level having decision making power in the company and are involved in the formulation of policies and middle level

employees involved in the execution of the policies framed by top level. The top-level employees comprise of Board of Directors, Chief Executive Officer, Chief Financial Officer, Managing Director, Vice President, General Manager and Deputy Managers. The middle-level employees include Internal Auditor, Chief/Senior accountant, Environmental Consultant, Managers of various functional departments namely Production, Sales, Finance, Purchase, Quality assurance, Human resource, Research and development, Supply chain, Marketing and IT.

8. **External Auditors:** - the chartered accountants of the firms engaged in statutory financial audits as well as accredited technical experts involved in energy and environmental audit comprising of Bureau of Energy Efficiency (BEE) auditors', environmental consultants, ISO certification bodies and experts of NPC and NEERI.
9. **Stakeholder Pressure:** - the influence and demand from stakeholders that force the companies to disclose their environmental practices and the stakeholders including regulators, investors, customers, employees, NGOs and community.
10. **Environmental awards and Certification:** - the recognitions given to companies for their efforts in environment protection, resource conservation and promotion of sustainable initiatives.
11. **Disclosure Practices:** - policies, methods and extent to which a company shares information relating to environmental performance and impacts to its stakeholders.
12. **Auditor type/Quality:** - the independent persons or bodies who conduct the audit and quality refers to the competence and reliability of the auditors.
13. **Pollution Propensity:** - the tendency of an industry or company to generate environmental damage relative to its activities.
14. **Political Exposure:** - the extent to which companies are connected with government policies and regulations in relation to environmental compliance.

15. **Media Exposure:** - the visibility of the company's environmental practices to the public through news outlets and online platforms.
16. **Board Size:** - the number of executives, non-executive and independent directors, who jointly oversee the strategy and compliance of the company.
17. **Board Independence:** - the presence of independent directors not forming part of the management of the company who are expected to ensure that the company acts best in the interest of stakeholders through their unbiased judgement.
18. **Gender Diversity:** - the representation of women in the company board to ensure a balanced decision making.
19. **Board Meeting:** - the gathering of board of directors where they discuss and make crucial decisions on strategic, financial, governance and compliance matters.
20. **Environmental Committee:** - also referred as sustainability or CSR committee is a specialized sub-committee of board who are entrusted with handling of social, environmental and sustainability issues within a company.
21. **Size of the Firm:** - scale of operations of the company measured by turnover, assets and market indicators.
22. **Age of the Firm:** - the number of years of existence of the company indicating its experience and stability in the industry.
23. **Number of years Listed:** - how long the company has been subject to stock exchange regulations and disclosure requirements.
24. **Type of Industry:** - the classification of industries based on the nature of their production activities and points out the difference in environmental impact and reporting practices.
25. **Uncertainty Avoidance:** - the extent to which automobile manufacturing companies adopt formal reporting frameworks for reducing uncertainty and managing the expectations of stakeholders.

26. **Disclosure Trends:** - the type of reports, reporting formats and medium of reporting adopted by the company for disclosing environmental information.
27. **Financial Performance:** - the ability of a company to generate profits, to manage resources efficiently, to achieve financial stability and growth over a period of time.
28. **Financial Performance Parameters:** - the quantitative indices used for measuring the financial performance of an organization.
29. **Return on Capital Employed (ROCE):** - the efficiency and profitability of a company in using its long-term funds to generate earnings.
30. **Return on Assets (ROA):** - the ability of a company to earn profits out of its assets and measures the efficiency of the company in utilizing resources for generating revenue.
31. **Earning Per Share (EPS):** - the amount of profit available to equity shareholders and it is an important financial indicator for investors.
32. **Leverage:** - the extent to which company uses debt in its capital structure and shows the financial risk of the company and dependency on external financing.
33. **Debt Equity Ratio:** - the proportion of the total debt of the company relative to its shareholders equity reflecting the financial structure, solvency and risk level.
34. **Current Ratio:** - the ability of the company to meet its short-term liabilities out of short-term assets.
35. **Quick Ratio:** - the ability of the company to quickly dispose its current liabilities out of its readily available resources.
36. **Environmental Reporting Parameters:** - different aspects of environmental activities of a company that show how a company manages energy, water. Pollution, waste and other environmental issues.

37. **Energy Intensity:** - the energy consumed by a company relative to its level of activity, output or revenue and it is an indicator of the efficiency of the company in utilizing energy to produce goods or services.
38. **Emission Intensity:** - the amount of greenhouse gas emissions produced by a company relative to its level of activity, output or revenue and the amount of pollution generated per unit of production.
39. **Water Intensity:** - the amount of water consumed by a company relative to its level of activity, output or revenue and shows the efficiency of the company in using water resources in its operations.
40. **Waste Intensity:** - the amount of waste generated by a company relative to its level of activity, output or revenue and indicates the efficiency of the company in managing raw materials to minimise waste.
41. **Environmental Reporting Completeness Ratio:** - measures the extent of expected environmental information actually disclosed by the company and how complete the environmental reporting of a company as compared to benchmark.
42. **Environmental Performance:** - the results of the actions of a company in the areas of pollution control, waste reduction and compliance with environmental standards.
43. **Performance Indicators:** - the measurable metrics that show the ability of the company in managing its environmental responsibilities.
44. **Constraints of Environmental Reporting:** - the challenges or barriers faced by the company while reporting and it includes internal, external and technical constraints.
45. **Benefits of Environmental Reporting:** - the positive outcomes or improvements that may arise from the sustainable initiatives of the company and includes future benefits of adopting environmental reporting.

1.12 Limitations of the Study

- 1) The population of the sample selected for the study was large, hence the geographical scope of the study was limited to South India.
- 2) The respondents taken for the study were only top and middle level employees with a designation of manager or above and having minimum 5 years of work experience and external auditors of minimum 5 years of experience in audit.
- 3) The study uses cross-sectional data where the respondents' perceptions at a specific point of time is considered without considering for any change in perceptions over time.
- 4) The concept of challenges and prospects of Environmental reporting in Automobile sector is not yet studied in national level, so there may be chances of response errors and personal biases from the part of respondents due to lack of clear understanding of the concept as well as statements used in the questionnaire.
- 5) This study focused on the challenges and prospects of environmental reporting among those companies who have to disclose information compulsorily as per companies Act 2013, but there are many companies' disclosing environmental information voluntarily which is not considered for the present study.

1.13 Structure of the Thesis

The thesis is organized into nine distinct chapters which are summarized as under:

Chapter 1: Introduction

This chapter lays the foundation for the study by presenting a comprehensive overview of the overall research framework and methodology used for the study. It starts with the background of the study followed by its significance, scope and statement of the problem that guided the investigation. The research questions, the objectives of

the study set on the basis of the questions and major hypotheses formulated to direct the analysis were also outlined in this chapter. The research methodology described in detail including research design, selection of the area of the study, sources of data and the sampling framework. The chapter also covers sample design, sampling frame, sampling technique and the fixation of sample size. The questionnaire design is explained along with the key variables of the study. The chapter also discusses reliability and validity testing of the data, statistical tools employed for data analysis and operational definitions. The structure of the thesis is presented and the chapter is concluded with a summary highlighting the methodological findings of the research.

Chapter 2: Review of Literature

The chapter provides a detailed overview of the existing literatures pertaining to the study and finally the research gap is identified. The national and international studies are covered.

Chapter 3: Theoretical Framework

This section explains the various theories associated with Environmental Reporting and a conceptual model has been developed by the researcher on the basis of these theories.

Chapter 4: Demographic Profile of Respondents and Determinants of Environmental Disclosure in automobile manufacturing companies in South India

This chapter gives a comprehensive overview of the age, income, gender and experience wise classification of respondents. The respondents of the study included employees and external auditors. The first part deals with the profile of employees and external auditors. The subsequent part covers the data analysis of first objective of the study. The first objective of the study is to analyse the various determinants of environmental disclosure in selected automobile manufacturing companies.

Chapter 5: Trend of disclosure and the effect of Financial Performance on Environmental Reporting

This chapter covers the data analysis of second and third objectives of the study. The second objective is to examine the trends of disclosure adopted by selected automobile companies. The third objective of the study is to analyse the effect of financial performance on environmental reporting. The influence of financial performance parameters on environmental reporting parameters has been thoroughly examined in this objective.

Chapter 6: The Mediating role of Environmental Policy, Separate Environment department, EMS, Employee Training and the moderation effect of Financial Performance in linking Environmental reporting with Environmental Performance

This chapter focus on data analysis of fourth objective of the study. The fourth objective is to study the mediation effect of environmental policy, separate environmental department, environmental management system and employee training while linking environmental reporting to environmental performance. It also examines the moderating effect of financial performance in strengthening the relationship between environmental reporting and environmental performance.

Chapter 7: Constraints and Benefits associated with environmental reporting

This chapter presents the final objective of the study to analyse the challenges and benefits of environmental reporting in automobile industry.

Chapter 8: Summary, Findings, Conclusion, Suggestions, Implications of the study and Scope for further research

The chapter gives a detailed overview of the summary and various findings derived from the study and the overall conclusion of the study. The various suggestions that can be given to companies, policy makers

in general and external auditors are also highlighted. The theoretical and practical implications of the study and the topics that can be recommended for further research is also included in this chapter.

Chapter 9: Recommendations of the Study

This chapter includes the recommendations based on the findings directed at decision makers namely policy makers, external auditors, managers and regulators for implementing changes or improvement for further research.

1.14 Summary

This chapter establishes the general foundation for the study by introducing the concept of accounting, environmental accounting and environmental reporting. The study addresses the gaps and inconsistencies in environmental reporting within the automobile sector by defining the research problem and outlining its need in the present scenario. The main objectives of the research and the key research questions derived from these objectives have been discussed. This chapter also provides a better understanding of the importance of conducting this study, scope of the study, and limitations faced while conducting the study. An overview of the research methodology adopted by the researcher explaining the research design and stages in sampling has also been discussed. It sets the stage for conducting literature reviews on challenges and prospects of environmental reporting in automobile sector.

Chapter 2

REVIEW OF LITERATURE

2.1	Introduction	72
2.2	Overview of Environmental Accounting and Reporting.....	72
2.3	Significance of Environmental Accounting and Reporting.....	75
2.4	Definition of Environmental Accounting and Disclosure.....	76
2.5	Determinants of Environmental Reporting	77
2.6	Trends of Environmental Accounting and Reporting in Automobile Industry.....	113
2.7	Environmental Reporting and Corporate Financial Performance	118
2.8	Environmental Reporting and Corporate Environmental Performance.....	138
2.9	Challenges and Prospects of Environmental Reporting.....	143
2.10	Summary of Outcome of Literature.....	148
2.11	Gaps in Existing Literature.....	149
2.12	Summary.....	150

Chapter 2

REVIEW OF LITERATURE

2.1 Introduction

A literature review is a critical examination of existing research on a particular topic. It provides a comprehensive overview of key theories, methodologies, findings and gaps in the literatures available, so as to establish a solid foundation for new research.

This chapter presents a critical and comprehensive examination of existing research on Environmental accounting and reporting, that aims to establish a solid foundation for the present study. The opening section of literature review begins with an overview of environmental accounting and reporting, followed by a discussion highlighting its significance within contemporary research. The next section explores the various definitions of Environmental Accounting and Reporting as proposed by leading scholars which helps to get a conceptual clarity.

The subsequent sections provide focused reviews aligned with the five specific objectives of the study. These include investigations into the determinants of environmental reporting, the evolution and emerging trends in environmental reporting and the relationship between environmental reporting and both corporate financial performance and corporate environmental performance.

Further the review evaluates the studies relating to the benefits and constraints associated with environmental reporting. Following an exhaustive examination of these areas, the final part of the literature review highlights the key gaps, laying the ground work of the present study and a concise summary of the key insights of the chapter is also presented followed by a concluding section given at the end of the chapter.

2.2 Overview of Environmental Accounting and Reporting

In recent years, there has been notable progress in the field of environmental accounting and reporting largely driven by development of certain frameworks and

standards aimed at enhancing consistency and transparency. These advancements reflect a growing recognition among organisations and policy makers of the urgent need for integrating sustainability into business practices. There has been increasing demand to integrate environmental considerations into financial reporting, thereby ensuring that ecological impacts are also accounted for along with traditional financial metrics. The study presents a historical and conceptual review of evolution of environmental accounting highlighting the incorporation of environmental considerations into corporate financial reporting and sustainability frameworks.

The study identified the major theories influencing the environmental accounting namely stakeholder theory, legitimacy theory and institutional theory. Despite growing awareness and adoption, the study concluded that there exists a significant gap in the standardization of environmental accounting frameworks across industries. This lack of uniformity poses challenges for companies in accurately measuring, managing and reporting of environmental costs and benefits (Del & Lodhi, 2025).

A meta-analysis was conducted using the available literature on environmental accounting and sustainability, organizing the study areas into three key domains namely corporate sustainability reporting, green accounting practices, and the financial impact of environmental disclosures. The findings revealed that the adoption of green accounting is significantly more prevalent in developed economies, largely driven by stringent regulatory requirements and elevated stakeholder expectations (Sundarasen et al., 2024).

Porchelvi (2020) examined the environmental reporting practices of Indian companies and analyzed how they disclose the environmental impact in financial reports and sustainability statements. The study found significant variations in the level of commitment towards environmental reporting across the firms. Notably, large companies tend to be more transparent in disclosing environmental data compared to small companies driven by greater regulatory scrutiny and stakeholder pressure.

(The GRI, 2021) offers a comprehensive framework for environmental reporting enabling organisations to disclose their environmental, social and governance performance in a structured and transparent manner. The latest standard came into existence with effect from January 2023 apply universally to all organisations and addresses key environmental issues related to a company's impact on society, economy and environment. The primary objective of these standards is to standardise and quantify ESG metrics thereby enhancing transparency, consistency and comparability across industries.

(Climate Disclosure Standards Board, 2018 (CDSB)) provides a structured framework for disclosure of environmental information and natural capital in financial reports aiming to enhance consistency and comparability in environmental disclosures. The latest standards focusing on environmental and climate change related information came into existence on April 9, 2018 that aligns closely with the recommendations of the TCFD, thereby placing greater emphasis on climate related and environmental impacts in corporate reporting.

Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR) was created to promote best practices in corporate transparency and accounting thereby facilitating investment and economic stability. The core areas of ISAR mainly include sustainability accounting and reporting, implementation of International Financial reporting Standards (IFRS), accounting for small and medium sized enterprises (SMEs) and corporate responsibility reporting (United Nations Conference on Trade and Development, 1982).

The System of Integrated Environmental and Economic Accounting (SEEA) establish the internationally recognised standard concepts, definitions, classifications, accounting rules and tables for producing internationally comparable statistics on environment and its relation with the economy (United Nations, 2021). SEEA introduced ecosystem framework for measuring ecosystems in both physical and monetary terms. The world business council for sustainable development and IFRS foundation advanced initiatives to standardise emissions reporting (World Business Council for Sustainable Development & IFRS Foundation, 2022).

2.3 Significance of Environmental Accounting and Reporting

Athambawa et al. (2021) suggested that environmental accounting is very important in companies operating in environmentally sensitive industries and it provides a road map for internal and external auditors of the company and it also helps to improve the reputation of the company. The environmental performance helps to improve satisfaction of stakeholders, brand image of the company and its value and helps in reducing the cost of capital. The organisations adopting system of environmental accounting has reduced chance of bankruptcy and low risk. Environmental accounting can be considered as a warning for organisations for increasing the awareness level of environmental protection.

Alewine and Stone (2013) in his study stated that strategic choices have close relation with environmental issues and data pertaining to environment is integrated into a sustainability scorecard, which is known as biodiversity balanced scorecard. (Ribeiro and Guzman, 2010) in his study analysed the use of environmental accounting practices by local firms and found that there was no relation between implementation of compulsory environmental requirements and establishment of environmental accounting practices. If there are more regulations, the company officials can understand environmental accounting and monitor the procedures.

Rounaghi (2019) argued that the important criterion for evaluating the performance of a company to work together as a team of chemical engineers, plant managers and buying agents is environmental management. The entire world is facing many environmental issues and to tackle these problems, environmental accounting is important. (Senn & Giordano-Spring, 2020) found that environmental accounting is still in its infancy stage and different interpretations can be made from the financial reporting of many organisations due to low level of regulatory clarity and concluded that environmental spending and responsibility are independent of each other and once the environmental rules are modified, it will be more beneficial to regulators as well as consumers.

The need for environmental reporting has been highlighted by (Arnaud Delubac, 2023) mainly due to its various benefits namely risk management, optimization of cost and savings, supporting decision making, and improved employees ,customers and other stakeholder engagement. (Malik & Mittal, 2015) reported that environmental accounting is in preliminary stage in India and whatever shown in accounts more or less comply with rules and regulations. In India, people are unaware of environment safety and they prepared only environmental policy and just mentioned in annual statements of the company. For sustainable development, there should be well-defined environment policy in the country and proper accounting procedure.

Carroll and Shabana (2010) reviewed the existing literature on CSR and highlighted the growing importance of environmental considerations and noted that environmental accounting is an essential tool for businesses seeking to demonstrate their commitment in sustainability. Environmental reporting has become an important tool for building trust among stakeholders. Horváth and Szabo (2004) discussed the role of environmental bench marking in improving corporate environmental performance and argued that those companies systematically measuring environmental impacts and comparing them to industry benchmarks can adopt best practices, reduce environmental footprint and enhance operational efficiency.

2.4 Definition of Environmental Accounting and Disclosure

Gray (2006) highlighted that “Environmental Accounting and Reporting is not limited to financial accounts but includes the reporting of non-financial aspects such as environmental impacts, resources consumed, and waste produced”. Schaltegger and Burritt (2000) defines “Environmental Accounting is the identification, analysis, and evaluation of environmental costs and benefits and the integration of this information into business operations and management systems”. (Bebbington et al., 2001) describe environmental accounting as "the process of identifying, measuring, and communicating information about the environmental costs and consequences of business activities."

According to (Federation Des Experts Comptable Européens) Environmental reporting covers the preparation and presentation of information by management for the use of multiple stakeholder groups both internal and external. The information on environmental status and environmental performance is disclosed. This information is disclosed separately in the form of environmental report or in other forms of reporting such as financial and social reporting. In the opinion of (ICAI), Environmental reporting is commonly used to describe the disclosure of environmental related data by the entity. The main items disclosed are data relating to environmental risks, its impacts, policies, strategies, targets and costs. The environment related information is reported in the annual report, accounts package, a standalone corporate environmental performance report, environmental statement, or in other mediums like staff newsletter, video, and CDs.

2.5 Determinants of Environmental Reporting

The study identifies a range of key determinants influencing environmental reporting practices among companies. These include external factors including stakeholder pressure, environmental awards and certifications, media exposure and political exposure. Internal governance attributes also play a key role including board size, board independence, gender diversity, frequency of board meetings and presence of an environmental committee. The firm specific factors include disclosure practices, auditor type and quality, pollution propensity, firm size, firm age, number of years listed, type of industry, and uncertainty avoidance.

2.5.1 Stakeholder Pressure

A stakeholder refers to an individual or group that is likely to be affected by the achievement of an organization's objectives. Stakeholder pressure compels firms to minimize the environmental impact of their operations. Among the various stakeholders, environmental stakeholders are those who have a vested interest about an organization's environmental practices. Effective stakeholder engagement is essential for identifying and prioritizing environmental and social issues. Stakeholders serve as a powerful catalyst for change, that influence the strategic

direction an organization must address. The process begins with understanding the expectations and motivations of various stakeholder groups followed by applying stakeholder mapping methods to evaluate the risks and opportunities associated with different stakeholder groups. The key stakeholder groups include local communities, employees, trade associations, suppliers, NGOs, the board of directors, customers, and suppliers. Companies with high environmental footprints tend to disclose information more transparently and seek to improve their environmental performance as part of their broader responsibility towards society.

The influence of stakeholder pressure on environmental disclosure has been thoroughly analysed across various literatures. Stakeholders demand, particularly from customers, investors, regulators and non-governmental organisations play a critical role in shaping corporate environmental reporting practices. Adimazoya & Asamoah (2024) conducted an empirical study to explore the effect of stakeholder pressure on environmental disclosure focusing on firms in mining and manufacturing sectors in Ghana. The primary data was collected from 214 participants and revealed that firms operating in emerging economies face considerable pressure from stakeholders to improve the transparency and quality of sustainability disclosures. Notably, the stakeholders were dissatisfied with traditional sustainability reporting methods such as corporate sustainability reports. Instead, there was a strong preference for more dynamic and accessible communication channels especially social media-based disclosures. Regulatory bodies and non-governmental organisations exerted more pressure on the firms to provide accurate and comprehensive information regarding their environmental impact. These categories of stakeholders were instrumental in driving improvements in shaping corporate environmental disclosures.

Christensen et al., (2021) emphasised that stakeholder pressure is consistently identified as critical determinant of environmental disclosure. The existing research can be categorized into four domains: motivations, consequences, disclosure characteristics and user characteristics. Environmental Social Governance disclosure is primarily driven by pressures from investors, regulation and civil society. They

exert pressure through formal mechanisms in the form of compliance requirements and informal expectations involving reputational legitimacy. The quality of environmental disclosure is directly related to strong governance structure and stakeholder engagement. Those firms with strong governance structure and stakeholder engagement mechanism tend to have more quality disclosures. The key motivational drivers identified include regulatory compliance, reputation and legitimacy, investor demand, corporate strategy and risk management. Stakeholder pressure especially from investors and regulatory bodies plays a significant role in shaping ESG disclosure practices. High quality disclosures are more prevalent in firms with integrated governance networks and proactive stakeholder engagement.

Deegan (2010) provided foundational insights into how different stakeholder groups namely investors, regulators, non-government organisations and consumers influence corporate reporting practices. They exert varying degree of exposure in shaping the content and quality of disclosure. Institutional investors expect more detailed disclosure with quantitative data that enable risk assessment and performance bench marking, while consumers prioritize sustainability commitments and corporate responsibility narratives thereby valuing ethical practices over technical data. He was also of the opinion that high stakeholder pressure correlates with more comprehensive disclosure of environmental information. Regulators enforce compliance through mandatory reporting frameworks in high impact sectors such as oil, gas and mining sector where environmental impact is high. NGOs and civil society apply reputational pressure and influence voluntary reporting standards.

Tran and Pham (2024) emphasised on growing influence of external pressures notable from foreign investors, international media and regulatory authorities on environmental reporting in developing nations. If international investors are investing in a company, disclosure tends to increase due to adherence to global best practices. Firms that are subject to scrutiny by global media and strong environmental regulations are more likely to enhance their ESG transparency. They also pointed out that the firms in developing economies are integrating their ESG disclosures with international standards due to globalization. Karaman et al. (2024)

examined the role of three main stakeholder groups namely shareholders, consumers and government agencies on corporate ESG performance, thereby disclosing more environmental and social information. Shareholders drive ESG performance through investment decisions and demand for transparency. Consumers influence disclosure through expectations around sustainability commitments. There was an inconsistent impact of government pressure on ESG disclosure. The regulatory pressures from government bodies had an inconsistent impact on disclosure.

Pinheiro et al. (2023) examined the influence of secondary stakeholders notably society and media on sustainable development goal reporting and suggested that those companies operating in environmentally sensitive sectors such as mining, energy and manufacturing are likely to enhance disclosure in response to societal pressure. The public expectations and media acts as informal energy mechanisms prompting companies to align sustainability narratives with stakeholder concerns. Complementing this (Wang et al., 2020) conducted a meta-analysis of 58 empirical studies to assess the broader impact of various stakeholder pressures on corporate environmental strategies. They classified stakeholders as internal (employees, management and stakeholders) and external (regulators, NGOs, media, and consumers and concluded that internal stakeholder pressure is the most influential driver of environmental strategy adoption, while external pressures are more commonly observed in developed economies where institutional frameworks and public awareness are stronger.

Stakeholders such as international buyers and the media increasingly influence disclosure practices. Companies in emerging markets are using social media to address stakeholder concerns regarding environmental performance, rather than relying on traditional methods. Different stakeholder groups have varying levels of expectations regarding environmental disclosure.

2.5.2 Environmental Awards and Certification

Environmental awards and certifications play a crucial role in enhancing corporate environmental reporting. These certifications serve as tangible indicators

of an organization's commitment to sustainability and significantly influence the manner in which environmental information is disclosed. They act as benchmarks, guiding organizations to align their operations with internationally recognised environmental standards. ISO 14001 certifications require the implementation of robust Environmental management systems. This system functions as regulatory framework within the company and ensures that the activities and products of the company fulfil its environmental obligations related to regulatory compliance, pollution prevention and continuous improvement. The companies with ISO 14001 certification tend to make full disclosure of information reflecting their alignment with the societal values and expectations. The compliance with environmental standards enhances the reputation of the company within the community and demonstrates its dedication to environmental stewardship.

The companies enjoy wide range of benefits by environmental certifications including streamlining operational procedures, conservation of natural resources, reduction of raw material consumption, enhancing employee safety, and motivating staff towards greater efficiency. Moreover, the certified companies often attract more potential employees, foster better internal communication and build mutual trust between executives and staff. Various awards have been provided by the Government, NGOs and environmental groups as a source of encouragement for the companies to increase concern towards the environment. It is a motivation for the companies to oversee the environment. Winning such award signifies that the company has met the specific environmental criteria and maintained high standards in its operations. There is a clear positive correlation between awards and quality of disclosure.

A study by (Darnall & Sarki's, 2009) pointed out that companies with ISO 14001 certification are more likely to adopt proactive environmental practices and greater transparency in the disclosure of environmental information. The awards obtained not only reflect a company's commitment to sustainability but also strengthen its environmental reporting mechanisms and enhance the reputation of the company and thereby promote environmental reporting. (Bansal & Clelland, 2004) further observed that the firms recognised with environmental awards tends to

experience positive market reactions, gain increased credibility and are more inclined to transparent disclosure practices.

Environmental certifications require adherence to specific reporting standards which promote more uniform and comparable environmental reporting across firms. The firms that adopt frameworks such as GRI are more likely to obtain certifications and awards, as they produce more standardised and comprehensive reports that facilitate more effective stakeholder assessment of environmental performance (Brown et al., 2009). The environmental certifications play a vital role in shaping stakeholder perceptions. According to (Michelon et al., 2015), the firms that receive environmental certifications and awards are viewed by the stakeholders as more environmentally responsible thereby increasing trust and investment from stakeholders. These certifications compel organizations to uphold high quality environmental reporting standards and play a critical role in shaping the perceptions of stakeholders. (Boiral, 2007) cautioned against the potential misuse of certifications through greenwashing where certifications are obtained by the firm by fraudulent means without engaging in environmental practices thereby undermining the credibility of environmental reporting and poses challenge to stakeholder trust.

Firms that adopt environmental certifications like ISO 14001 tend to exhibit enhanced level of disclosure as these certifications mandate detailed reporting protocols. Such certifications serve as credible signals to stakeholders, thereby improvement in stakeholder trust and competitive advantage (Wang & Gao, 2020). Beyond improving transparency, environmental certifications positively associated with financial performance primarily through gain in resource efficiency and reduction in operational risks that are reflected in the sustainability reports of the company. Moreover, environmental certifications provide a structured framework for structured disclosure practices promoting consistency and comparability across firms (Hamrouni et al., 2020).

The relation between environmental awards and certifications and environmental reporting is multifaceted. They can drive organisations towards better environmental

practices but the underlying motivations and actual environmental impacts demand careful consideration. The environmental reports should be critically evaluated to ensure that they reflect genuine performance rather than symbolic gestures.

2.5.3 Disclosure Practices

The GRI standards ensure consistency in reporting enabling organizations to meet diverse stakeholder needs through the provision of comparable and transparent data. These standards are instrumental in disclosing the environmental, social and economic impacts of organizational activities. The various steps in the GRI reporting process are aligning key sustainability issues and aligning them with organizational goals, establishing a reporting framework and collecting relevant data across departments, developing and revising content based on stakeholder feedback, publishing report and communicating with stakeholders, and lastly evaluating existing reports. The standards enable the companies to engage in strategic decision making, risk reduction, identification of business opportunities and strengthen stakeholder relationships. There are two types of disclosures namely general standard disclosure covering organizational profile, strategy and governance and specific standard disclosure focusing on environmental, social and economic impacts. Only qualitative aspects of environmental performance namely attitudes and actions towards environmental control and statement of environmental policy are included in disclosure. Environmental disclosure aspects per GRI include materials, energy, water, biodiversity, emission, waste products and services, compliance, transport, overall supplier environment assessment and environment grievance mechanism.

Unlike financial reporting, which follows Generally Accepted Accounting Principles, environmental reporting lacks a universally accepted format. As a result, the scope and presentation of environmental information are largely determined at the discretion of company management. However regulatory frameworks such as Companies Act 2013 impose certain mandatory requirements. Under this Act, companies are obligated to disclose specific environmental data including measures taken for conservation of energy, investments made towards energy

saving initiatives, total energy consumption, and energy consumption per unit of production.

GRI standards provide a comprehensive framework for the organization to report the impact of climate change on energy and emissions encompassing economic, social and environmental dimensions. These standards are aligned with widely recognised international benchmarks and are frequently used by the firms to report their progress towards United Nations Sustainable Development Goals (SDGs). GRI standards undergo regular revision to incorporate latest amendments and respond to evolving demands from stakeholders and regulatory bodies regarding sustainability reporting. Transparency plays a crucial role in fostering trust among various stakeholders and investors, reinforcing accountability and enhancing credibility.

The GRI and Sustainable Accounting Standard Board (SASB) offer complementary frameworks for corporate disclosure, promoting transparency and accountability in sustainability reporting. SASB's standards are industry specific and help to identify sustainability related risks and opportunities that may materially impact a company's financial performance. Comprehensive disclosures enable investors to make informed decisions, decrease the sentiment of mistrust and speculation and increases the confidence of investors by ensuring transparency in corporate operations. Disclosure is a cornerstone of corporate governance allowing stakeholders to monitor and evaluate the performance of the firm. It is essential that all material issues are disclosed in a clear and precise manner, in conformity with laws, standards and rules. Environmental disclosure index is used to examine the extent of environmental reporting. This index is divided into six sections with one key section- environmental commitments- focusing on company's responsibilities, role, guiding principles, systems and procedures adopted by the company to mitigate and manage environmental impact.

The Securities and Exchange Board of India (SEBI) mandates companies to prepare Business Responsibility Reports (BRR) which outlines the measures undertaken by the company for the welfare of society, environment and economy.

These reports must align with the principles set forth in the National Voluntary Guidelines (NVGs) on social, environmental and economic responsibilities of business. Under Department of Public Enterprises (DPE) guidelines on Corporate Social Responsibility (CSR) and sustainability in 2013, a memorandum of understanding between the Central Public Sector Enterprises (CPSEs) and government stipulates that the CPSEs allocate a fixed percentage of their revenue towards sustainable development. Furthermore, the SEBI Committee on corporate governance established in 2003, requires all listed companies to prepare and submit quarterly governance reports at the end of each reporting quarter. Although the environmental information is not specifically provided in this report, they contribute to broader stakeholder engagement by addressing societal concerns and indirectly reflecting environmental considerations.

Under the Environmental Protection Act of 1986, it is mandatory for all the organisations to submit environmental audit reports in the format prescribed by the State Pollution Control Board. The key aspects to be included in the report are material and water consumption, level of emission, discharge of effluents, solid waste generation, pollution control measures, activities of the concern for protection of natural resources and investments made towards environmental sustainability. In addition, the Central Pollution Control Board (CPCB) of India has launched the Corporate Responsibility for Environmental Protection (CREP) initiative for promoting responsible environmental practices across industries. A range of regulatory frameworks and guidelines have been introduced to curb pollution, including the Public Liability Insurance Rules, the Water (Prevention and Control of Pollution) Rules, and the Environmental Impact Assessment (EIA) Notification.

(Sheroy Madera) highlighted that around 500 companies are voluntarily disclosing their climate data underscoring that transparency has evolved into a business necessity. While many companies adopt voluntary framework for disclosure, the quality and consistency of these reports vary widely. As (Cho et al., 2012) argue, mandatory reporting plays a crucial role in standardizing practices and improving comparability across firms. The transition towards integrated reporting and adoption

of digital platforms for disclosure have further enhanced the accessibility and useability of environmental information (Dumay et al., 2017). Organizations employ diverse methods to communicate their environmental performance, policies, and impacts to stakeholders. These disclosure practices have evolved over time, shaped by regulatory requirements, stakeholder expectations, and the growing prioritization of sustainability. Organizations are increasingly recognizing that maintaining transparency in environmental matters is vital not only for competitiveness but also for securing investor confidence and long-term trust.

2.5.4 Auditor type/Quality

The selection of the audit firm is a critical factor influencing the quality and extent of environmental disclosure. The audit firms play a pivotal role in determining the volume and amount of information disclosed by a company, thereby contributing to enhancement of existing disclosure practices. The International audit firms, particularly the Big four, exert significant influence on disclosure due to their global standards and reputational strength. Most of the organisations establish an audit committee to monitor the reporting practices ensuring that the disclosures align with regulatory and stakeholder expectations. Qualified board members are often appointed to these committees, granting them better access to management control and enabling them to focus on quality and accuracy of information and can monitor the existing reporting system in the firm. The committee is responsible for the approval of timely and relevant disclosures, and its effectiveness is often strengthened by the presence of financial experts. One of the primary responsibilities of the auditor is to validate the contents of the report. Even though the disclosure of information is voluntary, the auditors are expected to ensure that both financial and non-financial information disclosed by the company represents a true and fair view of its operations.

The Big four accounting firms-Deloitte, PwC, EY, and KPMG-command confidence of society due to their global reputation and commitment to maintaining professional integrity. These firms are very much interested in protecting their goodwill and reputation, which motivates them to collaborate with companies that

prioritize transparent environmental disclosure. Employing a Big Four audit firm can enhance the company's legitimacy and signal credibility to stakeholders. The auditors appointed by shareholders have a great influence on the quality of environmental information disclosure. Their reports not only strengthen the certifications, but also help to reduce agency costs by aligning the interests of management and stakeholders. Moreover, auditors help to reduce the conflict between these parties by ensuring that both financial and non-financial information is disclosed in the annual reports reflects a true and fair view of state of affairs of the company.

The committee can be considered as a key pillar for disclosure. Its efficiency is often reflected in the frequency of its meetings, the expertise of its members and the proportion of independent external directors. The appointment of independent auditors strengthens the role of committee in ensuring transparency and accountability. An effective audit committee enhances the investors trust in the objectivity and reliability of financial statements thereby reinforcing corporate governance practices. To function optimally, the committee should be constituted with appropriate guidance and support from board and operate under a defined set of codes and responsibilities.

The audit committee plays a central role in overseeing the internal control and risk management system of the company, helping to reduce information asymmetry in the organisation. It acts as a superintendent of the financial reporting process of an organisation extending its concern over ethical conduct, complex nature of accounting standards, and fair disclosure of the firm's earnings. In the context of globalisation, increased rivalry and technological advancements such as Electronic Data Interchange and satellite transmission, the committee's responsibilities have expanded considerably. Large audit committee gets more authority and can leverage diverse skills, experience and energy to address complex challenges and improve reporting standards.

Scholarly opinions vary regarding the optimal size of audit committees. Some argue that a larger number of members in the committee will result in prolonged

discussions and hinder timely decision making. Conversely, others suggest that a greater number of ethically committed members can increase the quality of disclosure. Empirical studies generally supported the view that the larger committees contribute to more reliable reporting. The frequency of committee meetings is an indicator of increased monitoring, as regular engagement allows directors sufficient time to perform their monitoring responsibilities. Frequent meetings are positively correlated with improvements both in terms of quantity and quality of disclosure. The committee members should possess thorough understanding of the financial statements and reporting principles. The presence of experts in the committee help to reduce the misstatements in financial accounts that will in turn increase the quality of reporting. Audit committees help to assess the environmental issues relating to the reputation of the company. Through their expert and vigilance, the committees ensure transparent, accurate and responsible corporate reporting.

Okolie & Lzedonmi (2014) asserted that auditor independence is a critical factor that enhances the quality of audit. When the auditor maintain autonomy from clients, the reliability of financial and environmental reporting improves significantly. However, if the auditor becomes financially dependent on the client or subject to undue influence, the quality of the audit will be affected resulting in unreliable environmental reporting. Regulatory frameworks such as Sarbanes Oxley Act emphasise the importance of auditor independence, pinpointing its role in improving the accuracy and credibility of environmental reports. These auditors can critically evaluate the environmental claims of a company and ensure that it is prepared in adherence with sustainability reporting standards. He also noted that in some situations, when auditors receive financial incentives from a client, they may be less rigorous in their assessments leading to practices like green washing and the exaggeration of sustainability claims.

The presence of an audit committee significantly enhances the credibility of environmental reporting and reinforces compliance with corporate governance standards. Turley and Zaman (2007) in their study of UK firms found that the presence of an audit committee with independent and experienced auditors

contribute to higher quality environmental disclosure. Such committees play a vital role in ensuring transparency and accountability in sustainability reporting. Conversely, they also noted that weak or inadequately structured audit committees tend to result in vague or incomplete, environmental reporting due to insufficient internal oversight.

De Mour and De Beelde (2005) observed that a robust environmental auditing system significantly enhances the disclosure of detailed and accurate environmental information. In contrast, the absence of stringent regulatory oversight gives chances for the companies to manipulate reports. Alotaibi and Hussainey (2022) further emphasized that the companies whose accounts are audited by Big four firms tend to provide more reliable and transparent disclosure. This credibility fosters investor confidence, which in turn positively affects stock prices and overall firm valuation.

The audit committees play a vital role in identifying, monitoring and assessing the risks faced by the organizations (Friedman and Miles, 2006); (KPMG, 2010). Their effectiveness is closely related to the incentives provided to members, that help to promote reputation and mitigate reputational loss (Mangena & Pike, 2005; Schöndube-Pirchegger and Schöndube, 2011). The presence of auditors within the governance framework enhances the reliability of information disclosed to stakeholders thereby strengthening the credibility of environmental reports (Simnett et al., 2009). Consequently, the environmental reputation of the firm is positively related with the structure and quality of the audit committee. As per (Smith Report, 2003), an effective audit committee should consist of at least three independent non-executive directors with a minimum of possessing financial expertise. The Chairman of the committee is responsible for deciding the frequency and scheduling of meetings which must occur at least three times annually. These provisions are designed to ensure oversight and reinforce the role of committee in maintaining transparency and accountability in reporting.

Jensen and Meckling (1976) argue that external auditors are mostly preferred by the companies because they provide an impartial and fair assessment of

disclosures, thereby enhancing the credibility of reported information. (Adelopo, 2011) further suggested that bigger audit firms have more bargaining power, enabling them to demand more comprehensive disclosure from clients. Their high level of professionalization contributes to improved quality in CSR reporting. The Big Four audit firms are considered as more credible and better equipped to assure sustainability reports due to their global reputation and technical expertise. Simnett et al. (2009) found that companies audited by these firms tend to have higher-quality environmental disclosures. Additionally (Zhou et al., 2020) identified a positive correlation between Big Four auditors and compliance to GRI guidelines, reinforcing their role in promoting transparency and accountability in sustainability reporting.

Auditor independence is widely recognised as the main factor influencing the audit quality directly influencing the reliability of both financial and environmental reporting. The overall quality of environmental reporting is influenced by multiple factors including the type of auditor engaged, degree of auditor independence and the effectiveness of audit committee. The independent auditors ensure that ESG reports are based on verifiable data and reflect factual information. This level of scrutiny helps to mitigate the risk of green washing where companies exaggerate their sustainability efforts and fosters greater investor trust in the sustainability efforts of the company.

2.5.5 Pollution Propensity

The level of pollution indicates the relationship between firms' environmental performance and varies across industries and countries. The expectation of stakeholders will also differ with firms situated in high pollution industry disclose more environmental information as compared to less polluting firms. It is very difficult to measure pollution propensity because the environmental impact of industrial waste is not always known.

According to Resource and Management Efficiency Theory, environmental pollution signals inefficient resource use and triggers stricter regulations and technological improvements. These changes inculcate social values and attract

institutional investors, make the best use of available market opportunity and increase the efficiency of resource usage. Pollution harms the ecological environment, damages the health of human beings and stringent environmental regulation and fines will be imposed as compensation. The environmental pollution reduces the future market value of shares of listed firms, seriously affects firms' image and affects investors' confidence in the earnings of the company.

Strong pollution propensity strengthens environmental management practices of the company and takes steps to reduce the impact of environmental disasters and reduce risks associated with disaster. The managers of high polluting industries will be more cautious about their environmental policies and practices, promoting green production and local transparency. Two types of environmental regulation exist namely formal regulations led by government and informal regulations that rely on participation of society. The formal regulations like smog control policy, environmental taxes and subsidies reduce the effect of pollution emissions and promote economic development. Informal government regulations involving public disclosure improves environmental performance and helps to analyse the capital market trends of the companies.

The industries with high public visibility or environmental impact tend to disclose more to manage public relations and stakeholder pressure. Manufacturing firms will disclose more information as compared to non-manufacturing industries. Environmental sensitivity reflects a firms ecological footprint resulting in greater transparency. The industries Emissions Directive, Water framework Directive and urban waste water treatment directive aims to reduce emissions, control pollution and protects natural resources through regulatory limits and waste management standards.

Clarkson et al. (2011) discovered that the Australian firms with greater pollution emissions disclose more environmental information, often aligning their reporting with GRI Guidelines to ensure objectivity and verifiability. Similarly, (Bewley & Li, 2000) focused on manufacturing firms in Canada and observed a positive association with Environmental disclosure and pollution propensity

suggesting that firms facing higher environmental impact prompts more transparency. (Khanna & Brouhle, 2009) evaluated the effectiveness of voluntary environmental programs to reduce pollution and enhance Environmental Reporting. The various voluntary programs like Environmental Protection Agency 33/50 program were analysed to evaluate their impact on environmental performance and concluded that participation in voluntary programs result in reduction in pollution emission, thereby enhancing disclosure. There is a strong positive correlation between voluntary initiatives and transparency.

Al-Tuwaijri et al. (2004) investigated the interrelationship between Environmental Disclosure, Environmental performance and Economic Performance in chemical industry by employing a simultaneous equation model. The toxic emissions, Environmental Disclosure and financial performance metrics were the variables incorporated in the study. There was a negative relationship between toxic emissions and extent of disclosure indicating that firms with lower pollution levels, demonstrate better environmental performance and enhanced environmental disclosure. The firms that are committed to pollution reduction are more likely to be transparent about the environmental impacts.

Han and Yang (2023) investigated the nonlinear effects of environmental data disclosure on urban pollution in China and identified a U-shaped relationship. Their findings suggest that the disclosure levels are initially high when emissions are more, but tend to decline as regulatory effectiveness improves. Wang et al. (2024) further highlighted that environmental disclosure impacts pollution levels through mechanisms such as fostering green innovation and upgrading industrial structures.

Environmentally sensitive companies disclose more information as they are affected by visible environmental concerns like risk of pollution and environmental disasters. Such industries face great pressure from society and if these firms do not disclose proper information, environmental pressure groups, NGO's, government and general public pose pressure on them and will be treated as violating social contract. The firms with higher levels of pollution tend to disclose more environmental information.

2.5.6 Political Exposure

The political cost of disclosed information influences management's decision to disclose. Political exposure refers to the extent to which stakeholders differ in their sensitivity towards environmental issues across different firms. Environmental group mainly targets large firms to adopt practices like waste recycling. The political connection-ties between executives and government enhance investor protection and access to resources but may lead to neglect of environmental responsibilities. According to rent-seeking theory, such connection is considered a form of political exposure or a resource for the firm though they can negatively impact environmental performance.

Patten (2002) explored the relation between Environmental performance and Environmental disclosure identifying political exposure as a mediating factor. His findings suggest that the companies with poor environmental performance tend to increase their disclosure efforts as a strategic response to mitigate political exposure and public criticism. Similarly (Li & Zhang 2022) examined the influence of political exposure on corporate Environmental disclosures and concluded that firms subject to more political pressure are more likely to engage in extensive environmental disclosure.

Stanford Graduate School of Business (2024) highlighted the influence of political exposure and socio-political pressures in shaping corporate environmental behaviour of various aspects of political economy that influence sustainability. The firms operating under political scrutiny respond by amplifying their environmental disclosures. The companies engage in disclosure not merely as compliance mechanism but as a strategic tool to safeguard legitimacy, managing the perception of public and aligning with societal expectations.

Alhebri and Alfadhli (2024) in their systematic review examined the broader role of Environmental, Social and Governance disclosures in addressing both stakeholder trust and political scrutiny. Their findings concluded that transparent ESG reporting act as a buffer against reputational risks and regulatory interventions in political sensitive contexts.

Mahmoudian et al. (2022) examined the influence of corporate political connections mainly with government entities on disclosure patterns. The study revealed that the firms with stronger political connections tailor their reporting strategies to reflect their institutional allegiances and the expectations of political factors. The disclosure is not merely reactive but also proactive that serves as a signalling mechanism to avoid scrutiny.

2.5.7 Media Exposure

The media coverage plays a crucial role in shaping the awareness of public towards disclosure practices. If outsiders gain more knowledge about a firm through the media, the firms are forced to increase their disclosure to differentiate themselves from poor performers and maintain legitimacy. The volume of media attention serves as a proxy for public exposure. Thus, environmental disclosure is positively associated with the extent to which stakeholders are aware of the firm's environmental exposure which is measured by the number of news articles published about the firm's environmental disclosures. The number of news articles reflects the extent of public knowledge about the firm so that any manipulation made by a company, will be likely to be exposed in the media, thereby reducing bias. Disclosure includes both printed and web-based information. Disclosures are now made in both digital and printed formats evolving from traditional annual reports and press releases.

Media coverage plays a vital role in shaping public opinion about the activities of a company. According to legitimacy theory, companies will strive to align their operations according to the norms and expectations of the society. The companies must communicate their actions transparently to stakeholders to maintain legitimacy. The media plays a key role in conveying the information to the public, enabling them to assess how company address the environmental issues. Moreover, the media attention motivates managers to expose the company's environmental activities, reinforcing accountability and gaining reputation.

According to (Brown & Deegan, 1999), increasing media coverage plays a pivotal role in drawing the attention of the public towards various societal problems.

In today's digital era, media serves as a powerful tool for disseminating information rapidly. The information conveyed through mass media contribute significantly in establishing society's legitimacy among relevant stakeholders. He also emphasized that heightened media coverage leads to broader disclosure. Environmental legitimacy is positively associated with reactive environmental press releases, which in turn influences the extent of carbon emission disclosures. The latest advancement in technology empowered the media, enabling to play a crucial part in promoting transparency in carbon emission disclosure.

Janna & Muid (2014) argue that exposure to media compel the companies to publish their environmental protection activities in pursuit of favourable response from stakeholders. Companies with greater media coverage are more likely to disclose extensively on greenhouse gas emissions. However, when companies experience anxiety or apprehension regarding environmental regulation, they may limit the disclosure of carbon emissions. Such disclosures are often perceived by investors as a positive signal about the company. The organizations adopt various strategies including aligning their symbols, values and methods of operation with those institutions perceived as legitimate.

Public media play a crucial role in the legitimation process leveraging their institutional roles to access and disseminate information widely. The media coverage acts as a filter through which different perceptions of good or bad management are shaped. The narratives and evaluation provided by public media significantly influence which organizational activities are prominent. Ultimately, the content of media coverage is closely linked to public opinion thereby witnesses the significant role played by media in shaping societal perceptions.

Gray and Handley (2015) and Morales et al. (2018) suggested that firms disclose information to align with the expectations of the society and to mitigate institutional pressures. In this context, media exposure acts as a catalyst influencing the strategic decisions of the firm to disclose information. (Zhang & Liao, 2015) found that positive media attention enhances the firm's commitment to environmental

practices and ensures timely reporting. Similarly, (Jarboui & Moalla, 2023) observed that the high media visibility strengthens voluntary disclosure thereby helping firms to manage risk and build public trust. The media exposure plays a significant role in shaping which environmental issues are to be prioritized. The firms having higher media visibility tend to adopt transparent and robust environmental disclosure strategies (Cormier & Magran, 2015; Lauterbach & Pajuste, 2017).

The media coverage plays a constructive role in enhancing environmental disclosure, significantly influencing the quality and ratings of disclosure. Interestingly, negative environmental media coverage often correlates with improved voluntary disclosure as firms respond proactively to protect their reputation. Environmental issues are addressed through a wide array of platforms including local newspapers, magazines, televisions, websites, Facebook, Instagram or any other communication media. These diverse media serve as a tool for increasing awareness, shaping public opinion and encouraging corporate transparency in environmental practices.

2.5.8 Board Size

The firm with larger boards tends to disclose more information as board size is considered as corporate governance mechanism that influences voluntary disclosure of companies. A board means a group of people who have come together for a common purpose, typically to oversee and guide organizational strategy. Large number of directors on the board can increase effectiveness by incorporating diverse expertise and knowledge, broader perspectives and increased capacity to monitor management. They are also more likely to include members with financial and accounting backgrounds, contributing to more robust environmental disclosure. Therefore, a positive relationship is observed between board size and environmental disclosure.

However, opposing views suggest that larger boards may be less effective due to coordination challenges, poor communication, slower decision making, diluted accountability, and in some cases more likely to be influenced or manipulated by the CEO. The larger size of board can improve monitoring capacity but can also hinder

effective communication. So, in these cases there will be a negative relation between board size and environmental disclosure and in some situations, there will be no relationship among them. The relationship may vary depending on factors like organizational dynamics, governance culture and effectiveness of communication.

Andrikapoulos et al. (2024) investigated the influence of board size on corporate sustainability performance among European listed firms by following resource dependence theory, stakeholder theory and agency theory. The major findings of the study suggests that the presence of larger boards contribute positively to sustainability performance due to diverse skills, perspectives and expertise of directors. Such companies publish detailed sustainability reports and demonstrate greater transparency in ESG disclosures. However, the study also identified an inverted U-shaped relationship, indicating that beyond a certain threshold, increasing board size will lead to inefficiencies and reduce the effectiveness of sustainability reporting. Thus, the quality of board members is more critical rather than just the number of directors.

Supporting this view (Rao et al., 2012; Halder et al., 2015; Trireksani & Akbas, 2016) argued that larger boards enhance diversity and resource access, thereby strengthening the ability of the company to meet the environmental needs of stakeholders. Their research points out a positive relation between board size and environmental disclosure, thereby emphasizing the strategic importance of board composition in advancing legitimacy and transparency.

Matuszak and Rozanslea (2020) conducted their study in German listed firms to assess their adherence to GRI standards for sustainability disclosure. Employing panel data analysis, the study revealed a negative relationship between size of board and quality of environmental reporting. The larger size of the board hinders effective coordination and proper communication, leading to slower decision-making processes regarding sustainability disclosure. In contrast smaller size of the board, likely to produce high quality sustainability reports as streamlined communication and focused participation facilitate effective governance.

Javed et al. (2023) explored the impact of board size on Environmental reporting among global corporations by applying regression models and found a U-shaped non-linear relationship between board size and sustainability reporting. In the earlier stages, an increase in board size positively influences sustainability reporting driven by enhanced expertise, diversity, and broader stakeholder representation. However, beyond the optimum level, further expansion of board can lead to bureaucratic inefficiencies, slower decision-making, and conflicts, ultimately diminishing the value of sustainability reports. The study suggests that an optimal board size of 8–12 directors is considered most effective for enhancing sustainability performance. While board size remains an important factor in shaping sustainability reporting, its influence depends on industry specific dynamics, regional regulatory frameworks, and firm-specific characteristics (Chams & Garcia, 2024).

The relationship between board size and environmental disclosure can be positive, negative or even neutral depending on various contextual factors. When directors perform effectively, the level of disclosure will be high regardless of board size. Small boards help to reduce agency conflict among managers and shareholders by fostering closer oversight and streamlined decision making. However, the small size can constrain the board's capacity to monitor the behaviour of managers. Conversely, larger boards facilitate broader corporate engagement as there will be independent and experienced directors in larger boards. This diversity helps to bridge the informational asymmetries and enhance the quality of reporting. The effectiveness of disclosure is not solely determined by board size alone but also depends on quality, independence and active participation of members.

2.5.9 Board Independence

Independent directors play a vital role in safeguarding the interest of stakeholders, employees, customers and organisation. They are expected to operate without undue influence from internal or external pressures, enabling the board to adopt a balanced and centered approach to decision making. By overseeing the company's management and ensuring the disclosure of quality information, independent director helps to build stakeholder trust thereby enhancing firm's

reputation and value. The corporate board comprises of both dependent and independent directors where dependent members are directly involved in the company's operations and may include family members of the owners. Independent directors represent the interests of minority shareholders and are not directly involved in the day-to-day activities of the firm. They maintain a limited connection with the firm beyond their role as directors.

Independent directors bring valuable expertise and objectivity to the board that is required for assessing and monitoring environmental and sustainability practices, so that information asymmetry between management and stakeholders will be reduced (Peters & Romi, 2015). The research has shown a positive relation between presence of independent directors and improved environmental performance (Post et al., 2011). Moreover, ESG reporting influenced by independent directors was also positively associated with firm performance and strengthened corporate governance mechanisms across these regions. However certain limitations such as lack of specialized knowledge among independent directors and the difference in governance structure across industries can diminish the positive effects of disclosure. All these factors pointed out the importance of not only board independence but also the relevance of expertise in driving more sustainability outcomes.

Garcia et al. (2019) emphasized that composition of a board significantly influences the environmental reporting practices. The meta-analysis revealed that board independence in sustainability issues positively influence both environmental performance and disclosure quality. Independent directors in the board ensure that firms comply with environmental standards and reduce the risk of greenwashing.

Similarly (Vitolla et al., 2020) underscored the importance of board independence in determining the scope and quality of integrated reporting, particularly with respect to environmental aspects. The boards with financial expertise are more likely to produce sustainability reports that align with regulatory and investor expectations. Drawing on agency theory, both studies suggested that the firms with weaker governance structure tend to deliver lower quality environmental reports, highlighting the need for robust oversight and specialized knowledge in the board.

Baldini et al. (2018) in his study analysed both the firm level and country level factors influencing Environmental disclosure practices. Their study highlighted the importance of board governance mechanisms particularly CEO duality where the CEO simultaneously serves as the board chair in shaping the transparency of sustainability reporting. The findings concluded that such governance sectors impact the quality of disclosures, underscoring the importance of separating executive and oversight roles to enhance accountability.

2.5.10 Gender Diversity

Gender diversity on corporate boards typically measured as the proportion of female directors relative to the board size to improve voluntary disclosure. According to the agency theory concept, the function of the board is to monitor and control managers. A more diverse board strengthens this oversight function, as varied perspectives contribute to more independent and effective governance. High diversity is associated with improved board independence, bringing members with a broad range of experiences, skills, abilities and insights that enhance the quality of decision making and managerial supervision.

As per resource dependence theory, the provision of resources and providing external links is a key function of the board of directors. Diverse boards are positioned to connect with broader environment, facilitating the exchange of fundamental viewpoints, thereby generating best decisions and high-quality ideas. The inclusion of women in the board introduces unique perspectives that enables a firm to better understand the complexities of environment and to assess stakeholders' expectations. It helps to develop positive financial outcomes supporting informed decision making by aligning corporate strategies with societal and environmental needs.

Several countries have enacted various legislation mandating gender quota on corporate boards for assuring gender diversity and enhance governance quality. Gender diverse boards contribute to expanding the scope of the firm by fostering networks and linkages with other organizations. This diversity helps to solve problems, improve communication and make a critical analysis of various

environment related issues. Board heterogeneity through gender inclusion has been shown for strengthening environmental stewardship.

Women directors follow participative leadership style thereby encouraging open dialogue and information exchange among board members. Their active involvement in environmental initiatives and prompt decision making enhances the responsiveness of the firms to environmental issues. Women also enhance the effectiveness of changes required for green innovations and are community influencers and demonstrate greater sustainability awareness compared to their male counterparts.

Due to the uncertain environment, skills of women on the board are found to be efficient and essential for securing a balance between stakeholder's value and interest. The stakeholder management has improved. The relationship between gender diversity and disclosure will be affected by the nation's culture that influence both governance norms and stakeholder expectations. The impact of gender diversity on environmental disclosure varies across regions.

(Liao et al., 2015) pointed out that low gender diversity on the board negatively impacts greenhouse gas disclosure. Their study found a significant positive association between gender-diverse boards and level of greenhouse gas disclosure, suggesting that the presence of female directors on the board plays an important role in enhancing environmental transparency. Similarly, (Jizi, 2017) explored the influence of board gender diversity in shaping the quality of environmental disclosure. The findings indicated that higher female representation on the board leads to more comprehensive and reliable environmental reporting. Both studies underscored the critical role of gender diversity in strengthening corporate governance.

A recent review by (Al Shaer & Zaman, 2024) also synthesized the existing literature on impact of board diversity on ESG reporting, concluding that gender diversity in board significantly support robust ESG reporting. (Hussain & Orij, 2024) further explored gender diversity as a moderating variable in assessing the relationship between environmental performance indicators and financial performance. The

environmental performance indicators include emissions, innovations and resources. An analysis of data from 6000 companies revealed a positive relationship between environmental performance and financial performance and this is strengthened by greater gender diversity on boards.

Similarly, (Tingbani et al., 2020) examined the relationship between board gender diversity and voluntary greenhouse gas disclosures. Their findings indicate that boards with higher female representation have a greater tendency to take on environmental responsibility.

The female directors promote sustainability initiatives and contribute to more comprehensive environmental reporting. There is great importance of incorporating gender inclusive governance in advancing corporate accountability.

Amran et al. (2024) analysed the impact of gender diversity on climate related financial disclosures and concluded that boards with female representation tend to produce more comprehensive climate related disclosure. The study also emphasized the importance of female directors in promoting transparency in environmental reporting.

In the context of emerging markets, Pareek and Gupta (2021) examined Indian firms and found that increased representation of females on the board results in improved sustainability performance thereby highlighting the strategic role of gender diversity in emerging markets. Similarly, (Khan & Johi, 2022) conducted a quantitative review and established a positive correlation between gender diversity and corporate sustainability, reinforcing the governance benefits of inclusive leadership.

Issa and Fang (2023) explored the effects of board gender diversity on environmental performance and concluded that gender diverse boards are very critical for environmental stewardship. Complementing these findings, (Gonenic & Krasnikova, 2022) demonstrated that there is a positive relationship between female representation on boards and voluntary disclosure even in those countries without strict quotas. The presence of gender diversity helps in fostering transparency and ethical governance.

The attention of the board on vulnerable stakeholders has increased and are affected by social value differences between male and female directors. Social value of an individual is affected by culture which also affects the ethical behaviour and decision-making power of female directors. Traditional gender role distinguishes men and women in leadership with women typically bringing a more inclusive perspective to governance.

Greater female representation on the board has been linked to enhanced decision-making quality and improved financial performance. In contrast, the absence of women in the boards hinders the ability of the company to utilize its intellectual and social capital. Female directors contribute to the development of social policies and better supervision of company's disclosure activities. For fostering more balanced governance and for promoting ethical, transparent and socially responsible behaviour, representation of women in the board is essential.

2.5.11 Board meetings

Hossain et al. (2022) identified a positive correlation between board meeting attendance and level of environmental disclosure. Their findings suggested that when environmental issues are actively discussed in meetings, there will be more disclosure of environment information. In developed economies board meetings have been identified as critical forum for addressing environmental challenges, enabling the firms to adopt proactive environmental strategies and engage in voluntary disclosure.

The primary objective of conducting board meetings is to strengthen the control and validate the decisions taken by the CEO, ensuring that company management is in accordance with predetermined rules and regulations. Regularly conducted meetings enhance transparency, reduce conflicts and enable the monitoring of the company thereby disclosing more ethical matters.

During times of crisis, the frequency of board meetings is increased to address urgent strategic challenges. The factors such as declining market performance and heightened investor issues often necessitate more frequent engagement from the

board. When company dynamics weaken, timely approval and oversight from directors becomes critical to ensure quick and informed decision making. While the companies can self-determine how often board meetings are held, they are likely to limit the frequency of meetings due to associated costs. These include the consumption of managerial time, travel expenses, administrative coordination, and remuneration for directors. Despite these concerns, evidence suggests that companies with lower attendance at board meetings often experience poorer performance outcomes. The Board meetings are also likely to be positively influenced by CSR duties.

Ahmed et al. (2016) highlighted that frequent board meetings are often associated with enhanced Environmental Disclosure. Regular meetings provide opportunities for the directors to discuss environmental issues leading to more comprehensive reporting. (Jizi, 2014) conducted a study focusing on UK firms and found a positive correlation between the number of board meetings and level of Environmental disclosure. He argued that active board engagement facilitates better environmental reporting practices. The more frequent board meetings strengthen board oversight, ensuring that firms comply with sustainability expectations set by regulators and stakeholders.

The key insights on the influence of board characteristics on environmental reporting are presented in the following table.

Table 2.1

Influence of Board Characteristics on Environmental Reporting

Board Characteristics	Impact on Environmental Reporting
Board meeting frequency	An increase in the number of meetings leads to better insights and more detailed environmental disclosure.
Board independence	Independent directors ensure compliance with regulatory norms and strive to reduce misleading environmental claims.
Board size	Larger boards that include experts in sustainability enhance integrated environmental reporting.
Gender Diversity	The presence of female directors contributes to the attainment of long-term environmental sustainability goals.

Source: Compiled by Researcher

2.5.12 Environmental committee

The committees with in corporate governance structure reflects a firm's commitment to addressing specific strategic and operational concerns, including environmental sustainability. The committee comprises a group of directors having expertise in a particular area and decision-making authority of the organization and entrusted with various responsibilities. Due to the complexities in the working environment, establishment of sub committees among boards is encouraged to enhance efficiency. Standing committees namely audit committee and compensation or remuneration committee are common in large firms. Their main function is to foresee decision making and reporting about the specific tasks to the main board. These committees are established due to increasing demand from stakeholders. The interaction between female board members and the environmental committee will have a positive effect on disclosure.

Liao et al. (2015) found that firms with a dedicated environmental committee disclose greenhouse gas emissions through their Carbon Disclosure Project Report. These committees play a crucial role in promoting transparency regarding environmental impacts, leading to more detailed and reliable reporting. The main objective of setting up the environmental committee is to ensure that environmental information is accurately captured and transparently reported, aligning with stakeholder expectations. (Porchelvi A, 2020) opined that collaboration of the environmental committee and the audit committee help to strengthen the comprehensiveness and regulatory compliance of environmental disclosure. This collaboration not only enhances the credibility of the reputed information but also ensures smooth decision making at strategic level so that environmental considerations can be incorporated into core business operations.

Garcia et al. (2019) conducted a cross-national study of European firms and identified a significant positive relationship between the presence of Environmental Committees and extent of environmental reporting. Their findings suggest that the existence of the committee compels the companies to disclose more detailed information of environmental risks. Moreover, strong regulatory frameworks

amplify the influence of Environmental Committees in promoting sustainable business practices.

Similarly, (Rao, 2016) in their analysis of 150 publicly listed firms in Australia concluded that firms with dedicated environmental committees are more likely to produce comprehensive reports aligned with Global Reporting Initiative Guidelines. They emphasized the importance of appointing knowledgeable members to ensure the quality and credibility of disclosures. In the context of U.S firms, (Peters & Romi, 2024) found that existence of environmental committees significantly increases the likelihood of voluntary disclosure thereby improving public perception and investor confidence. However, the effectiveness of these committees is largely contingent upon their level of authority and direct involvement in strategic decision-making processes.

There is a well-established positive relationship between the presence of an environmental committee and the quality of environmental disclosure within organizations. The audit committee and environmental committee often collaborate closely thereby ensuring that both financial and non-financial reporting meet regulatory and stakeholder expectations. While the audit committee primarily oversees the accuracy and transparency of financial disclosures, the environmental committees particularly when composed of diverse members and sustainability experts positively influence the depth and credibility of environmental disclosure.

Collectively, these studies underscore the pivotal role of the Environmental Committee in enhancing corporate environmental reporting. The effectiveness of sustainability disclosures is not solely dependent on the existence of such committees but also on the broader governance structures, the prevailing regulatory environment and composition of the Environmental committee itself. When these elements align, particularly with diverse and knowledgeable members, organizations are positioned to deliver transparent, credible and comprehensive sustainability reports that meets stakeholder expectations and regulatory standards.

2.5.13 Size of the firm

Firm size is commonly measured by the total assets a company owns, which are expected to be utilized in the near future to generate economic value. Generally, the greater the assets base, the larger the firm is perceived to be. Larger firms face greater public pressure, and increased shareholder expectations, prompting many to voluntarily disclose environmental information as means of gaining legitimacy.

However, some scholars argue that larger firms disclose less, as their strategic focus tends to prioritize asset accumulation over transparency, and they perceive environmental reporting as having minimal impact on financial growth. The market presence of a firm also influences the firm's ability to disclose environmental information. Larger firms are more accountable to stakeholders and are seen as responsible corporate citizens, having sufficient funds to invest in social welfare initiatives and therefore expected to disclose more information.

Okafor and Ezeagba (2021) examined Nigerian firms and found that larger companies tend to provide more extensive Environmental Disclosure. The study also emphasized the need for proper resources to implement comprehensive reporting systems. (Cagno et. al., 2019) identified that along with firm size, age of the firm and existence of Environmental management system certifications influence corporate performance. Larger firms exhibit better environmental reporting practices. (Clarkson et al., 2008) investigated the relationship between environmental performance and disclosure and concluded that those firms with superior environmental performance tend to disclose more environmental information. This relationship is generally noticed in large firms as they face more pressure to maintain transparency.

Uddin et al. (2021) conducted their study on firms in Bangladesh and pointed out that size of the firm together with age, profitability and board independence significantly influence reporting practices. They also concluded that large firms disclose more environmental information aligning with legitimacy theory. The larger firms are better positioned to adopt voluntary sustainability reporting frameworks like GRI. (Herbohn et al., 2014) pointed out that smaller firms face barriers to

extensive disclosure in the form of limited resources and irrelevance of comprehensive reporting. A study among global corporations found that environmental impact metrics such as CO₂ emissions and energy use have a significant influence on the size of the firm. These metrics act as benchmarks for assessing the environmental performance of a firm and indicate that larger firms tend to have a higher environmental impact (Vodák & Montemurro, 2022).

Larger firms gather information for internal disclosure and also provide information to external parties driven by heightened visibility and government regulation. Since large companies often seek external capital and aim to influence societal perception, they there by further incentivize comprehensive disclosure practices. Inadequate transparency led to high agency costs due to their widespread shareholder base. Therefore, greater disclosure helps not only to reduce potential agency costs but also to gain competitive advantage and strengthen stakeholder trust, as they are closely observed by both internal and external stakeholders.

2.5.14 Age of the Company

A company's existence in society is contingent upon its acceptance by the community in which it operates. Legitimacy is crucial for determining a company's survival. Sustained and meaningful interaction between the company and the community is essential for its continued existence and competitiveness. As companies accumulate years of experience, they tend to develop deeper community ties, resulting in enhanced public image. Age reflects a firm's stability and financial strength and influences stakeholder power, strategic posture, and financial performance. As a company matures, its reputation improves, and its involvement in discretionary activities—such as environmental protection measures and disclosure practices—increases and they seek to enhance their public image by disclosing more information. Some authors suggest that both young and mature firms disclose environmental information. The age of a firm indicates the length of time it has been established, and long-standing companies are generally perceived as having a more legitimate presence compared to newly formed firms.

Nobanee and Ellili (2016) analysed the degree of corporate sustainability reporting using annual data for listed banks in UAE stock exchange for the 10-year period from 2003 to 2013 using content analysis. Both Islamic and conventional banks were included in the study and concluded that the overall level of sustainability disclosure was low among UAE banks. Conventional banks exhibited a higher degree of Environmental reporting as compared to Islamic banks but the study did not find a significant relationship between age of banks and extent of Environmental Reporting. The factors other than firm age such as type of banking institution played a major role in determining the level of Environmental Disclosure.

Indriyani and Yuliandhari (2020) examined the influence of company age on the disclosure of CSR among non-financial companies listed in Indonesian stock exchange for the period from 2015 to 2018 using multiple linear regression analysis, and the study concluded that the age of the company had a positive impact on CSR disclosure. Older companies were found to be more actively engaged in CSR reporting and pointed out that the older and larger companies are more willing to disclose the information on environmental impact due to abundant availability of resources and enhanced reputation.

Nguyen and Huynh (2024) investigated the impact of firm age on environmental disclosure practices among firms in Vietnam and concluded that firm age was positively associated with the extent of Environmental Disclosure. Older firms had a tendency to provide more environmental information due to accumulated experience and stakeholder expectations.

Momin, et al. (2017) reviewed the relationship between Environmental Reporting and financial performance, and age of the firm was identified as a moderating variable. The study highlighted the need for standardised measurement tactics in assessing the impact of Environmental Reporting. Some studies reported no significant association between the age of the firm and level of disclosure indicating that older firms may be more proactive in environmental disclosures and dependent on other factors like industry, geographic location and specific characteristics of the firms that are included in the study.

The longer the age of the company, the greater the improvements in the quality of reporting, such as the inclusion of environmental and social activities in sustainability reports and they can understand the type of information to be disclosed and tend to report only that information which have positive impact on the company. Experienced firms are more aware of the importance of improving CSR disclosure, so there will be better sustainability disclosure.

2.5.15 Number of years listed

Those firms which are listed in the stock exchange for many years are well reputed and well-established and have more environmental disclosure. SEBI had made it mandatory for disclosure as per index for getting listed in stock exchange. Listed companies prepare sustainability reports based on Internationally accepted reporting frameworks such as GRI, SASB and others. The same information need not be disclosed twice in the report.

The reporting is done in three sections. The first section deals with details of the entity and its products, employees, subsidiaries and associate companies followed by qualities relating to quality and management process and the last section deals with principle wise performance disclosures. They have to report on essential indicators which are mandatory and leadership indicators which are voluntary and includes carbon footprint and toxic chemicals involved in the manufacturing process.

SEBI played a crucial role in enhancing Environmental reporting standards. The sustainability reporting has been made mandatory with effect from the financial year 2022-2023 for the top 1000 listed companies thereby, providing a more detailed overview of environmental, social and governance initiatives of the company. The Board introduced measures to reduce the cost of compliance of small businesses. The companies are to disclose the percentage of purchases and sales covered by ESG reporting for ensuring comparability across companies.

Environmental Reporting has evolved significantly over the past three decades. There has been a shift from initial Environmental Disclosure to inclusion of social

and governance issues and growing emphasis on corporate transparency regarding environmental impact. This underscores the increasing importance of comprehensive Environmental reporting in corporate practices. Regulatory bodies like SEBI and GRI helped in promoting transparency and accountability among listed companies.

2.5.16 Nature of Industry

There is a difference in environmental impact, environmental issues and types of regulatory interventions among manufacturing and non-manufacturing industries. Industries with a high environmental impact including global warming, water pollution, and other related issues are more exposed to environmental concerns. The environmental stakeholders will scrutinise the environmental impacts and stimulate environmental disclosure. Voluntary disclosure can be undertaken by chemical plants, power stations, cement factories, and waste management industries at low cost.

New manufacturing industries and service industries have lower degree of environmental impact, only few environmental issues, thereby facing less stakeholder pressure and would be expecting a low degree of disclosure. Those industries with strict regulation and high pollution disclose more environmental information. Variation in industry has a significant impact on non-financial disclosure. The environmentally sensitive industry, having more concern towards stakeholders for disclosure. Extractive industries also have more disclosure due to the direct effect of their activities on environment.

Porchelvi (2020) examined how sustainability reporting varies across industries through 678 sustainability reports from G20 countries and findings indicate significant variability in sustainability reporting across different industries and it should be considered when assessing the sustainability performance of the organisations. In another study, Environmental accounting and reporting practices of 50 manufacturing companies in India was analysed and concluded that the companies reported voluntarily on the basis of a checklist of information and it helped to gain insight into the status of Environmental disclosure across diverse sectors. Environmental reporting was

unsystematic and inadequate in respect of certain companies while others provided qualitative environmental information in their annual reports. There was a lack of standardisation and comprehensiveness in the report. They did not disclose measurable outcomes or specific environmental performance indicators.

Firms operating in environmentally sensitive industries, such as manufacturing and mining, tend to disclose more environmental information and proper encouragement should be given to companies for disclosure of quantitative data on their environmental performance.

2.5.17 Uncertainty Avoidance

Uncertainty avoidance reflects the tolerance level of society for unpredictability and ambiguity, shaping social norms and business practices. In case of cultures with more uncertainty avoidance, there will be strict rules and resistance to change leading companies to adopt rigid procedures, thereby disclosure will be low. Conversely societies with low uncertainty avoidance encourage greater transparency, flexibility and innovation. Cultural factors play an important role in determining environmental reporting practices.

Hofstede (2011) highlighted that culture played an important role to socialize their members to feel either comfortable or uncomfortable. Individuals in high uncertainty avoidance culture demand less disclosure. (Søndergaard, 1994) emphasised on formalisation and standardisation in the organisation which influence leadership styles and decision-making process and there will be more disclosure. Furnham and Ribchester (1995) opined that individuals from high uncertainty avoidance cultures experience more stress and may exert pressure on companies to disclose more environmental information. Rinne et al. (2012) pointed out that the individuals from cultures with low uncertainty avoidance will be innovative and risk taking in contrast to which high uncertainty avoidance culture exhibits resistance to change and they prefer for routine activities thereby hindering entrepreneurial activities and so disclosure will be less.

2.6 Trends of Environmental Accounting and Reporting in Automobile Industry

Environmental disclosure trends are integral to corporate transparency and accountability. Organizations are increasingly compelled to improve the quality of environmental reporting due to heightened stakeholder awareness and regulatory pressure. Enhancing the quality of disclosure is essential for enabling stakeholders to make informed decisions. There is also growing awareness among companies of their environmental responsibilities.

Singh and Joshi (2017) analysed the annual reports of 137 Indian companies for two years-2011-2012 and 2014-2015 and concluded that there has been a significant increase in the extent and quality of Environmental Disclosure. The reporting was descriptive and there have been significant differences in reporting between different types of industries. Khan and Rahman (2023) analysed that approximately 90 percent of Indian companies are following a specified pattern of disclosure for Business responsibility reports. He concluded that there is a positive move towards standardised reporting in automobile industry.

Bebbington et al. (2019) reported that voluntary Environmental reporting led to inconsistencies and only selective information will be disclosed by the company. There is a growing need for mandatory reporting standards for ensuring uniformity and comparability. Both the quantity and quality of reporting should be increased. Gupta and Singh (2024) pointed out that there has been tremendous adoption of green accounting practices in the Indian Automobile sector. It is adopted to assess and report environmental impact. Environmental liabilities and costs are estimated so that it helps in proper adoption of greener technologies and informed decision making. (Porchelvi, 2020) noted that there is a tendency among Indian companies to disclose environmental related information though environmental reporting is largely voluntary in India. This voluntary disclosure helps to enhance transparency and meet stakeholder expectations regarding environmental responsibility.

Ramanathan and Kumar (2023) viewed that Environmental Sustainability is often integrated with CSR strategies of the company. They are connecting their

environmental initiatives with CSR activities thereby developing a holistic approach to corporate responsibility. Sharma and Verma (2019) noted that the automobile sector in India is facing unique environmental challenges in terms of emission and resource consumption. These challenges are solved by proper adoption of cleaner technologies and improvement of fuel efficiency. Singh and Joshi (2017) highlighted that there are significant variations in disclosure practices among Indian Automobile companies. The detailed report is provided by some companies while others offer minimal information due to lack of standardised framework for reporting.

SEBI (2023) have introduced guidelines for reporting which is a source of encouragement for the companies to disclose their environmental policies and practices. (Kalpande, 2022) evaluated the role of green accounting and reporting in the automobile sector and focus was on the disclosure of environmental costs and liabilities by the companies and pointed out that the green accounting practices were inconsistent due to inadequate regulatory enforcement and varying corporate strategies. The research also suggested that the automobile companies following structured environmental reporting mainly Tata Motors and Mahindra & Mahindra have better sustainability performance and improved stakeholder trust. (Grant Thornton India LLP. 2023) explored the trend of adoption of low carbon technologies by Indian Automobile manufacturers to align with global sustainability goals. The introduction of EVs, hybrid engines and energy efficient manufacturing processes helped to attain sustainability goals by reducing carbon emissions. The study also emphasised that there has been considerable improvement in carbon disclosure practices in India. The main conclusion of the study was that, although there is a lack of a standardized reporting framework, companies are increasingly focusing on reducing emissions and adhering to existing environmental standards.

Mahadevan (2019) found that there is a growing trend to adopt sustainable practices among tyre manufacturing companies, the level of reporting is inconsistent and the study advocated for standardised reporting formats and stringent regulations for ensuring greater transparency in reporting. The various tyre manufacturing companies like Apollo Tyres and MRF disclose their emissions and energy efficiency measures.

Kumar and Gary, 2015) examined the green supply chain management practices in the automobile industry and identified the methods undertaken by the companies to implement eco-friendly production, waste reduction and sustainable sourcing. Green supply chain management practices are essential to achieve long term sustainability and cost reduction. The study concluded that those companies with strong green supply chain practices tend to have better environmental reporting. There has been a positive correlation between sustainability efforts and transparency. (Kumar N & Prakash M) examined the pattern of environmental reporting of the top 50 companies listed on Bombay stock exchange and found that companies mention only sustainability initiatives in their reports. The disclosure of carbon emissions, energy consumption, and waste management initiatives remains limited. The study recommended the adoption of more robust reporting mechanisms to ensure that stakeholders are provided with transparent environmental information.

There is a need to adopt standardised environmental disclosures and aligning sustainability into business strategies in a country like India when it moves towards stringent environmental regulations and greater global environment consciousness.

The Company's Act of 2013 enhanced the Environmental Disclosure requirements in India for promoting transparency and accountability. There have been some discrepancies between the mandated disclosure and actual disclosure by the companies.

Tejawat, et al. (2020) assessed the extent of corporate governance disclosure practices among selected automobile companies listed in Bombay Stock exchange in the light of Companies Act 2013 and concluded that there is a significant variation in the extent of corporate governance disclosure among the companies studied. Some companies disclosed more comprehensive information while others show very little information indicating inconsistent adherence to the mandated norms. He also highlighted that company size, ownership structure and board composition are the main factors influencing disclosure practices.

Paul and Pal (2017) examined the extent and nature of Environmental disclosure among top 50 companies by conducting a content analysis of annual reports and sustainability reports of the top 50 BSE listed companies and assessed the presence and quality of Environmental Disclosure information. They concluded that the majority of the companies are involved in some form of Environmental disclosure but the depth and quality varied significantly. Qualitative environmental information was discussed and specific data on environmental performance was lacking in their reports. Those industries having higher environmental impact were disclosing more information but there was lack of consistency in their reports.

Kumar (2020) analysed the CSR reporting practices in India focusing on alignment with global and national goals. He found that many companies had initiated CSR reporting but there was no standardised format or reporting metrics adopted for disclosure. The GRI guidelines and National development goals were not followed while preparing environmental reports. He recommended the adoption of a more integrated approach to CSR reporting. This approach specifies that the disclosure should comply with legal requirements and contributes to societal and environmental objectives.

Deb (2021) conducted a study to identify the expectation gap between practitioners and investors regarding corporate reporting practices in India during the transition stage of convergence of IFRS. The major conclusions of the study were that the gap existed prior to the convergence with IFRS and is likely to persist even after convergence. The discrepancies between investor expectations and actual disclosure should be addressed. Modugu (2018) synthesised existing literature on corporate disclosure and identified the gaps for future empirical research. He concluded that there have been considerable differences among influencers of corporate disclosure between developed and developing economies. A unified theory that integrates all the existing theories should be evolved to accommodate the evolving reporting practices. Font et al. (2012) assessed the reliability of CSR disclosure mechanisms by testing the gap between CSR claims and actual practices. The actual operations are not reflected in the report and environmental performance is driven by

cost savings. Labour policies of the organisation comply with local regulation and socio-economic policies are inward looking. Both these policies do not consider environmental impacts. Large companies have more comprehensive policies but there will be greater gap in implementation while small companies focus mainly on environmental management and they disclose environmental information more promptly.

Jeffrey et al. (2013) examined the role of social norms of disclosure in financial reporting and CSR reporting. The major findings highlighted was that financial disclosures are regulated by accounting standards whereas CSR disclosures were voluntary and were shaped by existing societal norms. CSR reporting reflected the interest of the company and stakeholder interests were not considered. Although stakeholders exert pressure on companies, firms tend to selectively disclose information that aligns with their business goals. The study recommended that CSR reporting should be made mandatory and further developed to meet the diverse needs of stakeholders, ensuring meaningful disclosure.

A standardised approach to CSR reporting should be developed to bridge the gap between company intentions and stakeholder expectations. Singh and Singla (2022) evaluated the quality and quantity of disclosures in Management discussion and Analysis sections of Indian corporate reports and found that there was an increase in quantity of disclosures but the quality remains inconsistent. Many firms provided only general information instead of in-depth information that limited the use of disclosure.

Nanavati and Dave (2023) examined voluntary disclosure practices in the Fast-Moving Consumer Goods (FMCG) sector in India. They found a notable difference in the level of voluntary disclosure among FMCG companies. While many disclosed comprehensive information on financial performance and governance, the disclosure of Environmental, Social, and Governance (ESG) information varied widely. Some companies engaged in detailed disclosure, while others disclosed only product-related information. The study emphasized the need for standardization of voluntary disclosure to ensure consistency across the industry.

The detailed and intricate nature of disclosure mandates lead to partial compliance. It is common among companies which lack resources and expertise. Smaller firms do not have sufficient financial and human resources to meet comprehensive disclosure standards, thereby there will be low level of reporting. For aligning with the international disclosure practices, continuous adaptation is required which poses a challenge for companies attempting to meet both domestic and global expectations.

Proper training and adequate number of resources should be made available to smaller companies which help to have a better understanding and implementation of disclosure norms. The monitoring mechanisms should be strengthened to ensure strict adherence to disclosure requirements. There should be active interaction between regulators, companies and stakeholders thereby fostering a culture of transparency and continuous improvement in disclosure practices. There is a clear gap between regulatory disclosure norms and actual disclosure practices. The companies disclose only those information that align with business interest rather than full transparency. Mandatory Corporate Sustainability Reporting and ESG Reporting helps to bridge the gap in voluntary disclosure. There has been improvement in disclosure of risk management initiatives as a result of COVID19 pandemic. The qualitative aspects of disclosure should be concentrated to enhance the confidence of investors and decision making.

2.7 Environmental Reporting and Corporate Financial Performance

(Westminster University, 2016) examined the effect of sustainability reporting on the profitability of the firm among 95 publicly traded firms in the United States and regression analysis was used for further analysis. ROA, ROE and profit margin were the variables used for the study and highlighted that firms that published sustainability reports in the previous year experienced improved financial performance in the subsequent year. The study also pointed out that the implementation of sustainability reporting acts as a strategic tool for improving profitability of the firm and this result is applicable for those firms that lack strong institutional monitoring. Environmental reporting acts as a substitute for other mechanisms to enhance profitability in such firms.

Science Direct (2022) explored how ESG performance influences the profitability and value of the firm by applying panel data analysis across multiple industries for assessing the financial impact of ESG scores. The study pointed out that companies facing high environmental risks and with higher ESG scores exhibited greater profitability and firm value. Industries in the manufacturing and energy sectors fall under this category and the conclusion of the study was that firms investing in strong ESG performance achieve higher financial gains, thereby ensuring sustainability and increasing the value and profitability of the firm.

Some studies pointed out that the relationship between Environmental reporting and profitability depends on various factors. (Wiley Online Library, 2021) assessed whether sustainable business practices contribute to profitability across European firms. An industry wise analysis was done using financial and sustainability data obtained from publicly listed companies and found that sustainability practices played an important role in enhancing profitability of renewable energy and consumer goods industries. Sustainability practice had minimal or negative impact on profitability of extractive industries due to high compliance cost. The firms that have strong governance mechanisms and transparent environmental reporting experienced long term financial gains. The study concluded that the impact of sustainable business practices on profitability depends on the type of industry, regulatory environment and size of the firm. The firms that invest heavily in sustainable development have both short-term benefits and long-term benefits including improved reputation and competitive advantage.

ArXiv (2022) examined the association between Environmental Accounting and profitability among 150 Indian firms listed on BSE using financial and environmental disclosure data. Correlation techniques were adopted for the study. In the short run, there was no significant direct relationship between environmental accounting practices and profitability. Firms that allocated a substantial amount to sustainability initiatives incurred high operational costs, which had a negative impact on profitability. In chemical and mining industries, where strict environmental regulations exist, a stronger relationship between environmental accounting and financial stability was noticed. The

main findings highlighted in the study was that environmental accounting plays a vital role for regulatory compliance and risk management but may not help to improve profitability in the short run. In the long run, companies can enjoy the benefits of improved investor confidence and enhanced operational efficiency.

Virtus (2023) examined the impact of liquidity and profitability on ESG scores. Data were collected from firms in both developed and emerging markets. Regression models were developed to analyze the relationships and profitability showed a positive relationship with ESG scores, while liquidity had a negative influence on ESG scores. The study suggested that highly profitable firms will invest in sustainability initiatives while highly liquid firms prioritise short term financial gains over ESG commitments. The companies with a strong financial base use ESG reporting as a strategic tool for reputation management. Liquidity constraints prevent firms from focusing on ESG initiatives despite their potential long-term benefits.

Taylor and Francis (2023) examined whether firms with past environmental violations disclose more sustainability information. The analysis was conducted among small and medium sized enterprises that have committed environmental violations and there was no association between profitability and extent of Environmental disclosure. The firms that have violated environmental laws had a tendency to disclose more environmental information regardless of their financial performance. The main factor that may drive environmental reporting is regulatory and reputational concerns rather than profitability.

Financial performance cannot be considered as a factor that determines the level of environmental reporting. Zeng (2019) examined different styles of environmental disclosure and its effect on corporate profitability. Data from 676 firms in heavily polluting industries were analyzed. Two-stage least squares and weighted least squares methods were applied to control for endogeneity and heteroscedasticity. The substantive and symbolic disclosure positively impact profitability. Symbolic disclosure includes marketing driven environmental claims

and yields more short-term profitability whereas substantive disclosure includes actual performance based environmental efforts. Regulatory pressure enhances the financial benefit of substantive reporting. If the firms indulge in green washing, they will be facing the risk of reputational damage when they adopt symbolic disclosure. This type of disclosure can boost short term financial gain. The firm should balance them with substantive environmental efforts to avoid reputational risks.

Kanchanapoom and Narktabtim (2024) analysed the influence of ESG reporting on the profitability of Thailand publicly listed firms. Content analysis was conducted on ESG reports from 147 firms in Thailand from 2019-2021. ROA and ROE were taken as profitability indicators. The main findings of the study included the fact that the firms with strong ESG reporting have higher profitability. The effect is stronger in firms with strong governance practices. ESG investments attract investors and improve long term financial stability. The companies should be actively involved in ESG disclosures to enhance financial performance and investor confidence. Suryani et al. (2024) examined the influence of profitability and market value on carbon emission disclosures. Environmental performance is taken as a moderating factor. The study was conducted on Indonesian public companies over a four-year period (2018–2022). The variable representing profitability was ROA, and market value was measured using Tobin's Q. The study concluded that ROA has no significant effect on environmental disclosure. Tobin's Q has a strong association with carbon emission disclosure. Environmental performance helps to strengthen the relationship between market value and disclosure and the investors will consider carbon disclosure only when it is linked to strong environmental performance. The firms should integrate sustainability into business strategy so that market value of the company can be increased.

Fauzi and Idris (2018) pointed out the relationship between environmental disclosure, financial performance, environmental performance and firm value. Panel data regression analysis was conducted on Indonesian firms. There was a direct and indirect relation between financial performance and environmental disclosure. There was no influence of financial performance on environmental disclosure. The companies

disclose environmental information due to past sustainability efforts. Financial motives are not considered. Ahmed and Saeed (2017) examined the effect of sustainable marketing strategies on companies' profitability. They conducted a case study on green branding, eco labelling and CSR campaigns. Green branding improves sales and customers' trust. Eco labelling led to higher revenues by influencing purchasing behaviour. If the firm has strong sustainable marketing, long term profitability of the firm increases and drives consumer preference and profitability. Proper branding strategies should be adopted by the company for balancing financial and environmental objectives.

Table 2.2

Industry specific trends in Environmental reporting and Profitability

Type of industry	Findings	Impact of profitability	Factors influencing relationship
Manufacturing & heavy industry	Strong Environmental disclosures lead to an increase in the market value of the firm	Strong moderate	Regulatory pressure and perception of investors on environmental performance
Energy & Oil	High ESG scores result in an increase in profitability	Strong but volatile	ESG driven investments, green washing risks and compliance costs
Consumer goods & retail	Sustainable branding leads to more disclosure	High	Consumer preference, brand loyalty and market competition
Technology & Finance	Profitability depends on governance and transparency	Moderate	Regulatory compliance, investor expectations and long-term sustainability goals

Source: Compiled by researcher

The decision to engage in environmental reporting should consider long term strategic advantage mainly enhanced reputation, regulatory compliance and investor trust rather than immediate profitability gains. Environmental reporting has a positive impact on the profitability of the concern. Financial performance does not always lead to disclosure. Governance and regulatory factors will play a key role for sustainability reporting.

2.7.1 Financial Performance Parameters

2.7.1.1 Return on Capital Employed (ROCE)

ROCE is a performance measure to evaluate the profitability of an investment or a group of investments, analyse the return on a particular investment by comparing its cost and is a measure of overall profitability of a concern. ROI mainly relates net income to investments made by a concern and can be used as a measure of divisional profitability enabling to understand the utilization of assets for making profit. This will encourage managers to use the assets optimally. The assets will be acquired only if it gives return in consonance with organisational policy. The investments which enhance both divisional and organisational performance will be chosen.

Soetan et al. (2024) analysed the effects of components of corporate environmental reporting on the growth of ROCE among manufacturing firms in Nigeria. The data was collected for a 10-year period (2010 to 2019). Multiple regression analysis was employed in the study. The study concluded that there has been a significant positive influence of Environmental, financial and performance information on the growth of ROCE. In contrast to this, Environmental non-financial information did not show a significant impact. The study highlighted the fact that financial aspects of environmental reporting have a high degree of association with profitability and suggested that firms should integrate sustainability into their financial strategy. The financial aspects of environmental reporting should be emphasised to maximize ROCE.

Pawar and Munuswamy (2024) examined the effect of Environmental reporting on the financial performance of banks listed in National stock exchange Nifty Bank index for the period 2016-2021. On the basis of panel regression analysis, it was found that a significant negative relationship exists between Environmental reporting and ROE. It was concluded that Environmental reporting was associated with reduced profitability metrics in the banking sector. The impact of Environmental reporting varies across industries. In case of manufacturing firms, Environmental reporting is associated with increased profitability but the banks have to incur additional cost of compliance which in turn reduce the profitability. The

sustainability strategies should be tailored based on specific financial implications of each sector.

(Journal of Global Accounting, 2023) analysed the value relevance of Sustainability reporting in Nigerian manufacturing companies and found that sustainability reporting has a positive influence on ROI. The study concluded that investors consider transparency in environmental disclosure and comprehensive sustainability reporting should be adopted to enhance corporate value. The investors should assess the sustainability disclosures in the context of specific industries and markets. Environmental Reporting helps to increase the value of the firm in manufacturing and industrial sectors, but it may result in decrease in value in banking and other service-oriented industries. Those investors who prefer long term gain will invest in those companies adopting comprehensive Environmental Reporting.

2.7.1.2 Earning per Share (EPS)

The percentage of profit that is allocated to each outstanding share of common stock is called EPS and the profitability of the company is more if there is high EPS. A higher EPS indicates greater value because investors will pay more for such shares and can be used for comparison with other companies of the same industry or over a period of time. EPS helps to choose a suitable investment pattern for the company and also helps to analyse the financial progress of the company. Higher the EPS, greater is the profitability, so there is more possibility of getting a higher dividend.

Sarumpaet et al. (2017) conducted a study on 60 listed firms rated by Ministry of Environment of Indonesia between 2002 and 2012. The sample collected for the study was 246 and (Ohison, 1995) model was applied for the study. The environmental ratings were incorporated and the results concluded that there has been direct positive correlation between Environmental Performance and share prices, indicating that the investors consider the strong Environmental Performance of the company. In contrast inferior Environmental Performance was found to be value irrelevant in the market context. Investors can use Environmental performance metrics as a key indicator for evaluating a firm's long-term stability and profitability. Nugraha et al.

(2024) analysed 43 manufacturing companies listed in Indonesia stock exchange from 2017 to 2020 by employing single linear regression model using SPSS. The study highlighted that Environmental Accounting disclosure significantly influenced firm value. But Environmental performance did not exhibit a significant impact on firm value. The model explained 77.48 percent of variability in the firm value. The study suggested a substantial influence of Environmental accounting disclosure on firm value. The study was conducted for a five-year period from 2017 to 2021. The secondary data was collected from company websites and content analysis was done to score carbon information disclosed in sustainability reports. The study pointed out that carbon performance and Environmental performance were valued by investors, thereby market value of the company increases. The carbon disclosure and carbon reduction targets had no significant impact on market value. The study concluded that the investors mainly focused on environmental outcome rather than detailed disclosures. The impact of disclosure yields different results across industries. The polluting industries benefit significantly from improved environmental performance, at the same time firms in less pollution sensitive categories may not see a direct impact. The general environmental disclosure has a positive impact on firm value and profitability but a detailed and complex disclosure did not always yield financial benefits. Material and relevant disclosures should be promoted by the firm to instill confidence among investors and shareholders. Utomo et al. (2020) examined the effect of environmental performance on firm value. Environmental disclosure was considered as a moderating variable. The non-financial companies in the Indonesian stock exchange that participated in the Environmental performance assessment program were selected for the study. The SEM and partial least square were employed in the study. Environmental performance has a positive influence on firm value.

The investors should differentiate between firms engaging in genuine sustainability efforts and those practising green washing. Financial institutions should incorporate ESG factors into risk assessment models. The firms with weak Environmental reporting have to face regulatory fines, reputational damage and operational inefficiencies. The regulators should strengthen governance mechanisms

to ensure transparency and accountability in reporting. The mandatory sustainability reporting guidelines should be developed to ensure comparability and consistency in reporting.

2.7.1.3 Return on Assets

Return on Assets (ROA) indicates the amount of profit a firm generates from its assets and measures the efficiency of a company's management in utilizing economic resources to earn profits. Investors use ROA to identify potential stock opportunities. An increase in ROA suggests that the company is performing well by generating higher profits for each dollar invested in assets and decrease in ROA indicates that the company has made over investment in assets that have failed to produce revenue. It can be used to analyse the performance of the company in different time period. ROA plays an important role that affects the interaction of disclosure by the company to the value of the firm positively. The earnings generated from invested capital can be found out by applying ROA.

Aiyesan (2023) investigated the influence of Sustainability Reporting on the financial performance of listed manufacturing firms in Nigeria. The data was collected for the period from 2010 to 2020. The panel regression technique was employed in the study. The Sustainability reporting metrics adopted in the study include community relations, research and development and employee relations. The study pointed out that sustainability reporting metrics has a significant effect on ROA. He suggested that active environmental reporting enhances the financial outcomes in the Nigerian manufacturing sector. The firm should invest in CSR and environmental sustainability to gain competitive advantage, attract investors and to enhance long term financial performance.

Sohag et al. (2024) conducted an analysis on 270 firms in Bangladesh from the textile sector and the study employed a regression model to assess the impact of sustainability reporting on ROA. There has been a significant positive correlation between environmental sustainability reporting and ROA. But at the same time, social sustainability reporting did not exhibit a significant impact. Environmental

reporting can be considered as a major factor of financial performance. The environmental initiatives enhance operational efficiency and market recognition. The firms that integrate sustainability practices in their business processes and disclose environmental performance have better financial outcomes. This fact is true especially in emerging economies. The sustainability initiatives should be considered as long term investment rather than merely a compliance burden.

Nazim et al. (2024) conducted a study on textile industry in Bangladesh and examined 43 listed textile companies. The companies were divided into two categories: those adopting green technology and those not adopting green technology. The findings of the study revealed that companies implementing green technology demonstrated a higher ROA and, consequently, enhanced profitability. This encouraged firms to integrate environmentally friendly technologies. Companies are advised to incorporate eco-friendly innovations into their business processes to improve operational efficiency and profitability. Policymakers should promote the adoption of sustainable practices by introducing various incentives such as tax benefits, subsidies, or grants.

2.7.1.4 Leverage

The relationship between total debt and total assets is referred to as leverage. Total debt comprises both short-term and long-term liabilities. When a company finances the acquisition of assets through debt, assuming that the income generated from the new assets will offset the borrowings, it is termed financial leverage. There is generally a negative relationship between leverage and profitability, as leverage involves direct costs that reduce overall profitability. In low-profitability scenarios, excessive debt may further weaken a firm's financial position.

Kipngetich et al. (2019) conducted a study on firms listed on the Nairobi Securities exchange in Kenya. Data from 27 firms, spanning the period from 2008 to 2017, were analyzed and the results indicated a negative influence of leverage on environmental disclosure (Beta = 0.16, P less than 0.05). High levels of debt are associated with reduced environmental disclosures. The study concluded that firms

heavily dependent on debt financing may limit voluntary disclosures due to concerns about revealing sensitive environmental information that could negatively influence creditors' perceptions.

Mose and Buigut (2020) investigated non-financial Fortune 500 firms over the period from 2007 to 2022. The study employed the Generalized Method of Moments (GMM) estimation technique and the findings revealed an inverse relationship between ESG disclosure scores and leverage ratios, indicating that firms with higher ESG disclosures tend to have lower levels of leverage. This suggests that strong ESG disclosures encourage greater reliance on equity financing while reducing dependence on debt. Among the three ESG components, environmental and social factors were found to have a greater influence on leverage than governance factors. Firm size was included as a moderating variable, with larger firms exhibiting a stronger association between ESG disclosure and leverage.

These findings align with both stakeholder theory and pecking order theory. Firms that prioritize stakeholder interests tend to be more conscious of their environmental responsibilities and are likely to adopt lower leverage in order to maintain credibility and financial flexibility. According to pecking order theory, firms prefer internal financing over external debt. Consequently, firms with strong ESG practices are more likely to generate funds internally and rely less on debt financing, leading to a reduction in leverage.

Al-Radaydeh, et al. (2021) assessed the influence of CSR on Leverage and performance. They analyzed 187 companies listed on the Oman Stock Exchange over the period from 2014 to 2017 and the results indicated that social responsibility activities directed towards society had a significant effect on financial leverage, while environmental activities did not exhibit a notable impact. Furthermore, neither social nor environmental responsibilities showed a significant influence on corporate performance. The study found a positive association between social and environmental responsibility and financial leverage, and a negative association between financial leverage and corporate performance.

Adnan et al. (2023) conducted a study on the role of leverage on environmental disclosure in Malaysian SME sector. The research investigated 116 Malaysian Small and Medium Enterprise sector included in the Department of Environment between 2014 and 2019. The study explored the relationship between leverage and Environmental disclosure. If there is proper interaction between environmental crimes and leverage, the company has higher levels of disclosure.

Maintaining a balanced capital structure while enhancing environmental disclosure contributes to improved stakeholder trust and facilitates better financing opportunities. Evaluating a firm's environmental reporting in conjunction with its leverage provides valuable insights into its risk profile and long-term sustainability. This integrated assessment aids policymakers in accurately evaluating risks and making informed decisions within financial markets. The capital structure of a firm plays a critical role in assessing its commitment to environmental transparency

2.7.1.5 Debt Equity Ratio

Indebtedness refers to the amount of debt a firm owes to external parties. Higher levels of debt increase the influence of creditors over the firm's operations. When extending credit, creditors often impose certain restrictions and covenants. To instill confidence in creditors, firms with high levels of indebtedness typically adopt greater transparency in their disclosures. Consequently, managers of highly indebted firms tend to voluntarily disclose more environmental information to meet creditor expectations and maintain trust. Creditors are providers of loan capital and they are powerful stakeholders who have direct influence on a firm's activities. If the company has increased debt finance in its capital structure, the degree to which company responds to creditors expectations will also be more. If there is a high level of indebtedness in the company, there is greater need to reduce information asymmetry. In respect of risks relating to climate, the demand of creditors for transparency will be more. There is a positive relationship between indebtedness and disclosure.

Singhanian and Chadha (2024) conducted a meta-analysis covering 24482 firms for the period 1999-2022. There is a positive and significant impact of debt equity

ratio on sustainability reporting. The firms with higher debt equity ratio tend to disclose more environmental information in order to enhance transparency and mitigate financing risks. The country level GDP, financial development, quality of governance and cultural influence act as moderating variables. In countries, where governance systems are strong, higher debt equity ratios are likely to engage in higher levels of sustainability reporting. In developing economies, the regulatory enforcement is limited and investor demand is lower which results in weaker relationships. The companies that have high debt equity ratio use environmental disclosure as a strategic tool to maintain investor confidence and reduce financial constraints.

Chang et al. (2024) analysed 172 manufacturing firms from 2001 to 2022 in developing economies and found that high debt equity ratio tends to have lower levels of disclosure. The main reason behind this is that those firms having higher debt equity ratio focused on meeting short term obligations rather than environmental investments. They are likely to engage in voluntary environmental disclosure since they have fewer constraints and they need to appeal to investors. Industries in the energy sector exhibited the strongest negative relationship between the debt-to-equity ratio and green accounting disclosure. In contrast, firms in the service sector displayed a weaker negative effect, as they face lower capital investment pressures. To promote sustainable investment, the government should prioritize equity financing. Additionally, regulations should be introduced for mandatory environmental disclosure for firms with high debt-to-equity ratios.

Xu and Jamal (2024) conducted a systematic literature review covering a ten-year period from 2014 to 2024, focusing on the relationship between environmental disclosure and financial constraints. The study found that firms with a lower debt-to-equity ratio tend to exhibit higher levels of environmental disclosure. In contrast, firms with a high debt-to-equity ratio face greater financial constraints, which limit their ability to invest in sustainability initiatives. If environmental transparency is better, the firms will receive favourable credit ratings and improve their access to financing. Banks and investors consider the environmental risk for evaluating

financial decisions. The strong environmental disclosure helps to reduce borrowing cost and gain access to more funding opportunities. The firms that want to reduce financing constraints should try to improve environmental disclosure practices. Proper regulations should be made for an integrated reporting framework to support investment decisions.

The firms having high debt equity ratio will try to reduce environmental disclosure due to financial constraints. In contrast the firms with more equity in their capital structure, will disclose more environmental information to attract investors. In developed countries, environmental disclosure is adopted by the firm to improve investor confidence whereas in developing economies, weak enforcement of law limits the impact of indebtedness on environmental reporting. The relationship between debt equity ratio and environmental disclosure depends on several factors like financial constraints, industry dynamics and regulatory environments. The policymakers, investors and businesses should consider these factors while making financial and regulatory decisions.

2.7.1.6 Current Ratio

The most common ratio for analysing the short-term financial position of an organisation is current ratio. The ratio is a measure of margin of safety or cushion available to creditors. A high current ratio indicates that the firm is liquid and it has the ability to pay off its current obligations as and when they become due. But if this ratio is extremely high, too much money will be blocked in current assets and implies that funds are not properly used in the business. At the same time, a very low current ratio indicates that liquidity position is not good and the firm faces difficulty to pay off its debts.

Kilic and Uyer (2023) analysed companies listed on Borsa Istanbul and concluded that Environmental reporting positively influences financial performance metrics especially current ratio. It is an indicator of liquidity which in turn has a significant positive impact on ROA and Tobin's Q. The companies engaging in sustainability reporting experience improved financial health. (Maurya & Tiwari,

2022) in their study highlighted that environmental accounting has positive correlation with profitability thereby enhancing overall financial stability which has potential impact on liquidity measures.

2.7.1.7 Quick Ratio

Quick ratio shows the relationship between quick assets and current liabilities. It is a measure of instant debt paying capacity of the firm. The standard quick ratio is 1:1. A ratio more than 1:1 indicates that financial position is good and quick assets are sufficient to meet current liabilities. If the ratio is less than 1:1, the financial position is unsound.

Spence (1973) pointed out that the firms with strong environmental disclosures signal stability and long-term orientation to investors. The quick ratio reflects the capacity of the firm to invest in non-mandatory reporting including environmental disclosures. Clarkson et al. (2008) opined that the firms with higher quality disclosure tend to be larger, more profitable and financially sound indicating strong liquidity positions. Aisaifi et al. (2020) in their study pointed out that firms with high quick ratio are likely to disclose more environmental data because such firms can afford the additional costs associated with sustainability reporting. Michelon & Parbonetti (2012) showed that the environmental disclosure is indirectly influenced by quick ratio by affecting managerial discretion and stakeholder pressure. (Elijido Ten E, 2007) collected data from Australian companies and reported that while profitability was correlated with environmental disclosure, quick ratio was not significantly correlated.

2.7.2 Environmental Reporting Parameters

Environmental reporting parameters are the specific indicators used by organisations to disclose their environmental performance enabling the stakeholders to assess the ability of the company to manage their environmental responsibilities. The reporting parameters can be either quantitative or qualitative and they provide the basis for transparency, comparability and accountability in environmental reporting. These provide a comprehensive picture of ESG performance. The main

focus of environmental dimension is to know the impact of organisational activities on natural environment. The environmental reporting parameters is a yardstick to measure the direct and indirect impact of operations on the environment. They also monitor progress towards environmental goals and targets and present them in the form of reports to investors, regulators, customers and community.

2.7.2.1 Energy Intensity

The energy intensity measures the total energy consumed by a company to produce one unit of output. By calculating energy intensity, it is possible to understand how energy efficient an organisation is in performing its operations. The ratio can be obtained by dividing total energy consumption of a particular period by number of vehicles /other components manufactured by a company during that particular period. The ratio is usually expressed in Kilo watt hours. The interpretation of energy intensity is presented in the following table.

Table 2.3

Interpretation of energy intensity

Energy intensity	Interpretation
Low energy intensity	Energy efficiency and cost savings is high
High energy intensity	There is inefficiencies and outdated technologies
Trend calculated over a period	Improvement in sustainability operations

Source: Compiled by researcher

Clarkson et al. (2011) found that those firms having higher environmental disclosure practices have lower energy intensity because of improved internal management and performance monitoring systems. The disclosure acts as self-regulating mechanism that enables companies to identify inefficiencies and adopt cleaner technologies. They implement energy saving measures for improving their environmental performance. Quiu et al. (2016) concluded that those companies that publish energy specific disclosures will adopt energy efficient technologies. The companies disclosing sustainability information in accordance with GRI standards had reduced energy intensity. The reporting increase awareness among managers resulting in optimum usage of energy in their operations.

Rashid (2018) conducted a study in south Asian manufacturing firms and found a negative correlation with energy intensity. The firms that reported environmental information had 10-15 percent energy consumption per unit of output compared to non-reporting firms. The proper disclosure was considered as a mechanism for compliance with energy efficient standards. Liesen et al., (2015) pointed out that mandatory disclosure requirements led to significant drop in energy intensity across listed firms and that prompted firms to invest in monitoring systems thereby enabling better Environmental Disclosure.

2.7.2.2 Emission Intensity

Emission intensity is a crucial environmental reporting parameter which helps to measure the environmental performance of a company. Emission intensity refers to the amount of GHG emissions produced per unit of output. The emission intensity is calculated by dividing total emissions by number of units manufactured. There are mainly three types of emissions namely direct emissions from owned sources, indirect emissions from purchased electricity and indirect emissions from value chain. The interpretation of emission intensity is presented in the following table.

Table 2.4

Interpretation of emission intensity

Emission intensity	Interpretation
Low	The company is efficient and environmentally friendly
High	There is potential for improvement and pollution level is very high
Declining over time	Sustainability initiatives to be improved

Source: Compiled by researcher

Clarkson (2008) reported that high quality environmental disclosure results in lower emission intensity and voluntary reporting frameworks create internal and external pressures to measure, manage and reduce emissions. Disclosure is more credible when firms provide quantitative data on emissions. Stanny and Ely (2008) opined that companies with high GHD emissions are involved in less voluntary disclosure. They show gradual improvement in emission intensity over time due to public accountability. Matisoff et al. (2013) highlighted that the companies

participating in carbon disclosure project show reduced emission intensity. Kuo& Chen (2013) concluded that the proper disclosure of environmental reporting practices results in lower GHG emissions per unit of revenue. Emission intensity is low in those countries where regulatory and investor pressure encourage carbon disclosure.

Rankin et al. (2011) pointed out that disclosure of emissions result in setting of greenhouse gas reduction targets. The firms demonstrate improved emission intensity ratios. Lieson et al. (2015) opined that environmental reporting led to significant decline in emission intensity over time.

2.7.2.3 Water Intensity

The water intensity measures the amount of water used per unit of output. This is an indicator of efficiency of the company in using the available water resources and is a key indicator of sustainability in water stressed environment. The water intensity can be calculated by dividing total kilo litres of water consumed by total output. The interpretation of water intensity is presented in the following table.

Table 2.5

Interpretation of water intensity

Water intensity	Interpretation
Low	Water efficient operations in the company
High	Inefficiencies in the operations of the company
Declining trend	Improvement is required in the use of efficiency

Source: Compiled by researcher

Lieson et al. (2015) pointed out that the firms facing increasing pressure from stakeholders provide more transparent reporting of water use. The water intensity will be lower in respect of those industries in mining and manufacturing sector that disclose environmental information. The stakeholder engagement motivates the firms to invest in water efficiency technologies. V&an Zyl (2013) pointed out that the firms operating in water scarce regions that disclose water intensity metrics will have improved water efficiency. Reporting helps to increase accountability and proper management of water risk.

(GRI, 2018) standard include provisions for disclosure of total water withdrawal, discharge, recycling and intensity. Companies aligned with GRI standards show better monitoring and control over water use, and water intensity will be less. (Carbon disclosure project water program, 2020) emphasised that median water intensity reduction of 15-20 % is achieved over 5 years. Disclosure helps companies to set measurable water related targets such as intensity per product unit.

2.7.2.4 Waste Intensity

Waste intensity measures the amount of waste generated per unit of output. This is an important measure to assess how efficiently a company manages its material usage and waste production. The waste intensity can be calculated by dividing total waste generated by total number of units manufactured. This is expressed in kilograms. The interpretation of waste intensity is presented in the following table.

Table 2.6

Interpretation of waste intensity

Waste Intensity	Interpretation
Low	Efficient usage of material and good waste management
High	Inefficiencies or excessive production waste
Improving trend	Positive sustainability efforts

Source: Compiled by researcher

Clarkson et al. (2008) pointed out that firms with strong environmental reporting practices report lower waste intensity and waste minimization technologies will be disclosed. The companies that voluntarily disclose waste data adopt ISO 14001 or other EMS. (Gray et al, 2001) opined that waste intensity is included in environmental reporting due to regulatory expectations and stakeholder pressure. If waste intensity metrics is disclosed by the company, total waste per unit of output is reduced.

(GRI standards, 2020) disclosed waste generated, diverted, disposed and waste intensity. Laine (2009) pointed out that detailed disclosure of waste management

performance result in reduction in waste intensity. It enables the firms to shift towards resource efficient production processes.

2.7.2.5 Environmental Reporting Completeness Ratio

This is a quantitative reporting parameter which is used to measure the extent to which a company discloses environmental information relative to established reporting standards namely GRI guidelines. Environmental reporting completeness ratio can be obtained by dividing number of environmental items disclosed with total number of items reported as per GRI guidelines. The interpretation of this ratio is presented in the following table.

Table 2.7

Interpretation of Environmental reporting completeness ratio

Range	Interpretation
0.9 to 1.0	Full or almost full reporting
0.70 to 0.89	Moderate level of reporting
0.50 to 0.69	Partial compliance with reporting standards
0.5 or below 0.5	Incomplete or poor reporting

Source: Compiled by researcher

Michelon et al. (2015) found that completeness is one of the core dimensions of environmental reporting quality. The firms which have high completeness scores have stronger EMS and lower environmental impacts. Stakeholders particularly institutional investors consider complete reports as more credible. Cheng et al (2014) pointed out that companies having high environmental reporting completeness ratio have better stakeholder engagement and long term ESG performance. GRI studies consistently shown that organisations with high environmental reporting completeness ratio are aligned with international best practices. Industries like chemicals and mining have average completeness ratio due to materiality and regulatory scrutiny. Reddy and Gordon (2010) concluded that overall environmental reporting completeness was low in Indian companies particularly in those sectors where environmental regulation is low. The companies listed on the BSE showed high completeness ratios when adopting voluntary frameworks like GRI or ISO 14001.

2.8 Environmental Reporting and Corporate Environmental Performance

There has been a significant relationship between Environmental Disclosure and Corporate Environmental Performance. Some of the studies indicated a positive relation between comprehensive Environmental reporting and Environmental performance. If there is comprehensive Environmental reporting, there will be continuous improvement in environmental performance.

Clarkson et al. (2008) conducted a study on 100 multinational firms and found a strong positive correlation between high quality Environmental disclosure and lower emissions, thereby improving environmental performance. The main factor that serves as a mechanism for continuous improvement in environmental performance is transparency.

Some of the studies reported that although environmental information is reported, there will be no tangible improvement in their environmental impact. This fact is particularly noticed in high pollution propensity industries. Marquis and Qian (2014) conducted a study among Chinese firms and pointed out that sustainability reports of the firms were lengthy but at the same time there was no reduction in emissions and concluded that there has been no improvement in environmental performance. He also pointed out that reporting was symbolic rather than comprehensive. The effectiveness of Environmental reporting is greatly influenced by proper enforcement of regulations and scrutiny by stakeholders. The study was conducted in environmentally sensitive industries where they were indulged in the practice of disclosing exaggerated environmental information.

There is a positive financial impact for firms that align strong Environmental performance with high quality reporting. Busch et al. (2018) analysed their study using meta-analysis and found that companies with higher environmental performance and transparent reporting gain investor confidence and financial stability. The environmental performance of a company is considered a crucial factor by investors before making a decision to invest in that particular company. Hahn and Kühnen (2013) noted that the absence of universal standards of reporting pose a

difficulty to compare between firms and industries, thereby it is not possible to establish a clear relationship between Environmental performance and Environmental reporting. The credibility of Environmental reporting can be enhanced by application of standardised metrics such as GRI Guidelines.

Cormier and Magnan (2015); Fekrat et al. (1996); Freedman and Jaggi (1982); Ingram and Frazier (1980); Sutantoputra et al, (2012); Wiseman (1982) were of the opinion that there was no association between disclosure and environmental performance. According to (Al-Tuwaijri et al, 2004; Clarkson et al, 2008; Connors & Gao, 2011; Dhaliwal et al., 2011; Iqbal et al, 2013; Hassan & Kouhi, 2014), there has been a positive relation between environmental disclosure and environmental performance. Bewley and Li (2000); Cho and Patten, (2007); Cho et al. (2012); Clarkson et al. (2011); Hugues et al. (2001); Li et al. (1997); Ling (2007); Patten (2002) opined that environmental disclosure and environmental performance are negatively related. There has been a U-shaped relation between disclosure and performance (Dawkins & Fraas, 2011; Meng et al., 2014). Ingram and Frazier, (1980) opined that if there is no external monitoring system, the firm will disclose less environmental information. It is purely up to the discretion of manager regarding what all information to be disclosed. There is a tendency on poor performing firms to disclose only positive information so as to give a clean image among the public that they are good performers. (Wiseman, 1982) showed that environmental disclosure is not related to environmental performance. A sample of fifty companies from environmentally sensitive industries was taken, and no significant relationship was found between the two variables (Freedman & Wasley, 1990).

Michelon et al. (2015) pointed out that there are chances of manipulations in self-reported data, thereby the reliability of Environmental disclosure is reduced. Some firms inflate sustainability achievements and conceal those information having negative environmental impact. The information published by the company should be verified by an independent third-party auditor. Kolk (2008) was of the opinion that variations in environmental regulations across countries lead to differences in the level of reporting and performance and concluded that the firms operating in

countries where environmental laws are stringent, report more comprehensive and detailed environmental reporting and showed improved Environmental performance. Strong government policies are important in linking Environmental reporting with Environmental performance. Hahn and Kühnen (2013) reviewed sustainability reporting framework and their relationship with Environmental auditing. Companies with external audits produce more comprehensive environmental reporting. The firms in industries with high regulation are more likely to adopt external audits. Some of the disclosures were inconsistent due to lack of standardised audit methodologies. The main conclusion of the study was that regulatory enforcement and independent audits improve the quality of environmental disclosure.

Michelon et al. (2015) examined the influence of third-party environmental audit on corporate sustainability reporting and concluded that if the environmental accounts are audited, there is less chance of exaggerating environmental claims. The audit of the accounts also helps to improve investor trust and reduce financial risk associated with non-compliance. Companies in environmentally sensitive industries, mainly those industries in the mining and energy sector are more likely to conduct audits. The main implication of the study was that environmental audits reduce greenwashing in corporate reporting. Kolk, (2008) analysed the trends of environmental auditing in multinational corporations and concluded that companies which are exposed to higher compliance risk are more likely to conduct external audits. The audit helped to identify operational inefficiencies thereby cost savings. The government policies play a crucial role in the conduct of proper environmental audits. Busch & Lewandowski (2018) investigated how audited sustainability reports affect investor decision making and concluded that the firms that enjoy high investor trust had audited their environmental accounts with external auditors. Those companies that disclosed environmental information without audit faced reluctance on part of investors to invest in the company. The firms with regular audits received more ESG investments thereby enhancing financial and reputational benefits.

Marquis and Qian (2014) overviewed the Environmental Disclosure in Chinese firms and focused on misrepresentation issues. Although firms produce long

Environmental reports, the actions taken by the company on the reduction of emissions were missing in the report. The firms with external audits were less likely to exaggerate or misrepresent their sustainability efforts. The state-owned enterprises were less transparent as compared to private firms. Environmental audit is essential to prevent misleading Environmental Disclosure. (Deegan C, 2019) examined the usage of environmental audit and environmental reporting for maintaining legitimacy with stakeholders and concluded that firms with poor environmental records are involved in extensive reporting but lack independent audit of accounts. Those companies adopting Environmental auditing and reporting enjoyed more credibility. The stakeholders trust the firms with audited reports over self-reported disclosures. The study recommended that mandatory third-party audit should be a regulatory requirement. Hassan and Guo (2017) assessed whether European companies issue standalone environmental reports to gain legitimacy with stakeholders and its correlation with environmental performance. The SEM was employed for analysing data from carbon intensive and non-carbon intensive industries. The study pointed out that those companies that published standalone environmental reports provide more environmental information. The firms in carbon intensive industries use standalone reports to project their environmental image. The study also suggested that the format of Environmental reporting can be used to influence stakeholder perceptions though there may be no corresponding improvement in environmental performance.

Pucheta-Martínez et al. (2020) examined whether the firms with stakeholder engagement policies disclosed more environmental information and the role of firm performance in strengthening this relationship. The main finding of the study was that the companies with active stakeholder engagement policies tend to provide more comprehensive environmental disclosure. The profitable firms feel less pressure to disclose environmental information. The main implication of the study was that engaging stakeholders lead to better environmental reporting but financial success reduces the need for transparency in environmental matters. Ifada and Saleh (2022) examined the influence of environmental performance on Environmental disclosure and determined whether environmental cost disclosures moderate the relationship

using regression analysis and found a positive relationship between Environmental performance and Environmental disclosure. The companies with better environmental performance disclose more environmental information. When the firms disclose environmental expenditure, the extent of Environmental reporting will decrease. The study concluded that better environmental performance encourages transparency, while the disclosure of environmental costs compel companies to limit the breadth of their environmental disclosure.

Deswanto (2018) investigated the direct and indirect relationship of environmental disclosure with financial disclosure, environmental performance and firm value. The data were collected from companies listed on the Indonesia stock exchange. The companies were selected based on their participation in environmental performance rating programs between 2012 and 2014 and concluded that previous environmental performance positively affects current environmental disclosure, suggesting that firms with a track record of good environmental practices are more transparent. The environmental reporting does not have a significant impact on environmental performance and firm value.

The relationship between environmental reporting and environmental performance is determined by multiple factors. Strong environmental disclosure is associated with improved performance but challenges such as green washing and data manipulation will weaken the relationship. The environmental performance can be improved by proper regulation and independent audit. The environmental audit and environmental reporting are complementary that enhance corporate accountability and transparency. Audit ensures compliance while reporting acts as a communication tool for stakeholders. The challenges such as standardisation gap, green washing risk and cost constraints must be addressed to improve the effectiveness of environmental reporting and environmental audit. The strengthening of regulatory framework and promoting independent third-party audit improve the credibility of environmental disclosure thereby benefiting businesses, investors and society. The firms with third party assurance are more transparent in their disclosures. Investors always prefer environmental reports backed by independent

verification by auditors. The firms in a strict regulatory environment conduct more external audits.

2.9 Challenges and Prospects of Environmental Reporting

Environmental Reporting is an essential aspect of CSR where the information regarding environmental impact and sustainability initiatives of the company are disclosed. Despite its significance, Environmental reporting faces several challenges. One of the major challenges in Environmental Reporting is the lack of uniform regulations across different jurisdictions.

According to (KPMG, 2020), various countries adopt diverse Environmental disclosure regulations that may lead to inconsistencies in reporting standards. Adams and McNicholas (2007) highlighted that some firms operate in multiple regulatory environments so that it is difficult to comply with varying requirements and the comparability and credibility of information will be affected due to the absence of a global framework. (De Villiers and Marques, 2016) pointed out that there is no single mandatory standard of environmental reporting that ensures transparency and consistency. Although initiatives like GRI and SASB provide guidelines, they are not consistent. Cho et al. (2012) reported that due to lack of consistency in standards, difficulties will be faced for evaluating corporate environmental performance of the company. This leads to selective disclosure of information where only positive information will be disclosed by the company and negative impacts will be omitted.

Lyon et al. (2011) opined that the main challenge faced for the adoption of Environmental reporting is due to unwanted fear of reputational risk and financial implications followed by greenwashing, where the environmental reports submitted by the company are exaggerated or misrepresented. Mahoney et al. (2013) reported that the companies are engaged in symbolic reporting rather than comprehensive reporting. The companies enhance their public image without making improvements in sustainability initiatives. Hahn and Kühnen (2013) highlighted that environmental data reported by the company are inaccurate and unreliable and data collection methods are not uniform and some companies lack technical expertise to measure

key environmental indicators accurately. Michelon et al. (2015) pointed out the fact that voluntary reporting leads to selective disclosure thereby data integrity cannot be maintained. So, it becomes necessary to ensure third party verification to enhance the credibility of disclosed information. Wilmshurst and Frost (2000) pointed out that small and medium sized firms with limited resources struggle to implement comprehensive reporting due to high cost of data collection and sustainability audit.

Siregar and Soelton (2023) conducted study in Siks Tofu and Fermented Soybean Cake Cooperative in Balikpapan city and revealed significant obstacles in adopting Environmental accounting practices within MSMEs. The main obstacles pointed out in the study was that craftsmen were not ready to maintain detailed environmental records. Meanwhile, there was no proper system of documentation of environmental cost and the classification was done as per existing accounting framework. They emphasized the need for collaboration between craftsmen and administrators for developing a system for proper recording of environmental costs, thereby enhancing both economic and environmental outcomes. Adegbite and Egbunike (2022) conducted his study in Nigeria and examined the ethical challenges associated with Environmental reporting including breach of confidentiality while sharing environmental information thereby resulting in unauthorized sharing of sensitive environmental information. The qualifications of persons related to environmental management were overstated and mistakes were committed intentionally in environmental data and were not properly disclosed. The environmental information was exploited for financial gain and tax evasion related to environmental activities was common. There was a lack of openness in Environmental reporting and decision making and the information reported was false and deceptive. There is need for addressing these challenges for improving the reliability and credibility of Environmental accounting.

Al-Salmi and Hamdan (2024) focused on challenges related to disclosing environmental accounting performance and highlighted the need for improving the clarity of Environmental disclosure and developing uniform guidelines for Environmental reporting. (Pandey & Chattopadhyay, 2021) explored the environmental

disclosure practices of ACC cement in India and identified challenges related to regulatory compliance, stakeholder pressure and resource allocation. The expectations and demands from various stakeholders regarding environmental performance should be properly managed and there should be proper balancing of financial and human resources dedicated to environmental initiatives. Hasan and Hossain (2023) examined the current state of Environmental accounting practices in Bangladesh and highlighted several challenges including the unawareness of the benefits and importance of Environmental accounting by the organizations. The absence of stringent regulations led to inconsistent practices across industries. Limited financial and human resources pose a hindrance for the effective implementation of comprehensive Environmental accounting systems.

Alrazi and Mathews (2022) highlighted various obstacles that hinder the effectiveness of Environmental Accounting and Reporting including data reliability, standardisation issues and corporate resistance. The inconsistent data collection methods lead to inaccuracy of Environmental reporting and the lack of universal standards led to incomparable and unreliable reports. Small organisations resist the adoption of Environmental Accounting due to perceived costs and complexities. Islam and Rahman (2021) identified specific challenges faced by manufacturing companies in Bangladesh. Among them the main constraint was the huge initial investment required for the implementation of the Environmental Accounting system. There is a shortage of trained professionals in Environmental accounting practices and the lack of standardised guidelines led to inconsistent practices.

Kaspersen and Brink (2020) discussed the challenges in Environmental accounting namely insufficient cost accounting techniques and loss in expenditure. There is no proper method of accounting environmental costs that may lead to misrepresentation in financial reports. Poor accounting practices results in unrecognised environmental expenditure. Rodrigues and Martins (2024) pointed out accounting challenges faced by organisation when planning sustainable carbon neutrality. There was no proper method for measuring emissions and difficulties

were faced for aligning new environmental accounting practices with existing financial goals.

The harmonisation of Global reporting standards is required to overcome the challenges. There should be a proper mechanism for verifying Environmental Disclosure and an integrated reporting framework should be developed. Proper Coordination of efforts among regulatory bodies, industry professionals and other stakeholders is essential to develop standardized framework, enhance transparency and promote ethical practices in Environmental Accounting and reporting.

Big data and Internet provide opportunities for monitoring environmental consequences and thus tracking carbon footprint and water usage. The regulatory frameworks create a more consistent and reliable system of environmental accounting (KPMG, 2020). Environmental Accounting is a tool for demonstrating CSR, improving brand image and gaining competitive advantage. The accuracy of Environmental reporting data can be improved by latest technologies.

Internet sensors track environmental impacts and block chain ensure transparency and traceability of environmental data and these technologies reduce the cost of environmental accounting and make the reporting more reliable and consistent. The integration of environmental accounting with financial accounting enables to align environmental goals with financial outcomes and thus sustainability becomes an incredible part of business strategy (Adams & Simnett, 2011).

The main advantages of environmental reporting include measurement of environmental impact, impressing the firm's stakeholders, making the business attractive to suppliers, attracting new customers and new employees. Environmental disclosure helps to increase the awareness of stakeholders towards environment protection. Proper disclosure of information helps to increase the performance and reputation of the companies. Investors and consumers also request companies to disclose environmental information (Spasic & Stojanovic, 2013).

The organisations disclosing more environmental information has improved environmental performance that results in improvement of stakeholder's satisfaction,

improve firm value and reduce cost of capital. Those organisations are less prone to the risk of bankruptcy (Lin & Dong, 2018). There will be increased commitment of organisations for reducing the financing cost of equity (Yeh et al., 2019) and had lower capital restrictions.

Oikonomou et al. (2014); Salvi et al. (2018) opined that environmental reporting can reduce the cost of equity capital. According to (Jha & Cox, 2015), cost of debt capital can also be reduced as a result of environmental accounting and reporting. Credit dissemination will decrease as a result of improved environmental performance (Ghoul et al., 2011). The presentation of environmental accounting information positively impacts the financial performance of organisations in the present and in future too (Nguyen & Tran, 2019).

The financial risk of an organisation can also be minimized as a result of disclosure. Environmental accounting acts as a significant tool for communication relating to environmental activities of a firm and helps to fulfil the organisation's accountability in regard to environmental burden. The reporting of environmental activities is very much crucial for organisations to be sustainable and responsible towards society. The proper disclosure also makes them aware of how their actions affect the environment and how much it costs by considering environmental issues in their financial reports and decisions.

Dhaliwal et al. (2011) demonstrated that there will be reduction in cost of equity capital for those firms that disclose environmental information. There is a significant positive relationship between environmental disclosure and firm market value by attracting environmental conscious investors (Clarkson et al., 2013). The environmental reporting increase trust and confidence among stakeholders namely customers, employees, investors and the community (Bebbington et al., 2008). There will be improvement in public image and competitive positioning of a firm as a result of environmental disclosure (Michelon, 2011). By voluntary disclosure, firms can align with evolving regulations and helps to mitigate compliance risks.

Tracking and reporting of environmental information led to better management of resources, operational efficiencies and cost savings (Porter & van Der Linde, 1995). The proper disclosure enables the company to identify, assess and mitigate environmental risks thereby reducing financial and operational disruptions (Simnett et al., 2009). Disclosure helps to increase collaboration on sustainability initiatives (Unerman & Bennett, 2004). Those firms disclosing environmental information regularly are more likely to attract investments from socially responsible investors (Eccles et al., 2014).

2.10 Summary of Outcome of Literature

The studies on Environmental reporting in the automobile industry have faced various challenges namely inconsistent reporting standards, incomplete disclosure of emissions, high cost of reporting, risk of greenwashing and regional regulatory differences. Limited stakeholder engagement also weakens the overall impact of reporting. The reporting often emphasises on scope 1 and scope 2 emissions, with scope 3 emissions covering supply chain and product usage largely underreported. The credibility of disclosure is also questioned due to green washing practices and absence of independent verification.

High costs and resource requirements complicate environmental reporting for small and medium sized firms. Regional regulatory variations most often create additional complexity for multinational companies to harmonise their reporting practices. The environmental reports of these companies prioritise on compliance and investor relations rather than stakeholder engagement and public communication. On the positive side, there are strong prospects for Environmental reporting driven by rising regulatory pressures, frequent demand for investors and consumers for transparency, improved reputation and technological advancements including blockchain, AI and IoT based monitoring that offer new opportunities to improve data reliability and real time reporting. There has been more consumer preference for sustainable products and growing ESG focused investments that motivate firms to enhance their environmental transparency. The sector specific guidelines are also emerging which offer hope for more consistent and credible reporting.

The automobile industry is progressing towards better environmental practices; however, significant gaps still remain. Further research is needed to explore how companies can overcome existing barriers, leverage technology, and integrate environmental considerations into strategic decision-making to achieve more credible and meaningful reporting.

2.11 Gaps in Existing Literature

Various studies have been conducted on environmental accounting and disclosure, with the majority carried out at the international level. Very few studies have focused on environmental reporting at the national level. Existing national-level studies have primarily examined the significance and disclosure practices in the corporate sector in general. Industry-specific studies at the international level have mainly concentrated on the oil and refining industries, stock markets, petrochemical industries, and textiles. However, no significant studies have been conducted in the automobile sector, which is gaining momentum and contributing a major share to India's exports. In recent years, EVs have attracted increasing attention, leading to a substantial reduction in pollution. However, in the manufacturing of automobile components, spare parts, and assembly units, pollution emissions persist. Therefore, there is a pressing need to conduct research on the prospects and challenges of environmental disclosure in the automobile sector.

There is currently no universally accepted framework for environmental reporting in the automobile industry, leading to inconsistencies across countries and regions. This lack of standardization hinders the comparability of environmental performance among firms, weakening benchmarking efforts and complicating investor decision-making. Environmental reporting is often perceived merely as a compliance requirement or a marketing tool, rather than being integrated into strategic decision-making processes. When environmental reporting is disconnected from core business strategy, the potential for improving environmental performance is significantly reduced. Moreover, limited research exists on how stakeholders—particularly top level and middle level employees and external auditors in automobile manufacturing companies—perceive environmental disclosure. There is a need for

studies that examine the influence of environmental disclosure on stakeholder trust and behaviour. In light of these gaps, the topic '*Problems and Prospects of Environmental Reporting with Special Reference to Automobile Industry in South India*' has been selected for the research.

2.12 Summary

Firms disclose environmental information to meet the expectations of various categories of stakeholders and to maintain positive relationships with them. These disclosures help the organisations to align with societal expectations, gain public approval, and justify their operations. The reporting practices of a company are influenced by regulatory, cultural, and industry norms. Profitable firms are more likely to disclose environmental information due to their greater availability of resources and reputational incentives. The primary purpose of environmental disclosure is to reduce information asymmetry and to build trust among stakeholders.

Chapter 3

THEORETICAL FRAMEWORK

3.1	Introduction	152
3.2	Definition.....	152
3.3	Evolution of Environmental Reporting	153
3.4	Traditional Theories Related to Environmental Reporting	154
3.5	Contemporary Theories of Environmental Reporting.....	163
3.6	Modern Theories of Environmental Reporting.....	179
3.7	Conceptual Model	181
3.8	Summary.....	182

Chapter 3

THEORETICAL FRAMEWORK

3.1 Introduction

The theoretical framework of environmental reporting encompasses a set of concepts and theories that explain the reasons and conditions under which organizations disclose environmental information. It facilitates an in-depth understanding of the motivations, behaviours, and impacts associated with environmental reporting practices. This framework serves as a foundation for empirical research and guides corporate decision-making related to environmental communication thereby enhancing transparency and accountability.

3.2 Definition

At macro level Environmental Accounting can be explained as “one of the methods of accounting that incorporates environmental resources and services and changes into national economic indicators and measures the effect of environmental impact on GDP and NNP to reveal true maximum income which a nation can consume, while maintaining a sustainable development and growth, without compromising the interests of present and future generations as well as our neighbours”.

The environmental accounting is often considered as subset of social accounting at the corporate level. Social and Environmental accounting is the process of communicating the social and environmental impact of an organisation’s economic activities to particular segments of stakeholders or to the entire society. This approach extends the accountability of an organisation beyond the traditional method of providing profits to owners. This is based on the assumption that companies have broader responsibilities than simply making profits for shareholders thereby extending the accountability of organisations to contribute positively to sustainable development and well-being of society.

Environmental reporting is an umbrella term used to describe the impact of business activities on various stakeholders, including society, employees, and consumers. The use of environmental information aims to disclose the effects of corporate activities on the natural environment to stakeholders. Such reporting serves as a measure of sustainable income levels that can be maintained without depleting natural assets. Furthermore, it acts as a tool for evaluating the environmental costs and benefits of projects while considering their environmental impact.

A simple definition of environmental reporting is the disclosure of information related to the environmental impact, typically presented in company's annual reports or through other channels such as environmental policy statements or standalone corporate environmental reports. According to Federation Des Experts Comptable Europeans Environmental reporting covers the preparation and presentation of information by management for the use of by a wide range of internal and external stakeholders. The information on environmental status and environmental performance is disclosed. This information is disclosed separately in the form of environmental report or in other forms of reporting such as financial and social reporting.

3.3 Evolution of Environmental Reporting

Environmental accounting and reporting originated in several European countries, with each country initially developing its own framework independently. Norway was the pioneer in adopting green accounting, primarily to monitor and manage its natural resources. Netherlands and France were the second and third countries to adopt environmental accounting practices. Meanwhile, the U.S. Environmental Protection Agency undertook the development of environmental accounts for countries such as Chile, the United States, Japan, and Namibia. In India, former Environment Minister Jairam Ramesh emphasized the significance of integrating green accounting into national accounting framework, recognizing its vital role in sustainable development.

Environmental reporting also encompasses accounting aspects and involves the identification and analysis of environmental costs, the integration of these costs

into business decision-making, and the subsequent communication of this information to the general public through reports. Once the impact of a firm's activities on the environment is identified, the next step is to measure the associated costs and benefits as accurately as possible, thereby facilitating informed managerial decision-making. Measurement should be carried out in physical units. Once environmental impacts are identified and measured, companies develop reporting systems to communicate this information to both internal and external decision-makers.

The roots of Environmental Reporting can be traced back to 1960's and 1970's when environmental concerns gained global attention through various landmark events namely Stockholm Conference (1972) and the establishment of environmental protection agencies. The corporate environmental disasters like Bhopal Gas Tragedy (1984) highlighted the need for transparency in environmental reporting by 1980s and 1990s. During this period Voluntary reporting frameworks including GRI (1997) emerged. The 2000s and 2010s marked a shift towards standardization and regulatory enforcement, driven by initiatives such as the Kyoto Protocol (1997) and the Carbon Disclosure Project (2000). Mandatory environmental reporting requirements have been introduced globally by the government particularly for publicly traded companies. In 2020s Environmental reporting has become an integral part of financial disclosures with the development of frameworks such as Task Force on Climate Related Financial Disclosures, the European Union Corporate Sustainability Reporting Directive and International Sustainability Standards Board. The future of Environmental reporting will focus on greater accountability, digital tracking of environmental data and stricter regulatory compliance to combat climate change.

3.4 Traditional Theories Related to Environmental Reporting

The foundation theories of environmental reporting are mainly Stakeholder theory, Agency theory, Legitimacy theory, Political economy theory and Decision usefulness theory.

3.4.1 Stakeholder Theory

The theory explores the dynamic relationship between business and its various stakeholders including suppliers, customers, employees, investors and the entire communities at large. It was developed by R Edward Freeman (1984). The firm should develop values that address the interests of all stakeholder groups. When stakeholders perceive a company as highly responsible to environment, the stakeholder and company relationship will be stronger, thereby fostering deeper relationships and securing the full support of stakeholders.

The stakeholder plays a crucial role in guiding and influencing company's operations. The stakeholders are considered as vital resources whose interests and expectations shape various factors that contribute to Environmental reporting. When a company provides environmental information, it demonstrates a high level of environmental responsibility in its activities and decisions. The influence of stakeholders is often proportional to their power and they exert greater control and pressure on the company to fulfil their expectations. The stakeholder theory highlights the importance of effectively managing the conflicting interest of stakeholders and resolving potential conflicts. Through the annual report of the company, stakeholder gains insight into how organizations are fulfilling their social and environmental responsibilities.

The stakeholders in environmental reporting can be categorized into primary and secondary groups. The primary stakeholders include creditors, employees, shareholders, suppliers and regulators who are directly involved in or affected by the operations of the company. The secondary stakeholders such as media, environmental lobby groups and consumer advocacy groups play a vital role in mobilising the opinion of the public and influencing corporate behaviour. The stakeholders can also be classified as external, internal and intermediate stakeholder groups. External stakeholders include government, debtors and consumers who exert pressure on management to disclose environmental information. The internal stakeholders including shareholders and employees demand transparency and accountability from within the organization. Intermediate stakeholders such as accounting firms and

environment protection agencies hold significant influence on the extent and quality of environmental disclosure. Stakeholder theory helps to enhance productivity, improve employee satisfaction, improve mental health and low turnover rates.

In the recent scenario, awareness of public on CSR has been increasing and more stakeholders compel the company to disclose environmental information. The attitude of employees towards organisation is an important factor that influence stakeholder's perception about firm. Employees participate in the development and implementation of Environmental accounting and reporting. They are actively involved in production and operational processes of the company, yet they also bear the adverse effects of environmental pollution. Consequently, employees seek assurance that the company prioritizes environmental sustainability and workplace health. So, transparent disclosure of environmental information reflects the company's commitment to values and also strengthen its relationship with employees by fostering trust and accountability.

The stakeholder theory explains the broader concept of CSR particularly including environmental stewardship. The companies tend to disclose more information as part of CSR initiatives in response to increasing demand of stakeholders for more sustainable business practices. Gray et al. (1995) conducted longitudinal studies in UK based companies and found that trend of Environmental reporting is increasing in large companies and pointed out that environmental and social disclosure are determinants for meeting stakeholder expectations to maintain legitimacy. He concluded that stakeholder theory provides a framework to know about the reasons for engaging in environmental reporting by the companies.

Deegan and Rankin (1997) examined the annual reports of Australian firms and highlighted that the level of disclosure will be high in those companies that receive negative media attention and public criticism. The materiality of environmental information disclosed by the company depends on the focus of stakeholders especially media and public interest groups. He supported the stakeholder theory on the ground that companies react to stakeholder pressure for

preserving legitimacy Mitchell et al. (1997) introduced the concept of stakeholder salience that identifies mainly three key attributes namely power, legitimacy, and urgency. He also pointed out how companies prioritised stakeholder concerns in disclosure practices and concluded that firms respond more strongly to powerful and legitimate stakeholders especially in areas like environmental impact and provided a theoretical basis for explaining variation in environmental reporting between firms and industries.

Ullman's (1985) Three-Dimensional model links stakeholder theory to Environmental disclosure. The three dimensions included in the model are stakeholder pressure, strategic posture and economic performance. If the stakeholders are very powerful, the firms will disclose relevant environmental information. If the environmental strategy is proactive, the firms tend to disclose more and the financial condition of the firm is an important factor that influences the extent and quality of disclosure. The model implies that the firms that are financially sound, disclose information in response to powerful stakeholder groups demanding accountability.

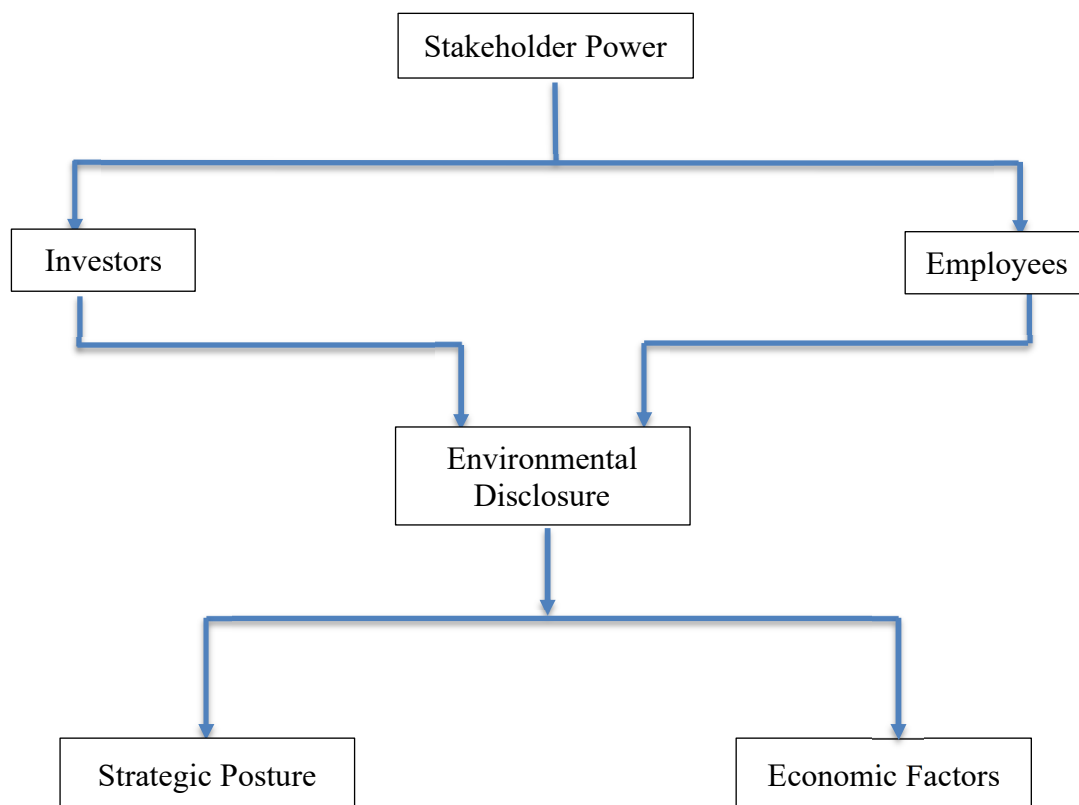
Robert's (1992) model examined the influence of different stakeholder groups on corporate environmental disclosure and the main assumptions of this model included are the corporations are accountable to different stakeholders, used as a tool to manage stakeholder relationship and the influence of each stakeholder group determines the level of disclosure. The reporting gains attention due to the role of regulators and NGO's who are very much concerned with environmental protection, institutional investors demand ESG information and public and community stakeholders are affected by corporate environmental practices. The model highlighted that environmental reporting is not voluntary or ethical but strategically motivated by stakeholder pressure.

Gray, Owen & Adams' Accountability model (1996) proposed that the key determinant of environmental disclosure is accountability to stakeholders. They distinguish between managerial stakeholder theory where the disclosure of information

is made to manage key stakeholder relationships strategically and ethical stakeholder theory where disclosure is made out of moral obligations to inform all affected stakeholders.

Figure 3.1

Stakeholder Based Model of Environmental Disclosure



3.4.2 Agency Theory

This Theory, introduced by Jensen and Meckling (1976), is used to explain and address conflicts that arise in the relationship between principals and agents. The theory primarily focuses on two key areas of dispute: differences in goals and differences in risk preferences. Managers, acting as agents, may prioritize short-term profitability and pursue market expansion strategies to enhance their own performance metrics or incentives. However, these actions can conflict with the interests of risk-averse stakeholders, such as long-term investors, who are more concerned with the firm's long-term stability and sustained growth in share value.

Environmental disclosure, in this context, can serve as a mechanism to reduce information asymmetry and align the interests of agents and principals.

Under agency theory, shareholders act as principals while the Board of directors serves as their agents. It is the responsibility of agents to safeguard the interest of principal. Accordingly, the Board of directors must assure the shareholders that the company is not indulged in any activity that adversely affects the interest of society and the activities of the company do not have harmful effects on the environment. Thus, it becomes the duty of the Board of directors to make available all environmental related activities of the company to resolve environmental issues. So, the Board of directors disclose necessary environmental information in the annual reports of the company so that it will be accessed by shareholders.

From the point of view of environmental disclosure, the theory provides an understanding of how information asymmetry between managers and shareholders influences environmental disclosure. The managers might conceal certain information about environmental impact in those circumstances where such disclosure negatively affects the performance of the company (Al-Tuwaijri et al., 2004). The factors that determine the extent and quality of disclosure includes corporate governance mechanisms like board independence, shareholders activism and institutional ownership (Cormier & Magnan, 2003).

The collectivist cultures result in greater emphasis on environmental disclosure since they prioritize group welfare and long-term sustainability (Hope, 2003). The firms disclose environmental performance to satisfy stakeholder demands when they have institutional power (Magnan, 2007). The disclosure helps to mitigate risks by demonstrating corporate accountability (Brammer & Pavelin, 2006). The increasing power of external stakeholders enables managers to disclose more information (Gray et al, 1995). Environmental disclosure helps to reduce agency cost by providing information to monitor managerial behaviour (Jensen & Meckling, 1976). There will be reduction in the information asymmetry among managers and stakeholders if there is an environmental committee or chief sustainability officer (Choi et al., 2013).

3.4.3 Legitimacy Theory

The theory was developed by Dowling and Pfeffer and is a construct for making predictions. According to legitimacy theory, all organisations must voluntarily disclose social and environmental information. Companies have to operate their activities in such a manner that does not violate the peace, environmental conditions, and social norms of the society in which they operate. This theory focuses on the interactions that exist between the company and society and derives from organizational legitimacy. The theory helps to disclose the strategies adopted by the organisation for its existence in society.

This concept is very important in understanding the connection between company and environment. In this theory, organisation justifies its reason to exist, to continue, to export and transform energy, material or information. It is possible to achieve legitimacy by demonstrating that companies' activities are in line with social values. The examples of legitimation include establishing an environmental committee, or the manager's position to oversee ecological impact, developing networks and conduct of environmental audit.

According to Legitimacy Theory, the organisations continually ensure that their operations are legitimate by aligning with societal norms and values. Deegan (2019) provided an in-depth application of legitimacy theory in social and environmental accounting and opined that organisations use environmental disclosure as strategic tool to fulfil the expectations of the society thereby maintaining legitimacy. He also highlighted the need for refining the legitimacy theory for a better understanding of its role in corporate disclosure practices. Ogunode (2022) examined the use of Environmental Accounting and reporting among companies to meet regulatory and ethical requirements thereby securing societal acceptance. The firms in pollution sensitive industries prioritise environmental protection and transparency to fulfil stakeholders' expectations and uphold legitimacy.

Akhter et al. (2023) conducted a longitudinal analysis in developing country and pointed out that companies enhance environmental disclosure to manage

legitimacy in response to regulatory changes and societal pressures. Vitolla (2017) conducted a study on Sustainability reporting among Italian companies pointing out that firms in environmentally sensitive industries provide more extensive disclosure which aligns with legitimacy theory as companies demonstrate their commitment to sustainable practices and meet societal expectations. (Crossley, 2021) highlighted the application of legitimacy theory in Small and Medium Enterprises and pointed out that they engage in social and environmental practices to gain legitimacy. He also emphasised the importance of transparency and sustainability in Environmental reporting for maintaining societal approval.

Meutia et al. (2022) compared the explanatory power of legitimacy and stakeholder theories and found that legitimacy theory more effectively explains company's efforts to align disclosures with societal values for maintaining legitimacy. Martens and Boi (2023) critically examined the application of legitimacy theory and pointed out the need for further development of the theory to address its limitations and enhance its power in corporate Environmental disclosure. Cho Laine (2015) pointed out that majority of environmental reports are symbolic when the companies face legitimacy threats and that the disclosures are made to shape public perception and do not reflected improvements in environmental performance. The disclosures serve as a legitimacy repair mechanism supporting the use of legitimacy theory in explaining corporate behaviour.

Kolk (2008) made a comparison of Environmental Disclosure practices across multiple countries and pointed out that the institutional environment shapes how legitimacy is defined and pursued. The firms in Europe were very proactive in reporting due to strong societal expectations and regulatory framework whereas those firms in less regulated contexts engaged in minimal symbolic disclosures. Hummel (2016) found that those companies having low sustainability ratings increased their levels of disclosure due to legitimacy seeking behaviour. The firms try to restore stakeholder confidence through detailed environmental reporting. The negative sustainability assessments act as a legitimacy threat that prompts the firms to intensify their disclosures. Legitimacy theory explained corporate actions as

reactive rather than proactive (Gray, 2009). The theory only provides descriptive explanations but fails to predict the type of firms and the extent of disclosure.

The legitimacy theory acts as a powerful framework for understanding environmental reporting among firms under public scrutiny and operating in high impact industries. It also explains the reasons for selective disclosure of environmental information in symbolic ways to maintain public approval and reduce reputational risk. Multi theory approaches should be formulated to understand the dynamics of disclosure more comprehensively.

3.4.4 Political Economy Theory

The environmental accounting and reporting are viewed as instruments that serve social, economic and political tool under political economy theory. This perspective emphasizes the power dynamics between business, government and society, suggesting that environmental reporting is shaped by these relationships. The firms use environmental disclosure as a means to negotiate their social contract with society, aiming to maintain legitimacy in the eyes of society and avoiding potential conflicts. Proper disclosure helps to manage political costs including litigation costs and taxes.

Rudel, et al. (2011) discuss the manner in which reporting is done using political and economic power and two ‘waves’ are identified. The productivist waves focus on how growth and production norms drive environmental harm and the later wave, points out how environmental movements, global institutions and transnational pressures influence environmental policy and reporting. He also suggested that political economy theory explains the macro level determinants of environmental reporting including regulation, public opinion and civil society and response of firms to power structures. (Gray & Adams, 1996) argued that firms disclose environmental information as part of social negotiation and not to inform markets.

3.4.5 Decision Usefulness Theory

The firms disclose environmental information for providing relevant, reliable and timely information to investors, creditors and other users for making better

economic decisions about allocation of resources. The users need to understand a firm's environmental risks and opportunities. If proper disclosure is not made by the company, there may be information asymmetry and the users may undervalue or overvalue the firm. The environmental reporting acts as a tool to improve market efficiency and reduce uncertainty for stakeholders to make economic decisions. The investors assess how climate risk affects the valuation of company and the creditors evaluate the ability of the firm to repay environmental liabilities. The regulators monitor compliance and assess systematic risk. The key types of decision useful environmental information include quantitative information including environmental provisions and liabilities, carbon emissions exposure, compliance cost and fines and penalties. The qualitative information provided includes environmental policies, risk management disclosures and climate adaptation and mitigation strategies.

Belkaoui (1989) argued that decision usefulness theory extends to social and environmental contexts and concluded that non-financial disclosures is also useful for decision making. Gray et al. (1996) suggested that environmental disclosure helps to build investor trust but it is too narrow because society at large also needs accountability.

3.5 Contemporary Theories of Environmental Reporting

The contemporary theories of environmental reporting are mainly Institutional theory, Signalling theory, Political cost theory, Voluntary disclosure theory, Cultural dimension theory and Profitability theory.

3.5.1 Institutional Theory

Institutional theory was developed by John Meyer and Brian Rowan which examines how well organizations are shaped by their societal, national, and global environments. It identifies the role of the social, political, and economic systems in which firms operate. The three components of institutional theory are cognitive, normative, and regulative. The cognitive structure is concerned with what is institutionalized within an organization. As a result, organizations tend to imitate the disclosure trends used by other organizations. In case of Environmental reporting,

similar firms which are competing in the same industry benchmark and imitate the practices of those firms which are superior.

Normative isomorphism refers to pressure put forward by professional and occupational groups to conform to a set of rules developed by them. This maintains the appropriateness of shared values. The existence of GRI Guidelines should govern environmental reporting. Regulative pressure refers to the role of regulation in bringing in institutionalisation. The firm faces pressure from regulatory bodies to follow certain procedures. The theory provides an understanding of change in the organisation as a result of social and environmental issues and describes the similarities and stability of organisational arrangements. The variations in the political structure helps to understand timing, organisation, and acceptance of environmental accounting initiatives. The behaviour of companies is influenced by the environment in which they operate and the actions and practices of an organisation are shaped by institutional theory and social interactions.

The theory examines the nature of organisational choices and how these choices are formed, mediated, and channeled by the institutional environment. An organisation's actions are largely dependent on a set of perspectives defined by a group of stakeholders. These actions typically involve choosing from a predefined set of options. Due to external pressure to disclose environmental information, companies adopt a sustainability logic. It becomes the main system of the company and sustainability reporting becomes the expression of sustainability logic when it communicates sustainability values to various stakeholders. Coercive isomorphism refers to influence arising due to power including pressure from regulators and various actors of organizations who provide resources. In order to attain legitimacy, the organisation tends to become more identical and efficient as against organisational concepts. Organisation change arises due to reduction of bureaucracy. The companies in highly regulated sectors where there are stringent environmental laws are likely to adopt detailed disclosure (Larringa -Gonzalez, 2007). The companies in the same industry adopt similar standards of reporting to align with prevailing institutional norms (Jennings & Zandbergen, 1995). The firms lying in regions with strong sustainability focused logics

consider disclosure as social responsibility initiative (Bebbington et al, 2009). The theory explains the innovative practices adopted by organisations including integration of environmental disclosure into sustainability reporting framework and there by contributing to institutional change (Higgins & Larringa, 2014).

Multinational corporations face diverse trends that leads to variations in disclosure and they adapt disclosures to meet local expectations at the same time maintaining global standards (Matten & Moon, 2008). If the organisations are working in complex institutional environments, they face competing pressures to balance economic goals with environmental and social expectations (Greenwood et al., 2011). The adoption of Global framework reflects coercive and normative pressures (Kolk, 2010).

The role of language and symbols in organisational practices is emphasised in institutional theory. The language used in Environmental reporting should reflect institutional norms and values. Bansal and Roth (2000) conducted a case study of 53 companies across US, Canada and UK and identified three primary motivations for environmental responsiveness namely legitimacy, competitiveness, and ecological responsibility. The dominant motivators were institutional pressures from government regulations and non-government organisations. The main implications of his study were that Environmental reporting is not merely about environmental impact but a strategy to secure organisational legitimacy.

Jennings (1995) applied institutional theory to explain the reasons for adopting sustainability practices by firms and concluded that sustainability practices become institutionalised when professional bodies and industry associations endorse them, regulatory authorities support them and media and public attention spotlight environmental issues. The main conclusion was that the companies adopted environmental reporting to fit into the institutional fabric of legitimacy and environmental concern was not at all a reason for disclosure.

Delmas and Toffel (2004) highlighted how different types of stakeholders exerted institutional pressure on firms. The pressures exerted by regulators,

customers and non-government organisations were mentioned in the study. The major findings of the study were that formal and technical Environmental disclosure were adopted by the company due to coercive pressure from regulators. The main reason for the adoption of a standardized reporting framework was normative pressure from professional associations. The mimetic pressure caused firms to imitate leading competitors to maintain market reputation. The type and intensity of institutional pressure influence the transparency and consistency of Environmental reporting.

Aragon-Correa (2020) examined how different regulatory pressures influence firms' environmental strategies. Mandatory regulations lead to compliance-oriented behaviour and self-regulatory pressure encourage proactive behaviour. The effectiveness of these pressures varies across industries. The proper understanding of regulatory pressures helps policymakers to design more effective environmental regulations.

Friederich et al. (2021) analysed 337 European firms annual reports over 20 years to identify climate risk disclosure and revealed an increase in disclosure over time with variations across industries and countries. The technological tools can enhance the monitoring and analysis of environmental reporting thereby providing insights into disclosure trends and effectiveness. Che Ku Kassim (2021) examined the influence of institutional pressures on Environmental reporting among Malaysian local governments and concluded that normative isomorphism through continuous professional development, impacts environmental reporting practices. The mandatory Environmental disclosure enhances both quantity and quality of Environmental reporting in local government.

Ooi (2022) integrated institutional theory to explain variations in climate change disclosure among firms and pointed out that the factors such as government ownership, foreign ownership, industry membership and sustainable business network affiliations influence disclosure practices. The directors having international experience and the companies having high financial performance disclose more climate change related information.

Kılıç (2021) explored the manner in which institutional environment influenced the adoption of integrated reporting among Fortune 500 companies and concluded that countries with stronger stakeholder orientations have higher adoption rates of integrated reporting. The institutional strength or weakness of nations impact corporate transparency and accountability behaviour. (Mahmood & Uddin, 2021) examined the influence of different institutional logics in sustainability reporting practices in Pakistan and concluded that variations in reporting are attributed to competing institutional logics.

Tarquinio and Xhindole (2022) explored how sustainability reporting becomes institutionalised within a company. It helped to improve corporate climate, rationalize operations and valuable decision support information. The study also highlighted the role of internal factors in creating, maintaining or disrupting institutional practices.

3.5.2 Signaling Theory

Signaling theory addresses the issue of information asymmetry that exists in competitive environments. It was developed as a means to reduce uncertainty between parties with unequal access to information. The theory focuses on the intention of management to disclose relevant information and, in turn, to interpret signals received from stakeholders and the market. Information asymmetry can create conflicts between management and agents or other interested parties. By transmitting credible and quality information, signals help to bridge this gap, thereby enhancing transparency and trust among stakeholders.

There are four elements in signaling theory namely signaler, signals, receiver and feedback. Executives, directors and managers act as signaler and signal means flow of information in the form of price news, dividend, and CSR investment. Receivers are individuals, investors and employees. The feedback refers to interactions between signalers and receivers.

The signals can be either positive or negative to improve information asymmetry. Positive environmental information helps to increase the value of firms and

performance. The performance of an organisation is closely related with quality of signals. High quality firms send high quality signals thereby disclose high quality information. Committed management sends positive signals that increase information reliability. Effective management uses CSR reports to signal to stakeholders about the commitment of firm and long-term policy for sustainable development. Sustainable disclosure practices provide information about strong corporate governance, and sound financial stability. Voluntary disclosures are used to signal superior quality of the company.

Cormier et al. (2005) opined that the firms use environmental disclosure to signal accountability. Mahoney et al. (2013) opined that signalling through environmental disclosure increase credibility among stakeholders and investors and thus enhance corporate reputation. De Villiers and Marques (2016) suggested that environmental sensitive firms use disclosure for signalling environmental stewardship and helps to gain legitimacy. Toms (2002) argued that disclosure serve as quality signals which in turn increases the reputation of firm. Cho and Patten (2007) suggested that signalling theory acts as a complementary to legitimacy theory as disclosures are signals of quality and respond to social pressures.

Hummel and Schlick (2016) criticised the fact that disclosures are always reliable signals and he also emphasized the risk of green washing. García-Sánchez et al. (2019) highlighted that managerial discretion influences the signalling effect of environmental disclosures. Lyon and Montgomery (2015) emphasised the ways the firms misuse environmental disclosure to appear environmentally responsible, thereby he emphasized the importance of credible signals to differentiate genuine efforts from green washing. Delmas and Burbano (2011) highlighted the challenges of building trust in environmental signals where misleading disclosures can be made.

Choi et al. (2013) found that those firms having high rate of carbon efficiency use disclosure as a signal to investors thereby linking environmental transparency to financial outcomes. Dhaliwal et al. (2011) found that high quality of environmental disclosure reduces the cost of capital of firm and reduces investment risk. Berthelot

et al. (2012) opined that the disclosure of industries with high environmental impacts are evaluated as quality signals by investors. Matsumura et al. (2014) opined that those firms falling under carbon intensive industries use signals to mitigate reputational risks.

The following table shows the relationship of key themes and signaling mechanisms.

Table 3.1

Key themes and signaling mechanism

Theme	Findings
Voluntary Disclosure	There will be key signaling mechanisms for those firms having high environmental performance.
Assurance	The credibility of information will be enhanced and serves as a costly and trust worthy signal.
Greenwashing risk	The effectiveness of signals is reduced and the credibility of information cannot be guaranteed.
Market response	The credible disclosures will be rewarded by investors.
Institutional influence	National regulatory framework shapes the dynamics of signaling.

Source: Compiled by researcher

3.5.3 Political cost Theory

The Political cost theory was developed by Watts and Zimmerman (1978) as a part of Positive accounting theory. The firms and managers' report environmental information to reduce political costs imposed by government, regulators or society. Large and profitable firms attract political attention and may face higher taxes, stricter regulations or social pressure. The proper disclosure of environmental information is an evidence to prove that the firms are socially responsible and reduce regulatory intervention. Such disclosure influences public opinion and reduces pressure from NGO's, activists and media. The government offer subsidies to companies that are environmentally responsible.

High polluting industries including oil, mining, chemicals and cement are politically visible and they publish more environmental reports to reduce scrutiny. The research shows that firms that are facing higher political exposure tend to

disclose more voluntary environmental information. The firms in USA falling under the category of environmentally sensitive industries disclose more environmental information consistent with political cost theory (Patten,1992). The Canadian firms use environmental disclosure to reduce political and regulatory pressure (Cormier & Magnan,1999). Watts and Zimmerman (1986) pointed out that managers choose different methods of reporting for minimizing political costs like taxes, regulation or wealth transfer.

3.5.4 Theory of Voluntary Disclosure

The voluntary disclosure theory states that disclosure of information helps to reduce the information asymmetry between managers and investors. The theory states disclosure merely as a tool of communication to market participants. This theory states that information can be made flexible according to one's own needs. It is not possible to disclose systematically on account of stringent rules and regulations. So, the majority of environmental information will constitute as part of voluntary disclosure, thereby reducing agency costs, improving supervision, information transparency, and investor management relationships and enhancing corporate image. Good corporate governance promotes environmental disclosure and if there are problems with disclosure, management can take steps to tackle those problems and find suitable remedies.

According to Voluntary Disclosure Theory, firms willingly disclose information to reduce information asymmetry between management and stakeholders (Healy & Palepu, 2001). In the case of Environmental reporting, firms disclose more information than is legally required to improve legitimacy, investor trust, and reputation. Clarkson et al. (2008) developed a disclosure scoring system based on voluntary GRI related disclosures. The study concluded that firms with better environmental performance tend to disclose more voluntary information. These firms use disclosure as a means to signal their strong performance.

Cormier and Magnan (2007) found that voluntary environmental disclosure contributes to capital market valuation. High quality disclosure relates to lower cost

of capital thereby ensuring that voluntary reporting serves strategic and economic purposes. (Aerts, W., Cormier D, & Magnan, M, 2008) opined that firms voluntarily disclose environmental data to control narrative and reduce reputational risk. Neu et al. (1998) pointed out that firms voluntarily disclose environmental information to manage stakeholder perceptions. Symbolic or theoretical disclosure is common in industries with high environmental exposure. Cho and Patten (2007) pointed out that voluntary disclosure is used to legitimize corporate behaviour especially in polluting industries. Poor performers disclose more symbolic content to reduce scrutiny.

Prado-Lorenzo et al. (2009) investigated voluntary GHG reporting across countries and concluded that large companies and those with stakeholder pressure are more likely to voluntarily disclose GHG data. Zamil et al. (2023) conducted a systematic review of 135 studies on determinants of voluntary disclosure. The main determinants of voluntary disclosure identified were size, age and leverage. Boshnak (2022) examined the influence of characteristics of firm and ownership structure on voluntary disclosure in Saudi Arabia and concluded that size of firm, leverage, type of manufacturing industry and government ownership positively affects the level of disclosure. The family ownership negatively impacts voluntary disclosure practices.

Adebayo and Ezejiofor (2021) investigated the relationship between voluntary environmental disclosure and corporate performance in Nigeria and found a positive relationship between voluntary disclosure and liquidity ratios. He also recommended stricter enforcement of sustainability disclosure guidelines to enhance corporate governance. Ahmed and Masum (2021) analysed the factors influencing voluntary environmental disclosure among Bangladesh firms and found that firm size and operating performance significantly affects the level of disclosure.

The firms indulge in voluntary disclosure to improve reputation, legitimacy, and access to capital. The pressure from investors, NGOs and media increases voluntary disclosure. The voluntary disclosure helps to reduce cost of capital and improves firm valuation. Large visible firms and those in environmentally sensitive industries are more likely to disclose voluntarily.

3.5.5 Cultural Dimension Theory

This theory was developed by Geert Hofstede. The primary dimensions—power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, and long-term orientation—play a significant role in shaping how societies perceive transparency, corporate accountability, and environmental responsibility (Hofstede, 1980). The theory aids in understanding cultural differences across various countries. These cultural variations can be reflected in the differing disclosure practices of companies, providing insights into how disclosure impacts business performance and stakeholder trust. The first dimension of the theory, the Power Distance Index, indicates the extent to which the non-disclosure of information is tolerated by stakeholders. It reflects the degree to which less powerful members of a society accept and expect an unequal distribution of power. The people in high power distance countries accept hierarchical structure and managers retain and not disclose information for preserving power inequalities resulting in more secrecy of information. Power distance has positive relation with level of secrecy and low information to stakeholders. A high-power distance accepts non-disclosure of information, encourages bureaucracy and shows high respect for the company. Under these circumstances, stakeholders do not care about non-disclosure, so it creates obstacles for powerful reporting and hence disclosure will be low.

A low power distance indicates a participative structure, encourages decision making and so more environmental information will be disclosed by the company. The second dimension of this theory considers the degree to which societies are integrated into groups. Individualism refers to giving too much importance to personal goals, so management will try to concentrate on promoting their own interest without considering the interest of stakeholders. So, they will try to reveal that information in disclosure which adversely affects the interest of society and so disclosure will be more. The individual wants personal freedom, and on the other hand, in the case of collectivism, greater importance is placed on the well-being of the entire group, and so the entire society's interest is considered. The organisation becomes more socially responsible, and disclosure will be less. In the case of

individualism, there is more transparency, less secrecy, and more disclosure and in the case of collectivism, there is more secretiveness, less transparency, and less disclosure. Asian companies, where collectivist cultures are followed, mainly focus on internal reporting, and so environmental disclosure will be low, whereas individualism drives more public disclosures (Chapple & Moon, 2005).

The third dimension of this theory states how uncertain situations are dealt with. Uncertainty avoidance refers to the degree to which society avoids risk and creates security by using technology. In case of high uncertainty avoidance index, there are stringent rules and regulations for the company and so they try to maintain secrecy for disclosure of environmental information and so high uncertainty avoidance index is positively related to secrecy and negatively related to disclosure.

On the other hand, in case of lower uncertainty avoidance index, there is relaxation in rules and regulations and there is a more relaxed atmosphere and principles are given less importance and main priority is given to practice and so less secrecy and disclosure will be more (Kolk, 2005). The firms in high uncertainty avoidance culture disclose more environmental information to mitigate social concerns and it is purely observed in Europe where uncertainty avoidance is high and they provide detailed environmental reports. Those companies operating in cultures with low power distance and high uncertainty avoidance engage more in environmental disclosure due to societal expectations for accountability and risk management. The developing economies with high power distance have weaker disclosure practices because there is less societal demand for transparency and their decision-making structures are hierarchical (Haniffa & Cooke, 2005).

The fourth dimension considers the preference of society towards achievement and its attitude towards sexuality. If there are more male members on the board, they are more assertive and do not have much concern about environmental issues and discharging of social responsibility, they discourage disclosure, on the other hand when there are more female members on the board, they tend to be more concerned about company activities that adversely affect the environment and quality of life, and therefore encourage the disclosure of environmentally related information. Feminine

societies are generally more caring, open, and inclined to disclose socially relevant information. Feminine cultures value environmental sustainability and quality of life, and they are more actively engaged in environmental reporting than masculine cultures, which focus primarily on competitiveness and financial performance (Buhr, 2001).

The fifth dimension is concerned with society's views. Long term orientation is viewed by the society as the long-term growth of the company and transparency will be more and high disclosure and short-term orientation emphasis on getting quick results and short-term success and more secrecy and so less disclosure. The sixth dimension deals with how societies can control its desires. Indulgence refers to free gratification of needs, fewer social norms and so low disclosure. On the other hand, in the case of restraint, society suppresses needs and regulates through social norms and there will be a high level of disclosure. When managers can understand how different cultures view the business aspects, they can make more effective decisions.

There has been a great influence of national culture on Environmental disclosure. Accountant's culture and values have great influence on their decisions and judgements regarding environmental disclosure. Various organisations are modifying the environmental practices to reduce their impact on the environment and improve corporate image. The companies have also started disclosing environmental information to reduce disputes among stakeholders and they want the organisations to act in an eco-friendly way. The companies are forced to report environmental aspects because they are forced by cultural pressures that in turn influence their behaviour and the nation and society have heavy expectations from these companies. Those operating in countries with uniform dimensions of culture show similar behaviour. Culture plays a dominant role in the corporate decision-making process and has an influence on the structure of the company, their managers and behaviour. Cultural values have a great influence on national accounting standards and the way the company reports environmental information.

Cultural factors play a key role while addressing environmental issues because stakeholders' level of expectations in different countries will vary. An example of

social structure is the cultural system. They explain the similarities and differences of programming of the human mind and differentiates societies. The important factor in the study of CSR is cultural background and is essential for understanding the motivation and behaviour of managers. The culture also affects the firm's tendency to disclose information through annual reports and also influences the leadership style and proper management of resources. The business culture of the firm affects the way of allocating resources of the firm. Those firms which have good financial performance and management have to make a best choice as to whether to implement environmental and social actions for satisfying the stakeholders interest or focus on maximization of wealth of stakeholders as the goal of the firm. Moral philosophy and ethical decision making are also affected by cultural values.

Ringov and Zollo (2007) analysed the influence of national culture on corporate social performance of 469 firms from 21 countries. There has been positive association with high individualism and low power distance on corporate responsibility. On the other hand, high masculinity and high uncertainty avoidance had a negative impact on environmental performance. The cultural values of the firm play a significant role in perceiving stakeholder expectations thereby affecting Environmental Disclosure. Hope et al. (2008) highlighted the association between culture and auditor choice and concluded that high uncertainty avoidance leads firms to engage in more external assurance, thereby suggesting more formal environmental reporting practices. The cultural traits mainly uncertainty avoidance and individualism highly influence corporate transparency and governance that are closely related to voluntary sustainability disclosure.

Li, and Haniffa, (2014) connected culture to disclosure practices using Hofstede's dimensions and pointed out that firms in countries where power distance is low and individualism is high, disclosed more non-financial information including environmental metrics. Culture acts as a moderating variable to ensure the effectiveness of sustainability reporting. Husted (2005) conducted a regression analysis between the environmental performance index and Hofstede's cultural dimensions, concluding that firms located in countries characterized by long-term

orientation and femininity tend to demonstrate a stronger commitment to environmental sustainability. The study highlights the critical role of culture in shaping national-level environmental behavior, which in turn influences how companies within those countries report on and respond to environmental issues.

Hannan and Tan, (2009) conducted his study in China and found that cultural characteristics especially high-power distance, collectivism and long-term orientation led to limited voluntary disclosure but high compliance with regulation. Cultural context plays a pivotal role in shaping whether the firms signal through Voluntary Vs Mandatory reporting. Park et al. (2007) analysed the influence of national culture on environmental sustainability across countries and concluded that better sustainability disclosure is practiced in those countries with low power distance and high individualism. He also suggested that cultural values significantly impact national environmental policies and practices. Blacconiere et al. (2001) compared the Environmental disclosure practices of Canadian and US firms and pointed out that Canadian firms have collectivist culture and they tend to provide more voluntary disclosure. On the other hand, US firms are operating in more individualistic and litigious environments and focused more on mandatory disclosures.

Calza et al. (2016) examined the influence of national culture on firms' environmental proactivity and concluded that future orientation and gender egalitarianism positively influence environmental initiatives. The collectivism, assertiveness and uncertainty avoidance had a negative impact on disclosure. Orcos and Palomas (2019) explored the influence of cultural dimensions on the adoption of ISO 14001 environmental management standards and highlighted that institutional collectivism accelerated the adoption of ISO 14001 whereas performance orientation slowed down the adoption. The study examined the role of cultural values in shaping environmental management practices.

Khlif et al. (2015) conducted a meta-analysis on how national culture moderates the relationship between profitability and Environmental disclosure and concluded that firms in those cultures with low power distance and high individualism and high profitability are more likely to disclose more environmental information. They also

suggested that cultural context influences corporate transparency behaviours. Nagy and Molnárné (2022) examined the impact of cultural dimension on pro environmental behaviour in Hungary and found that individualism and power distance have significant but weak negative impact on environmentally conscious behaviour and indicated that cultural change is necessary but not sufficient for enhancing environmental behaviours. Faria and Pereira (2022) analysed Environmental disclosure in liberal economies and concluded that power distance, individualism and masculinity have positive impact on Environmental disclosure. Companies operating in cultures with lower levels of uncertainty avoidance tend to disclose more environmental information.

3.5.6 Profitability Theory

Company's financial profitability is an important factor for environmental disclosure. Profitability is one among several factors which gives the management freedom and flexibility to communicate to various stakeholders environmental and social information. In case of lower profitability, importance is given to economic aspect rather than social and environmental activities. If the firm is operating under satisfactory financial conditions, it has a great influence on level of commitment that top management has towards environmental responsibility actions in the future.

As the profitability of firm increases, the disclosure of environmental information also increases. Those firms that disclose environmental information in detail, includes quantitative data in their reports including environmental investments and environmental achievements of the firm. The actions taken by these firms will be submitted as supporting evidence. These include cleaner production, control of pollution and developing green products. All these activities help to reduce environmental hazards of the firm and help to enter into competitive markets, receive subsidies from government and avoid environmental penalties thereby increasing the profitability of the company.

Voluntary disclosure of information helps to reduce information asymmetry thereby reduce agency, transaction and financial costs and optimize the allocation of resources which in turn creates additional value of firm and increase in profitability.

Those firms presenting information in a symbolic style focus on environmental goals and strategy and quantitative information is less and in respect of firms whose performance is poor, disclose elaborate information with high complex words.

If the resources owned by the company is less than the profitability, the company will disclose more information and earns legitimacy from the community. The high profitability helps to attract more investors and represents the firms' capacity to generate profit. The profitability ratio represents liquidity, management of assets, debt and capital. Community demand companies to disclose environmental information as per Legitimacy theory and those companies which have high profit margin can disclose information very easily as compared to companies with low profit margin. If the company has low profit, naturally it will not disclose environmental information in annual reports as they consider it unnecessary due to high cost of disclosure.

Ullmann (1985) opined that profitable firms are more visible and under scrutiny of stakeholders and thus report more to signal transparency and legitimacy. The firms with higher profitability have more resources and incentives to voluntarily disclose environmental information. Al-Tuwaijri, et al. (2004) indicated that profitability enables firms to allocate resources for detailed disclosure. The firms with more environmental and economic performance disclose more environmental information. Clarkson et al., (2008) pointed out that profitable firms tend to produce more substantive and detailed disclosure. The environmental reporting is positively related to both environmental and financial performance.

Cormier and Magnan (2003) found that profitability is positively correlated with the extent of Environmental disclosure and suggested that profitable firms use disclosure to differentiate themselves from competitors and maintain investor confidence. Hossain, et al. (2006) found a positive but weak relationship between profitability and environmental disclosure and also highlighted that profitability cannot be considered as a sole determinant of disclosure in developing countries. Hackston and Milne (1996) used profitability as one of the variables and found no strong influence on volume of disclosure. It poses as a challenge to the assumption that profitability consistently drives disclosure behaviour.

Chiu and Wang (2015) pointed out that profitability theory has great association with Environmental disclosure and companies with better financial performance have been indulged in voluntarily reporting of environmental activities. Kılıç and Kuzey (2019) indicated that financial capability of a firm enhances its willingness to engage in transparency. Eljayash et al. (2013) conducted a study on oil and gas sector firms and found that profitability has only limited effect on environmental disclosure. The political and regulatory factors have more influence on firm performance.

The profitability has a positive relation with the quality of disclosure. But in certain cases, companies feel that disclosing all environmental issues will adversely affect their profitability and so it tries to disclose less. In such a situation, there is a negative relationship between profitability and disclosure. Financial performance of an organisation defines the financial progress and conditions of a company. The general conclusion is that companies publishing high levels of disclosure tend to portray good financial performance. When the investors of the company come to know about disclosure, it will help to increase the company's importance. There will be increased observation of the company from the point of view of investors which in turn leads to high financial performance.

3.6 Modern theories of Environmental reporting

The modern theories of Environmental reporting include Integrated reporting theory and Triple Bottom Line approach.

3.6.1 Integrated Reporting Theory

This theory was introduced by the International Integrated Reporting Council in 2010 and the framework was formally published in 2013. The financial reports and sustainability reports should be kept separately. The communication of strategy, governance, performance and prospects of an organization that lead to creation of value over time is known as Integrated reporting. The focus is on six capitals used by an organization including financial, manufactured, intellectual, human, social and environmental capital. The natural capital is a key dimension of integrated reporting

and includes disclosure about environmental risks and opportunities, the effect of environmental issues on value creation and linking environmental performance with strategy, governance and financial outlook.

The Integrated reporting involves linking financial and non-financial information and recognizing interdependencies with stakeholders. The reporting focus on what truly impacts value creation and long term risks and opportunities. The key principles underlying integrated reporting includes conciseness, reliability, consistency and comparability. The main strengths of integrated reporting include bridging financial and environmental social and governance disclosure into single report and focus on long term value creation thereby providing a holistic picture of performance, helping investors to assess risks and sustainability and encouraging companies to embed sustainability into strategy. The main weaknesses include variations in the adoption levels, measurement issues in connection with non-financial capital and limited assurance of non-financial data.

3.6.2 Triple Bottom Line Approach

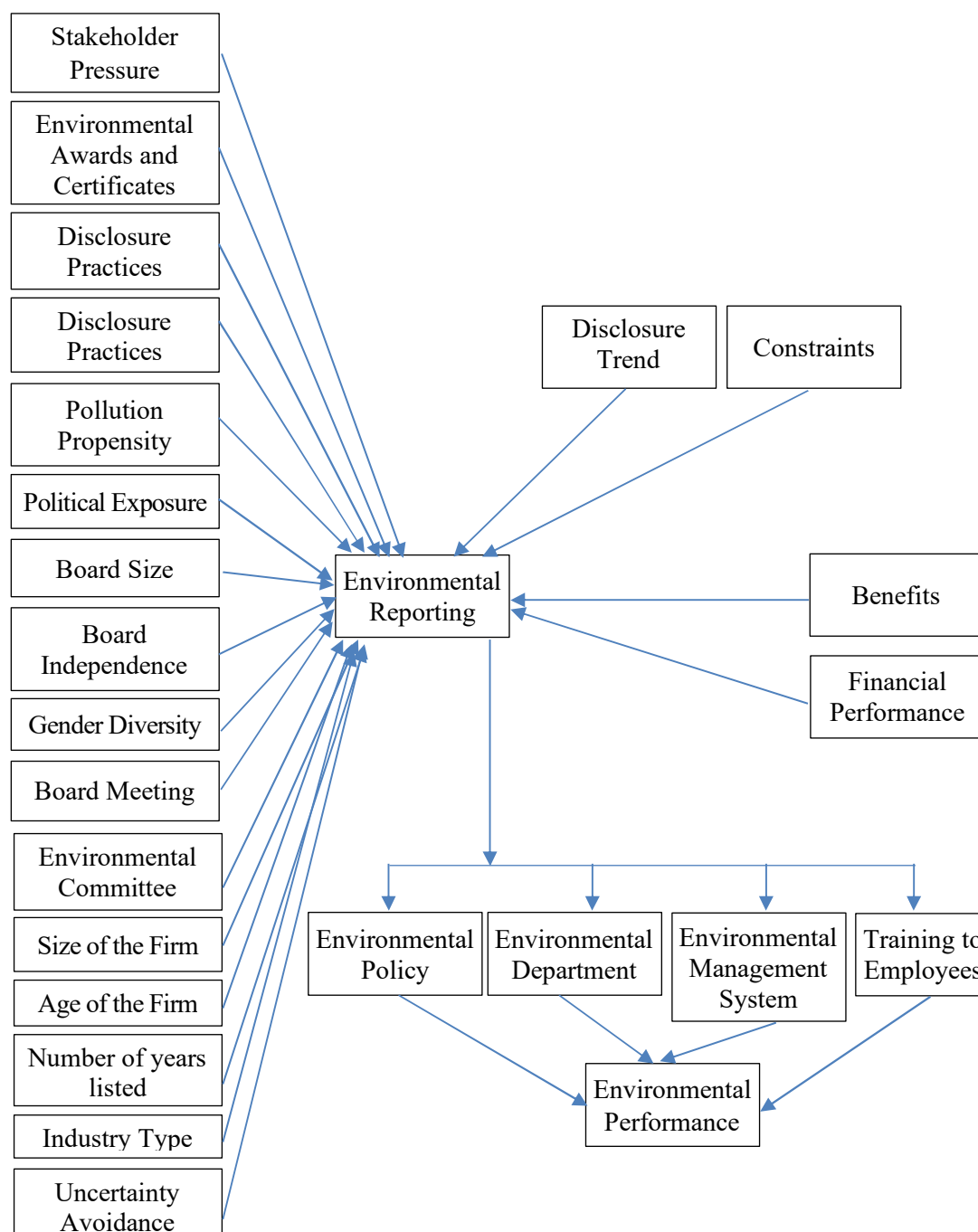
A sustainability reporting approach where both the financial performance and their social and environmental impacts are disclosed by the firm is termed as Triple bottom line approach of reporting. The focus is shifted from shareholder value to stakeholder value and lays the foundation for modern ESG and Integrated Reporting frameworks. The company's performance is measured across three dimensions including Economic, Social and Environmental dimensions. The economic dimension comprises of revenues, cost, shareholder value and economic impact. On the other hand, social dimensions comprise of labour practices, community contributions, diversity and human rights. The environmental information reported includes emissions, waste, biodiversity and climate impact. The main purpose of this approach is to provide a holistic view of company performance, to ensure long term sustainability and to help stakeholders to evaluate the responsibility and sustainability of the company.

3.7 Conceptual Model

Based on these theoretical frameworks, a conceptual model was developed by researcher

Figure 3.2

Conceptual Model



Source: Compiled by Researcher

3.8 Summary

This chapter presents various theories that guide the environmental reporting practices of an organization. Environmental reporting is a subset of CSR and they are supported by various traditional and modern theories that explain the reasons behind engaging in reporting of environmental impacts by organizations. The reporting is a multifaceted practice. Traditional theories focus on explaining reporting from compliance and stakeholder management perspective whereas modern theories incorporate strategic, dynamic, institutional and critical views. These theories applied together offer a comprehensive framework for understanding the determinants, processes and implications of environmental reporting in contemporary organizations.

Chapter 4

DETERMINANTS OF ENVIRONMENTAL DISCLOSURE IN AUTOMOBILE MANUFACTURING COMPANIES IN SOUTH INDIA

4.1	Introduction	184
4.2	Demographic Profile of Respondents	185
4.3	Analysis of Variables and Testing of Hypothesis.....	190
4.4	Summary.....	236

Chapter 4

DETERMINANTS OF ENVIRONMENTAL DISCLOSURE IN AUTOMOBILE MANUFACTURING COMPANIES IN SOUTH INDIA

4.1 Introduction

The previous chapter dealt with the theoretical and conceptual framework providing insight into the concept of environmental accounting and reporting and the various factors of environmental disclosure in automobile sector. The present chapter highlights the analysis of the determinants of environmental disclosure in automobile manufacturing companies in South India and it is organised into two sections. The first part gives an overview of the demographic characteristics of the respondents included in the study. The demographic profile provides an overview of respondents' background characteristics such as age, gender, occupation, experience and awareness level that helps to have a clear-cut understanding of the viewpoints of the respondents. The respondents are categorized into employees and external auditors.

The second part provided a detailed overview of factors that hinder or drive environmental disclosure within the industry and the findings provide insights into how these factors influence the behaviour of disclosure thereby helps to have a broader understanding of environmental reporting in automobile sector. The second part is divided into two sections: the first section deals with testing the reliability and validity of measurement scale and the second section deals with analysis of the various determinants of environmental disclosure. A comparative analysis of the differences in the perception of respondents on each of the sub statements of the constructs is examined by applying independent sample t test and the differences in the respondent's perception on various determinants is also analysed. The Exploratory Factor Analysis (EFA) explored four factors affecting environmental disclosure including organizational characteristics, sustainability and risk management, stakeholders influence and governance and assurance. The SEM was used for analyzing the data to determine the significant effect of these factors on environmental disclosure in automobile sector.

The seventeen significant factors affecting environmental disclosure considered in the study are Stakeholder pressure, Environmental awards and certification, Disclosure practices, Auditor type/quality, Pollution propensity, Political exposure, Media exposure, Board size, Board independence, Gender diversity, Board meetings, Environmental committee, Size of the firm, Age of the firm, Number of years listed, Nature of industry and Uncertainty avoidance.

PART I

4.2 Demographic Profile of Respondents

This section presents the demographic profile of the respondents who participated in the study titled **"Challenges and Prospects of Environmental Reporting with special reference to Automobile Industry in South India"**. Although the study's title suggests a focus on Environmental Reporting, the demographic profile of the respondents' comprised employees and external auditors from various companies. The demographic characteristics of these two groups of respondents are examined in this section to provide an understanding of the background and composition of the sample.

The demographic profile of the respondents was analysed using frequency and percentage distributions. This analysis provides a comprehensive overview of the characteristics of the employees and external auditors who participated in the study. By examining the demographic profile of the respondents, this section lays the foundation for further analysis and interpretation of the data collected in the study.

4.2.1 Employees

This section presents the analysis of data collected from 400 employees of the automobile manufacturing companies who participated in the study entitled **"Challenges and Prospects of Environmental Reporting with special reference to Automobile Industry in South India"**. The demographic variables examined include age, designation, department, experience, marital status, educational qualification, and gender.

Table 4.1

Demographic Profile of Employees

		Frequency	Percentage	Cumulative Percentage
Age	21-30	17	4	4
	31-40	168	42	46
	41-50	190	48	94
	51-60	25	6	100
Designation	Managers	235	59	59
	Top level officials	165	41	100
Department	Research & Development	60	26	26
	Manufacturing	42	18	44
	Supply chain/Logistics	40	16	60
	Environmental Sustainability	13	6	66
	Marketing & Sales	75	32	98
	Others	5	2	100
Experience	5-10 years	86	22	22
	10-15 years	201	50	72
	15-25 years	113	28	100
Marital status	Married	354	89	89
	Un married	46	11	100
Educational Qualification	Graduate	12	3	3
	Post Graduate	190	48	51
	Professional Degree	197	48	99
	Others	1	1	100
Gender	Male	275	69	69
	Female	125	31	100

Source: Primary Data

The respondents represent a diverse range of age groups. A significant portion of respondents (48 percent) belong to the age group ranging from 41 to 50 years, indicating a strong presence of middle adulthood respondents in the sample. This was followed by respondents in the age group of 31-40 years (42 percent), suggesting a substantial presence of young adulthood respondents, followed by a small proportion of late adulthood respondents (6 percent) in the age group of 51-60 years

of age. The remaining 4 percent of the respondents belong to 21-30 years of age, indicating a negligible representation of youth in the sample. There was higher representation of middle adulthood respondents with a mild presence of youth and established adults.

The majority of the respondents (59 percent) held managerial positions in the organization and average number of respondents (41 percent) were top level officials representing Vice President, CEO, CFO, MD and directors. This indicates a significant presence of managerial personnel in the sample.

The majority of the managerial personnel (32 percent) belong to marketing & sales department, average number of respondents (26 percent) belong to research and development department followed by manufacturing (18 percent) and supply chain & Logistics (16 percent) respectively while a very negligible portion of respondents (2 percent) were from other departments namely information technology. This indicates a significant presence of managerial personnel from marketing & sales department.

The majority of the respondents (50 percent) had between 10-15 years of experience, while 28 percent had 15-25 years of experience. This indicates a higher presence of experienced personnel in the sample. The remaining 22 percent of the respondents had medium level of experience ranging from 5-10 years.

The majority of the respondents (89 percent) were married, while a very negligible proportion (11 percent) were unmarried. This indicates a high presence of married respondents in the sample. The majority of the respondents (48 percent) held a professional and postgraduate degree. This indicates a higher presence of highly educated respondents in the sample. The remaining 3.0 percent of the respondents held a graduate degree, while a negligible proportion (1 percent) belong to the "others" category.

The majority of the respondents (69 percent) were male, while 31 percent were female. This indicates a significant dominance of male respondents in the sample.

4.2.2 External Auditors

This section presents the analysis of data collected from 400 external auditors of the automobile manufacturing companies who participated in the study entitled **“Challenges and Prospects of Environmental Reporting with special reference to Automobile industry in South India”**. The demographic variables examined include age, work experience, gender, marital status, type of auditors, area of practice, and level of knowledge in Environmental reporting standards.

Table 4.2

Demographic Profile of External Auditors

		Frequency	Percentage	Cumulative Percentage
Age	21-30	15	4	4
	31-40	170	43	47
	41-50	188	47	94
	51-60	27	6	100
Work experience	5-10 Years	79	20	20
	10-15 Years	171	43	63
	15-25 Years	150	37	100
Gender	Male	281	70	70
	Female	119	30	100
Marital status	Married	366	92	92
	Unmarried	34	8	100
Type of external auditors	Chartered accountants	255	64	64
	Energy auditors	145	36	100
Area of practice	Auditing	193	48	48
	Taxation	168	42	90
	Advisory	30	8	98
	Corporate Finance	9	2	100
Level of knowledge	Beginner	40	10	10
	Intermediate	248	62	72
	Advanced	112	28	100

Source: Primary Data

The respondents belong to different age category. The majority of the respondents (47 percent) belong to the age group ranging from 41 to 50 years, indicating a high presence of middle adulthood respondents in the sample. This was followed by respondents in the age group of 31-40 years (43 percent), suggesting a substantial presence of young adulthood respondents, followed by a small proportion of late adulthood respondents (6 percent) in the age group of 51-60 years of age. The remaining 4 percent of the respondents belong to 21-30 years of age, indicating a negligible presence of youth in the sample.

The respondents had a diverse range of work experience. The majority of the respondents (43 percent) had work experience ranging from 10 to 15 years, indicating a significant presence of mid-career professionals in the sample. This was followed by respondents with work experience of 15-25 years (37 percent), suggesting a substantial presence of highly experienced professionals. The remaining 20 percent of the respondents had 5-10 years of work experience, indicating a smaller presence of early-career professionals with moderate level of experience. None of them were having less than 5 years of work experience.

The majority of the respondents (70 percent) were male, while 30 percent were female. This indicates a significant dominance of male respondents in the sample. The majority of the respondents (92 percent) were married, while a small proportion (8 percent) were unmarried. This indicates a significant dominance of married respondents in the sample.

The high proportion of respondents in the sample (64 percent) were chartered accountants conducting statutory audit and average number of respondents (36 percent) were experts in energy audit.

The respondents belong to different area of practice. The majority of the respondents (48 percent) practice in the area of Auditing, indicating a significant presence of audit concentration in the sample. This was followed by respondents practicing in the area of Taxation (42 percent), suggesting a substantial presence of respondents focusing on providing services related to tax planning, followed by a

negligible proportion of respondents (8 percent) doing advisory work. The remaining 2 percent of the respondents working in the field of corporate finance, indicating under representation in corporate finance in the sample.

The respondents had a diverse range of expertise in the field of environmental reporting standards like GRI. The majority of the respondents (62 percent) had reached intermediate level, indicating a significant presence of professionals having moderate knowledge on Environmental reporting in the sample. This was followed by respondents with advanced level of knowledge in the field (28 percent), suggesting a substantial presence of expert knowledge professionals having high degree of understanding and familiarity with Environmental reporting. The remaining 10 percent of the respondents were beginners indicating a minor presence of professionals who are novice having a basic entry level understanding of environmental reporting.

PART II

4.3 Analysis of Variables and Testing of Hypothesis

The environmental reporting practices of a firm are influenced by a combination of different factors. These factors influence both the quantity and quality of disclosure. Seventeen key factors affecting environmental disclosure are analysed in this objective. The main aim is to determine the factor which has highest impact on environmental disclosure. All the seventeen factors are categorized into four groups including organizational characteristics, sustainability and risk management, stakeholder influence and governance and assurance. The organizational characteristics include number of years listed, board size, board meeting, size of firm, age of the firm, board independence and environmental committee. Media exposure, gender diversity and environmental awards and certification come under sustainability and risk management. The factors coming under stakeholder influence include uncertainty avoidance and stakeholder pressure and auditor type and quality, political exposure, disclosure practices, type of industry and pollution propensity come under governance and assurance. Many of these factors have significant

positive effect on disclosure. The findings help to provide greater insights for the company and policymakers to prioritize on those factors which have greater impact on disclosure. The companies that face frequent pressure from stakeholders will disclose more environmental information for meeting the expectations of different categories of stakeholders.

SECTION A

4.3.1 Measurement Scale Validation

To establish the reliability and validity of the data, various statistical tools were applied. Specifically, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted to examine the factor structure and construct validity of the scales. Convergent validity and discriminant validity assessments were also performed to evaluate the scales' ability to measure the intended constructs.

Furthermore, reliability analysis using Cronbach's alpha was undertaken to assess internal consistency, while normality testing was conducted using the One-Sample Kolmogorov-Smirnov (K-S) test, skewness, and kurtosis to examine data distribution assumptions. The results of these analyses provided evidence for the validity and reliability of the measurement scales, thereby supporting the integrity of the data for subsequent analysis.

4.3.1.1 Exploratory Factor Analysis

The table provided below presents the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity, conducted to assess the suitability of the data for factor analysis in examining the determinants of environmental disclosure.

Table 4.3

KMO and Bartlett's Test- Determinants of Environmental Disclosure

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.929
Approx. Chi-Square	3954.640
Bartlett's Test of Sphericity	df
	136
	Sig.
	.000

Source: Primary Data

The results revealed a KMO measure of 0.929, exceeding the recommended threshold of 0.6, indicating satisfactory sampling adequacy. Furthermore, Bartlett's test of sphericity yielded a significant result ($\chi^2 = 3954.640$, $df = 136$, $p < 0.001$), rejecting the null hypothesis of no correlation between variables. This confirmed the presence of significant correlations, supporting the factorability of the data.

Table 4.4

Communalities- Determinants of Environmental Disclosure

Determinants	Initial	Extraction
Stake Holder pressure	1.000	.719
Environmental awards and certification	1.000	.651
Disclosure practices	1.000	.752
Auditor type/quality	1.000	.801
Pollution propensity	1.000	.666
Political exposure	1.000	.726
Media exposure	1.000	.749
Board size	1.000	.674
Board independence	1.000	.562
Gender diversity	1.000	.618
Board meeting	1.000	.609
Environmental committee	1.000	.695
Size of the firm	1.000	.593
Age of the firm	1.000	.633
Number of years listed	1.000	.739
Type of industry	1.000	.715
Uncertainty avoidance	1.000	.772

Extraction Method: Principal Component Analysis.

Source: Primary Data

The communalities ranged from 0.562 (Board Independence) to 0.801 (Auditor Type/Quality), indicating a moderate to high proportion of variance explained by the underlying factors. The majority of variables exhibited communalities above 0.6, suggesting that the extracted factors adequately captured the underlying structure of the data. These findings supported the factor analysis approach, indicating that the determinants of environmental disclosure shared common underlying factors. The moderate to high communalities suggested that the extracted factors effectively represented the data, enabling the identification of meaningful patterns and relationships.

Table 4.5

Total Variance Explained- Determinants of Environmental Disclosure

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	8.034	47.259	47.259	8.034	47.259	47.259	4.332	25.480	25.480
2	2.001	11.772	59.030	2.001	11.772	59.030	3.874	22.786	48.267
3	.841	4.947	63.977	.841	4.947	63.977	1.994	11.728	59.995
4	.797	4.685	68.662	.797	4.685	68.662	1.473	8.668	68.662
5	.680	4.000	72.663						
6	.608	3.576	76.239						
7	.552	3.249	79.488						
8	.528	3.106	82.594						
9	.513	3.019	85.613						
10	.432	2.540	88.153						
11	.399	2.345	90.497						
12	.349	2.052	92.549						
13	.289	1.701	94.250						
14	.287	1.689	95.939						
15	.272	1.601	97.540						
16	.234	1.378	98.918						
17	.184	1.082	100.000						

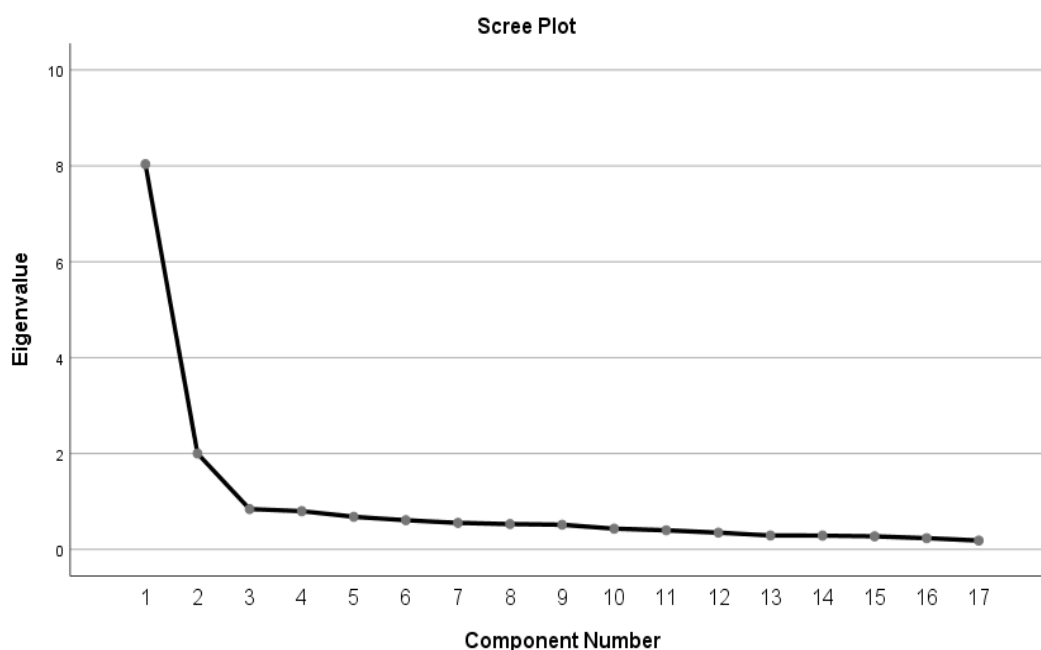
Extraction Method: Principal Component Analysis.

Source: Primary Data

The analysis extracted 17 components, with the first four components explaining 68.662% of the total variance. Component 1 accounted for 47.259% of the variance, indicating a dominant factor. The scree plot suggested retention of four factors, explaining 68.662% of the variance.

Figure 4.1

Determinants of Environmental Disclosure



These findings supported the factor analysis approach, revealing underlying factors explaining significant variance in environmental disclosure determinants. The results provided statistical justification for reducing the data to four primary factors, facilitating interpretation and identification of meaningful patterns. The extracted factors contributed to a comprehensive understanding of environmental disclosure determinants, informing strategies for enhanced disclosure practices.

Table 4.6*Component Matrix- Determinants of Environmental Disclosure*

	Component			
	1	2	3	4
Environmental committee	.791	-.248	.086	-.013
Number of years listed	.772	-.243	-.290	.015
Media Exposure	.767	-.196	.306	-.166
Age of the firm	.757	-.207	-.126	-.014
Board Size	.729	-.295	-.170	-.164
Pollution Propensity	.712	.355	.048	-.179
Disclosure Practices	.707	.498	.053	.043
Size of the firm	.681	-.352	-.077	-.017
Board Independence	.673	-.322	-.050	.043
Environmental awards and Certification	.667	.180	.414	-.034
Political Exposure	.655	.510	-.189	.032
Board meeting	.655	-.139	-.351	-.193
Auditor Type/Quality	.644	.587	.203	-.027
Type of industry	.629	.512	-.226	-.078
Gender Diversity	.612	-.328	.304	-.207
Uncertainty avoidance	.611	.092	-.143	.608
Stake Holder Pressure	.578	-.278	.250	.496

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Source: Primary Data

The component matrix revealed that Component 1 comprised variables related to organizational characteristics (e.g., Environmental committee, Number of years listed, Media Exposure) with high loadings (.791, .772, .767). Component 2 consisted of variables associated with governance and assurance (e.g., Auditor Type/Quality, Board Independence, Disclosure Practices) with significant loadings (.587, .498, .673). Components 3 and 4 represented mixed factors with lower loadings.

Table 4.7

Rotated Component Matrix- Determinants of Environmental Disclosure

	Component			
	Organisational Characteristics	Governance and Assurance	Sustainability and Risk Management	Stake Holders Influence
Number of years listed	.777	.252	.098	.248
Board Size	.758	.191	.238	.083
Board meeting	.722	.294	.027	.000
Size of the firm	.676	.099	.277	.222
Age of the firm	.675	.264	.234	.228
Board Independence	.630	.113	.277	.275
Environmental committee	.616	.233	.439	.262
Auditor Type/Quality	.031	.829	.312	.123
Political Exposure	.256	.798	-.020	.155
Disclosure Practices	.176	.797	.209	.204
Type of industry	.280	.796	-.037	.040
Pollution Propensity	.306	.699	.289	.012
Media Exposure	.501	.257	.645	.125
Gender Diversity	.477	.065	.619	.054
Environmental awards and Certification	.157	.492	.591	.187
Uncertainty avoidance	.289	.382	-.045	.735
Stake Holder Pressure	.294	.038	.385	.695

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Source: Primary Data

The rotated component matrix revealed four distinct factors: Organisational Characteristics, Governance and Assurance, Sustainability and Risk Management, and Stakeholders' Influence. Component 1 (Organisational Characteristics) comprised variables such as Number of years listed (.777), Board Size (.758), and Size of the firm (.676). Component 2 (Governance and Assurance) included Auditor Type/Quality (.829), Political Exposure (.798), and Disclosure Practices (.797). Components 3 and 4 represented Sustainability and Risk Management and Stakeholders' Influence, respectively. These findings supported the existence of distinct, interpretable factors influencing environmental disclosure. The extracted components provided valuable insights into the relationships between determinants, enabling the identification of key drivers. The results contributed to a comprehensive understanding of environmental disclosure determinants, informing strategies for enhanced transparency and accountability practices.

4.3.1.2 Confirmatory Factor Analysis

This section reported on the Confirmatory Factor Analysis (CFA) conducted to validate the measurement model of environmental disclosure determinants. CFA, a statistical technique within the structural equation modeling (SEM) framework, was employed to examine the relationships between observed variables and their underlying latent constructs. By assessing the fit of the a priori specified model to the data, CFA provided a rigorous test of the theoretical framework, enabling the evaluation of construct validity and reliability.

Figure 4.2

CFA-Determinants of Environmental Disclosure.

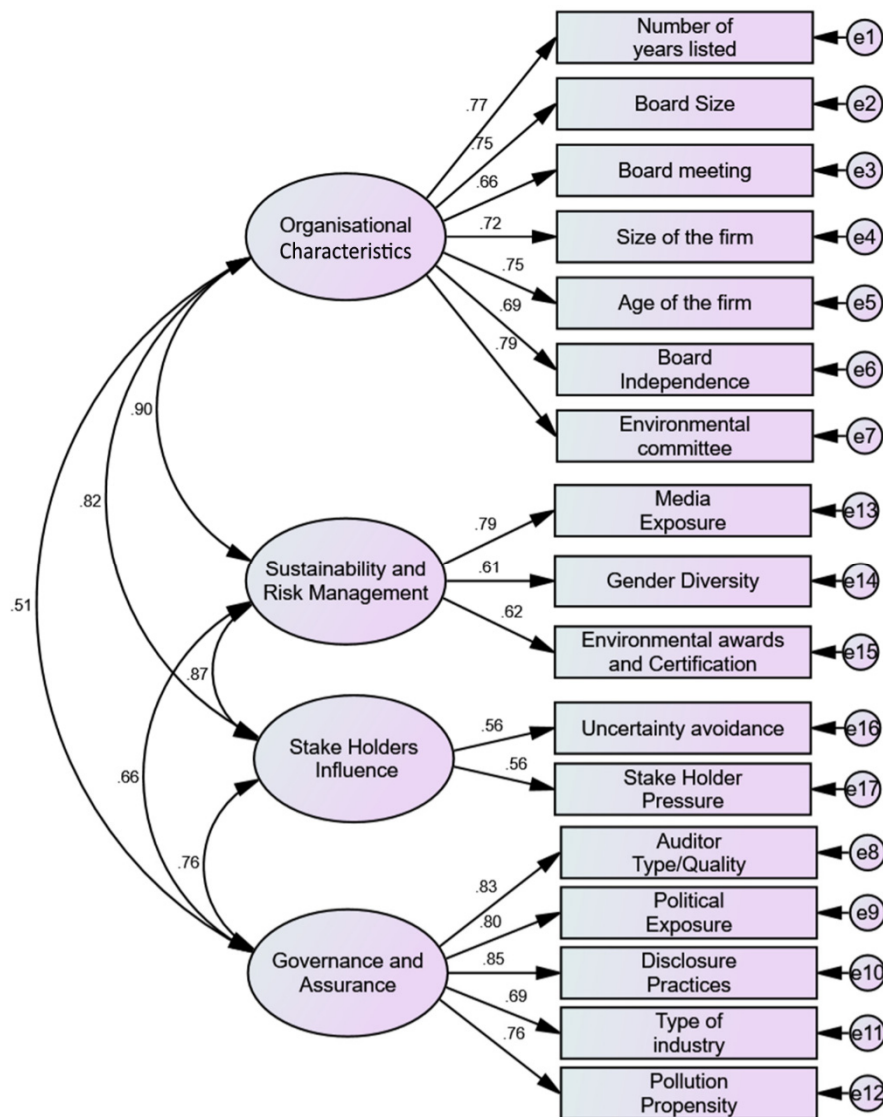


Table provided below presents the model fit indices for the measurement model examining the determinants of environmental disclosure.

Table 4.8

Model Fit Indices- Determinants of Environmental Disclosure

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.94	.91	.91	.92	.047
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated excellent model fit, exceeding recommended thresholds: Comparative Fit Index (CFI) = 0.94, Goodness-of-Fit Index (GFI) = 0.91, Tucker-Lewis Index (TLI) = 0.91, Normed Fit Index (NFI) = 0.92, and Root Mean Square Error of Approximation (RMSEA) = 0.047. These findings supported the validity of the measurement model, confirming adequate fit to the data. The satisfactory fit indices provided statistical justification for proceeding with structural equation modeling, enabling the examination of relationships between determinants and environmental disclosure.

Table 4.9

Summary of Scale Validation-Determinants of Environmental Disclosure

Sl.no	Criteria	Result
1	Exploratory Factor Analysis	Explored 4 Factors
2	Confirmatory factor analysis	Confirmed
3	Reliability	Satisfied
4	Convergent validity	Satisfied
5	Discriminant validity	Satisfied
6	Normality	Satisfied

Source: Primary Data

The results indicated satisfactory scale validation outcomes. Exploratory Factor Analysis (EFA) revealed four underlying factors, while Confirmatory Factor Analysis (CFA) confirmed the factor structure. Reliability analysis yielded satisfactory results, and Convergent Validity and Discriminant Validity assessments demonstrated adequate construct validity. Normality testing also yielded satisfactory

results. These findings supported the validity and reliability of the measurement scales employed to assess the determinants of environmental disclosure. The satisfactory scale validation outcomes provided statistical justification for proceeding with data analysis, enabling confident interpretation of the findings.

SECTION B

4.3.2 Data Analysis of Determinants of Environmental Disclosure

This objective mainly focuses on identifying the key factors that influence the decision of an organisation to disclose environmental information. Both internal and external factors that shape the extent, quality and nature of environmental reporting is considered. The main determinants of environmental disclosure considered for the study includes stakeholder pressure, environmental awards and certification, disclosure practices, auditor type/quality, pollution propensity, political exposure, media exposure, board size, board independence, gender diversity, board meeting, environmental committee, size of the firm, age of the firm, number of years listed, type of industry and uncertainty avoidance. This objective helps to give keen insights on how these determinants contribute to variations in environmental disclosure practices across firms and sectors. The four primary variables were examined: Organisational Characteristics, Sustainability and Risk Management, Stakeholders' Influence, and Governance and Assurance. A multi-faceted analytical approach was employed to investigate the relationships among these variables. Descriptive statistics provided an overview of the data distribution. Independent Sample T-Test was conducted to examine significant differences in environmental disclosure practices between various sub-groups. Structural Equation Modeling (SEM) was subsequently applied to examine the complex relationships between the four determinants and environmental disclosure.

4.3.2.1 Stake Holder Pressure

The study examines the perceptions of employees and external auditors regarding stakeholder pressure. The table presents the results of an independent sample t-test comparing the mean scores of employees and external auditors on various statements related to stakeholder interests, environmental policy, and disclosure.

Table 4.10

Comparative Analysis of Employees' and External Auditors' Perceptions on Stake Holder Pressure- Independent Sample T Test

Stakeholder Pressure	Category of Respondents	Mean	Std. Deviation	T Value	P Value
The company should consider stakeholders interest	Employees	4.9125	.33184	11.227	.000
	External Auditors	4.3550	.93604	11.227	.000
Disclosure helps to avoid employee's disappointment	Employees	4.4375	.56736	1.375	.170
	External Auditors	4.3625	.93181	1.375	.170
Managers perception is core element influencing company's environmental policy	Employees	4.1925	.66825	-2.965	.003
	External Auditors	4.3625	.93181	-2.965	.003
Internal stakeholders support Environmental Disclosure and external stakeholders' impulse pressure to disclose information	Employees	4.0350	.73833	-5.591	.000
	External Auditors	4.3675	.93253	-5.591	.000
Major company shareholders are affected by good Environmental reputation and production efficiency	Employees	3.9825	.77375	-6.035	.000
	External auditors	4.3500	.94059	-6.035	.000

Source: Primary Data

The findings reveal significant differences between employees' and external auditors' perceptions. Employees scored higher on considering stakeholders' interest (mean=4.9125, $p < 0.001$) while external auditors emphasized managers' perception as the core element in shaping environmental policy (mean=4.3625, $p < 0.001$). However, both groups agreed on the importance of disclosure in avoiding employee disappointment. Statistically significant differences were found in managers' perception, internal stakeholders' support and external stakeholders' impulse on environmental disclosure, and the impact of environmental reputation and production efficiency on major shareholders ($p < 0.05$).

The study's findings suggest that employees and external auditors have distinct perspectives on stakeholder pressure and environmental disclosure. Companies should consider these differences when developing stakeholder engagement strategies and environmental policies. The results highlight the importance of integrating stakeholder interests and environmental considerations into corporate decision-making. By

prioritizing transparency and disclosure, companies can maintain stakeholder trust and support, ultimately contributing to their social and environmental responsibility.

4.3.2.2 Environmental Awards and Certification

This table presents the results of independent sample t-test comparing the perceptions of employees and external auditors regarding environmental awards and certification. The respondents rated their agreement on various statements related to the impact of environmental awards, ISO 14000 certification, and corporate environmental responsibility.

Table 4.11

Comparative Analysis of Employees' and External auditors' Perceptions on Environmental Awards and Certification- Independent Sample T Test

Environmental awards and certification	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Awards encourage companies to take care of environment and disclose more environmental information	Employees	4.9200	.32227	12.737	.000
	External auditors	4.2250	1.04264	12.737	.000
Companies with ISO 14000 show more commitment to Environment policy	Employees	4.4875	.51039	4.494	.000
	External auditors	4.2275	1.03848	4.494	.000
Firm shows continuous improvement in Environmental performance	Employees	4.3475	.53616	2.035	.042
	External auditors	4.2275	1.05048	2.035	.042
Provide ethical conduct for customers and minimize harmful impacts to environment	Employees	4.2675	.55381	.805	.421
	External auditors	4.2200	1.04130	.805	.421
Help to prevent pressure from stakeholders and competitors	Employees	4.1825	.62464	-1.310	.191
	External auditors	4.2600	1.00495	-1.310	.191

Source: Primary Data

The findings reveal significant differences between employees' and external auditors' perceptions. Employees scored higher on the importance of awards encouraging companies to take care of environment and disclose more information (mean = 4.9200, $p < 0.001$) and ISO 14000 certification indicating commitment to environmental policy (mean = 4.4875, $p < 0.001$) and continuous improvement in Environmental performance (mean=4.3475, $p = .042$). However, no significant differences were found regarding ethical conduct and minimising harmful impacts in environment, stakeholder pressure, and competitor pressure ($p > 0.05$).

The study's findings suggest that employees and external auditors have distinct perspectives on environmental awards and certification. Companies should consider these differences when developing environmental strategies and stakeholder engagement initiatives. The results highlight the importance of environmental awards and certification, such as ISO 14000, in demonstrating corporate commitment to environmental responsibility. By prioritizing environmental performance and disclosure, companies can enhance their reputation, minimize harmful impacts, and maintain stakeholder trust.

4.3.2.3 Disclosure Practices

This table presents the results of independent sample t-test comparing the perceptions of employees and external auditors regarding disclosure practices in corporate reports. The table examines the mean scores and standard deviations of respondents' agreement on various statements related to environmental disclosure.

Table 4.12

Comparative Analysis of Employees' and External auditors' Perceptions on Disclosure Practices- Independent Sample T Test

Disclosure Practices	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Qualitative environmental information is included in directors report	Employees	4.8775	.44496	15.828	.000
	External auditors	3.8525	1.21632	15.828	.000
Statutorily required information on Conservation of Energy is included in the report	Employees	4.2950	.50855	6.326	.000
	External auditors	3.8825	1.20096	6.326	.000
Organizations commitment towards social goals are highlighted	Employees	4.2675	.59736	5.574	.000
	External auditors	3.8975	1.18554	5.574	.000
Large companies give Environmental information in detail in Chairman's statement as per Global Reporting Initiative guidelines	Employees	3.8300	.74329	-.816	.415
	External auditors	3.8875	1.19726	-.816	.415
Firms that fail to meet environmental expectations try to mitigate negative effects by disclosing more	Employees	4.1150	.61865	3.381	.001
	External auditors	3.8875	1.19516	3.381	.001

Source: Primary Data

The findings reveal significant differences between employees' and external auditors' perceptions. Employees scored higher on the inclusion of qualitative environmental information in directors' reports (mean = 4.8775, $p < 0.001$), the report should provide statutorily required information on energy conservation (mean = 4.2950, $p < 0.001$), organizations' commitment to social goals should be given due focus (mean = 4.2675, $p < 0.001$) and those firms that do not meet environmental expectations disclose more to reduce negative effects (mean = 4.1150, $p < 0.05$). However, no significant difference was found regarding the provision of environmental information in the chairman's statement according to GRI guidelines for large companies ($p = 0.415$).

The study's findings suggest that employees and external auditors have distinct perspectives on disclosure practices. Companies should consider these differences when developing environmental reporting strategies. The results highlight the importance of transparent disclosure of environmental information, including qualitative data and commitments to social goals. By prioritizing environmental reporting, companies can demonstrate accountability and responsibility, ultimately contributing to stakeholder trust and confidence. The significant difference in perceptions regarding firms' disclosure of environmental expectations also underscores the need for companies to proactively address environmental concerns.

4.3.2.4 Auditor Type/Quality

The table below presents the results of independent sample t-test comparing the perceptions of employees and external auditors regarding the impact of auditor type and quality on environmental reporting. The table examines the mean scores and standard deviations of respondents' agreement on various statements related to auditor quality and environmental assessment.

Table 4.13

Comparative Analysis of Employees' and External auditors' Perceptions on Auditor Type/Quality- Independent Sample T Test

Auditor Type/Quality	Category of Respondents	Mean	Std. Deviation	T Value	P value
High quality auditors can better assess the environmental impact of firm's business operations	Employees	4.9200	.32227	15.897	.000
	External auditors	3.6975	1.50388	15.897	.000
They produce more high-quality environmental information	Employees	4.2900	.47059	7.338	.000
	External auditors	3.7200	1.48057	7.338	.000
Auditors recommend clients to report Environmental information	Employees	4.1200	.50620	4.793	.000
	External auditors	3.7500	1.45870	4.793	.000
High corporate moral values of the company affect the selection and quality of the auditor	Employees	4.1400	.45927	5.295	.000
	External auditors	3.7300	1.47904	5.295	.000
Larger firms appoint Big 4 accounting firms as auditors to gain international recognition	Employees	4.5825	.57360	10.722	.000
	External auditors	3.7350	1.47316	10.722	.000

Source: Primary Data

The findings reveal significant differences between employees' and external auditors' perceptions. Employees scored higher on the ability of high-quality auditors to assess environmental impact (mean = 4.9200, $p < 0.001$), to produce high-quality environmental information (mean = 4.2900, $p < 0.001$), and to recommend environmental reporting (mean = 4.1200, $p < 0.001$). Employees also emphasized the importance of corporate moral values in selecting auditors (mean = 4.1400, $p < 0.001$) and the preference for Big 4 accounting firms in larger companies to gain reputation internationally (mean = 4.5825, $p < 0.001$).

The study's findings suggest that employees and external auditors have distinct perspectives on auditor quality and its impact on environmental reporting. Companies should consider these differences when selecting auditors and developing environmental reporting strategies. The results highlight the importance of high-quality auditors in ensuring accurate environmental assessments and reporting. The

significant differences also underscore the role of corporate moral values and auditor reputation in shaping environmental reporting practices. By prioritizing auditor quality and transparency, companies can enhance stakeholder trust and confidence in their environmental reporting.

4.3.2.5 Pollution Propensity

This table presents the results of independent sample t-test comparing the perceptions of employees and external auditors regarding pollution propensity and the effectiveness of various measures in reducing pollution emissions. The table examines the mean scores and standard deviations of respondents' agreement on various statements related to environmental information, government policies, and tax incentives.

Table 4.14

Comparative Analysis of Employees' and External auditors' Perceptions on Pollution Propensity - Independent Sample T Test

Pollution Propensity	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Environmental information announcement reduces pollution emissions and promotes low carbon development of enterprise	Employees	4.9000	.43065	15.189	.000
	External auditors	4.0300	1.06156	15.189	.000
Governments pollution control policy improves atmospheric environment	Employees	4.1825	.44687	2.593	.010
	External auditors	4.0325	1.06738	2.593	.010
Environmental tax reduces pollution emissions per unit of output	Employees	3.8425	.54630	-3.107	.002
	External auditors	4.0275	1.05808	-3.107	.002
Tax subsidies for clean companies help to reduce Environmental pollution	Employees	3.9600	.51387	-.971	.332
	External auditors	4.0175	1.06773	-.971	.332
Firms in more polluting industry reporting its toxic waste disclose more to avoid adverse actions of stakeholders	Employees	4.0775	.52649	.927	.354
	External auditors	4.0225	1.06293	.927	.354

Source: Primary Data

The findings reveal significant differences between employees' and external auditors' perceptions. Employees scored higher on the effectiveness of environmental information announcements in reducing pollution emissions (mean = 4.9000, $p < 0.001$) and the impact of government pollution control policies on atmospheric environment (mean = 4.1825, $p = 0.010$). However, external auditors scored higher on the influence of environmental tax in reducing pollution emissions per unit of output (mean = 4.0275, $p = 0.002$). There has been no significant difference between the perception of external auditors and employees that tax subsidies help to reduce environmental pollution ($p = .332$) and firms in more polluting industry that reports toxic waste will disclose greater information to avoid adverse actions of stakeholders ($p = .354$).

The study's findings suggest that employees and external auditors have distinct perspectives on pollution propensity and mitigation strategies. Companies should consider these differences when developing environmental policies. The results highlight the importance of transparency and disclosure in reducing pollution emissions and promoting low-carbon development. The significant differences also underscore the role of government policies and tax incentives in shaping environmental practices. By prioritizing environmental sustainability, companies can minimize adverse stakeholder reactions and contribute to a cleaner environment.

4.3.2.6 Political Exposure

This table presents the results of independent sample t-test comparing the perceptions of employees and external auditors regarding the impact of political exposure on environmental performance and disclosure. The table examines the mean scores and standard deviations of respondents' agreement on various statements related to societal expectations, political connections, and social responsibility.

Table 4.15

Comparative Analysis of Employees' and External auditors' Perceptions on Political Exposure- Independent Sample T Test

Political Exposure	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Society has higher expectations for environmental performance of large firms	Employees	4.9225	.31898	12.321	.000
	External auditors	3.8000	1.36001	12.321	.000
Political connection helps firms to obtain government resources, attract more media attention and increase firm's visibility	Employees	4.2175	.45904	-5.159	.000
	External auditors	3.8025	1.35206	-5.159	.000
Politically exposed firm are expected to take more social responsibility	Employees	4.1200	.49112	-6.931	.000
	External auditors	3.8100	1.34291	-6.931	.000
They have higher level of compliance with law and social norms	Employees	4.0075	.55967	-10.978	.000
	External auditors	3.7850	1.35771	-10.978	.000
High political cost compel management to disclose more Environmental information and to engage in environmentally friendly activities	Employees	4.0500	.55522	-6.632	.000
	External auditors	3.8050	1.34964	-6.632	.000

Source: Primary Data

The findings reveal significant differences between employees' and external auditors' perceptions. Employees scored higher on societal expectations for large firms' environmental performance (mean = 4.9225, $p < 0.001$), the role of political connections in securing government resources (mean = 4.2175, $p < 0.001$), and the social responsibility of politically exposed firms (mean = 4.1200, $p < 0.001$). Employees also emphasized the importance of compliance with laws and social norms (mean = 4.0075, $p < 0.001$) and the disclosure of environmental information due to high political costs (mean = 4.0500, $p < 0.001$).

The study's findings suggest that employees and external auditors have distinct perspectives on political exposure and its impact on environmental practices. Companies should consider these differences when developing environmental strategies. The results highlight the significance of political exposure in shaping environmental performance, disclosure, and social responsibility. By prioritizing transparency and compliance, companies can manage political costs, maintain

stakeholder trust, and contribute to environmental sustainability. The findings have implications for corporate social responsibility initiatives, environmental policy development, and stakeholder engagement strategies.

4.3.2.7 Media Exposure

This table presents the results of independent sample t-test comparing the perceptions of employees and external auditors regarding the impact of media exposure on environmental disclosure and corporate social responsibility. The table examines the mean scores and standard deviations of respondents' agreement on various statements related to public attention, stakeholder information, and NGO involvement.

Table 4.16

Comparative Analysis of Employees' and External auditors' Perceptions on Media Exposure- Independent Sample T Test

Media Exposure	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Increase public attention on social problems and Inform stakeholders how much company concerns on environment	Employees	4.8925	.44883	12.321	.000
	External auditors	4.3375	.78110	12.321	.000
Encourage managers to expose company's environmental activities and stakeholders get access to what they want	Employees	4.1200	.43135	-5.159	.000
	External auditors	4.3500	.78040	-5.159	.000
Increased media coverage increases the role of NGO's	Employees	4.0275	.44972	-6.931	.000
	External auditors	4.3400	.78162	-6.931	.000
Media exposure has greater frequency than yearly reports	Employees	3.7700	.64275	-10.978	.000
	External auditors	4.3300	.79226	-10.978	.000
The firms having high media exposure disclose more Environmental information	Employees	3.9875	.54598	-6.632	.000
	External auditors	4.3150	.82308	-6.632	.000

Source: Primary Data

The findings reveal significant differences between employees' and external auditors' perceptions. Employees scored higher on the role of media in increasing public attention on social problems (mean = 4.8925, $p < 0.001$). However, external auditors scored higher on the encouragement of managers to disclose environmental activities (mean = 4.3500, $p < 0.001$), the role of media in increasing NGO involvement (mean = 4.3400, $p < 0.001$), and the frequency of media coverage compared to yearly reports

(mean = 4.3300, $p < 0.001$). The auditors also emphasised that those firms which are exposed to media disclose more environmental information (mean = 4.3150, $p < 0.001$).

The study's findings suggest that employees and external auditors have distinct perspectives on media exposure and its impact on environmental disclosure. Companies should consider these differences when developing media strategies. The results highlight the significance of media exposure in shaping CSR, stakeholder engagement, and environmental disclosure practices. By prioritizing transparency and media engagement, companies can manage stakeholder expectations, maintain a positive reputation, and contribute to environmental sustainability.

4.3.2.8 Board Size

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of board size on corporate governance and environmental disclosure. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to board composition, decision-making, and stakeholder communication.

Table 4.17

Comparative Analysis of Employees' and External auditors' Perceptions on Board Size - Independent Sample T Test

Board Size	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Provide diversity in terms of expertise having financial or accounting background	Employees	4.9050	.50657	11.571	.000
	External auditors	4.2950	.92472	11.571	.000
Difficult to maintain coordination between board members and weaker decision making	Employees	4.2850	.50439	-.189	.850
	External auditors	4.2950	.92743	-.189	.850
Larger the size of board, more will be Environmental disclosure and unanimous decision can be taken	Employees	4.1850	.52580	-2.110	.035
	External auditors	4.2975	.92798	-2.110	.035
Agency conflict between managers and shareholders having different perspectives, values, and ideas	Employees	3.8675	.62524	-7.457	.000
	External auditors	4.2900	.94506	-7.457	.000
Strong board communicate with all stakeholders	Employees	3.6125	.69897	-11.293	.000
	External auditors	4.2800	.95335	-11.293	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized the importance of board diversity in terms of expertise (mean = 4.9050, $p < 0.001$). In contrast, external auditors highlighted larger board size for environmental disclosure (mean = 4.2975, $p = 0.035$), the potential for agency conflict between managers and shareholders (mean = 4.2900, $p < 0.001$) and the importance of strong board communication with stakeholders (mean = 4.2800, $p < 0.001$). At the same time there was no significant difference in the perception of employees and external auditors on difficulty in ensuring coordination among board members in cases where the size of board is large.

The study's findings suggest that employees and external auditors have distinct perspectives on board size and its impact on corporate governance and environmental disclosure. These differences have implications for board composition, decision-making processes, and stakeholder engagement strategies. By prioritizing board diversity, effective communication, and environmental disclosure, companies can enhance governance, manage stakeholder expectations, and contribute to environmental sustainability. The results underscore the importance of considering diverse perspectives in board composition and decision-making processes.

4.3.2.9 Board Independence

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of board independence on corporate governance and environmental disclosure. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to board monitoring, firm value, and stakeholder protection.

Table 4.18

Comparative Analysis of Employees' and External auditors' Perceptions on Board Independence - Independent Sample T Test

Board Independence	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Monitor managers and consider interest of stakeholder groups	Employees	4.9275	.31223	12.355	.000
	External auditors	4.2625	1.03017	12.355	.000
Independent directors in board increase firm value and protect interest of stakeholders	Employees	4.3325	.47170	.278	.781
	External auditors	4.3175	.97162	.278	.781
Independent directors contribute their skills, connections and contact and help in achieving strategic goals and disclosing more environmental information	Employees	4.3675	.54146	.363	.717
	External auditors	4.3475	.96128	.363	.717
Encourage top management to incorporate social considerations	Employees	4.1000	.54841	-3.681	.000
	External auditors	4.3075	.98507	-3.681	.000
Personal and professional relationship with the firm	Employees	3.3550	.78135	-15.341	.000
	External auditors	4.3175	.98189	-15.341	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized the importance of board independence in monitoring managers (mean = 4.9275, $p < 0.001$) and protecting stakeholder interests. In contrast, external auditors highlighted the significance of encouragement of top management in incorporating social considerations (mean=4.3075, $p < 0.001$) on board independence. Notably, employees scored lower on the influence of personal and professional relationships (mean = 3.3550, $p < 0.001$) with the firm. However, both employees and external auditors agreed that existence of independent directors enable to increase firm value, protect stakeholder interest and contribute their skills and connections achieving strategic goals thereby more disclosure of environmental information.

The study's findings suggest that employees and external auditors have distinct perspectives on board independence and its impact on corporate governance and environmental disclosure. These differences have implications for board composition,

decision-making processes, and stakeholder engagement strategies. By prioritizing board independence, companies can enhance governance, protect stakeholder interests, and promote environmental sustainability. The results underscore the importance of maintaining arm's-length relationships between board members and the firm to ensure effective oversight.

4.3.2.10 Gender Diversity

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of gender diversity on corporate governance, decision-making, and environmental disclosure. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to problem-solving, communication styles, stakeholder orientation, and socially responsible behavior.

Table 4.19

Comparative Analysis of Employees' and External auditors' Perceptions on Gender Diversity - Independent Sample T Test

Gender Diversity	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Favors problem solving by considering different perspectives and ideas	Employees	4.9125	.37443	11.920	.000
	External auditors	4.3075	.94349	11.920	.000
Women and men differ in communication style, educational background, commitment and expertise	Employees	4.3400	.60441	.314	.753
	External auditors	4.3225	.93578	.314	.753
Female directors more stakeholders oriented and they enhance board effectiveness	Employees	3.9100	.91870	-6.136	.000
	External auditors	4.3125	.93650	-6.136	.000
Positive impact on organizations socially responsible behavior and increase the propensity of disclosure	Employees	4.1025	.74389	-3.552	.000
	External auditors	4.3150	.93700	-3.552	.000
Women are more concerned than men in environmental issues and well-being of society and take actions to reduce perceived environmental risks	Employees	3.8400	1.02569	-6.873	.000
	External auditors	4.3175	.93749	-6.873	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized the benefits of gender diversity in problem-solving (mean = 4.9125, $p < 0.001$) while external auditors emphasised the benefits of gender diversity in promoting socially responsible behavior (mean = 4.3150, $p < 0.001$), stakeholder orientation of female directors (mean = 4.3125, $p < 0.001$) and women's concern for environmental issues (mean = 4.3175, $p < 0.001$). However both agreed that women and men differ in their commitment and level of expertise ($p = 0.753$).

The study's findings suggest that employees and external auditors have distinct perspectives on gender diversity and its impact on corporate governance and environmental disclosure. These differences have implications for board composition, decision-making processes, and stakeholder engagement strategies. By prioritizing gender diversity, companies can enhance governance, promote socially responsible behavior, and contribute to environmental sustainability. The results underscore the importance of inclusive leadership and diverse perspectives in driving positive organizational change.

4.3.2.11 Board Meeting

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of board meeting frequency on corporate performance, idea sharing, and disclosure. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to meeting frequency, performance discussion, issue resolution, stakeholder alertness, and decision-making.

Table 4.20

Comparative Analysis of Employees' and External auditors' Perceptions on Board Meeting - Independent Sample T Test

Board meeting	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Meeting frequency affects firms' performance and promotes idea sharing and knowledge and more disclosure	Employees	4.9150	.32870	13.148	.000
	External auditors	4.2600	.94054	13.148	.000
Provide opportunity to discuss strengths and weaknesses affecting firms' earnings	Employees	4.1550	.43755	-2.029	.043
	External auditors	4.2600	.93787	-2.029	.043
Deal with issues relating to low performance	Employees	3.9925	.41578	-5.352	.000
	External auditors	4.2675	.93976	-5.352	.000
Alert stakeholders to problems or conflicts of business operation	Employees	3.9950	.40668	-5.513	.000
	External auditors	4.2750	.93088	-5.513	.000
Major actions and decisions of the company taken in board meeting	Employees	3.2525	.73149	-17.207	.000
	External auditors	4.2725	.93296	-17.207	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized the importance of meeting frequency in promoting idea sharing and disclosure (mean = 4.9150, $p < 0.001$) and scored lower on opportunities for discussing strengths and weaknesses (mean = 4.1550, $p = 0.043$). However, external auditors scored higher on dealing with low performance issues (mean = 4.2675, $p < 0.001$), alerting stakeholders to problems (mean = 4.2750, $p < 0.001$), and taking major actions and decisions in board meeting (mean = 4.2725, $p < 0.001$).

The study's findings suggest that employees and external auditors have distinct perspectives on board meeting frequency and effectiveness. These differences have implications for board composition, decision-making processes, and stakeholder engagement strategies. By prioritizing regular and effective board meetings, companies can enhance governance, promote transparency, and contribute to long-term success. The results underscore the importance of

collaborative decision-making and stakeholder communication in driving positive organizational outcomes.

4.3.2.12 Environmental Committee

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the effectiveness of environmental committees in addressing environmental issues, managing stakeholder conflicts, and promoting sustainability. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to environmental disclosure, sustainability policies, employee awareness, and stakeholder communication.

Table 4.21

Comparative Analysis of Employees' and External Auditors' Perceptions on Environmental Committee - Independent Sample T Test

Environmental committee	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Environmental issues can be addressed and ensure better quality of Environmental disclosure	Employees	4.9500	.27874	13.105	.000
	External auditors	4.4225	.75526	13.105	.000
Manage conflict between stakeholder groups and improve company's commitment towards sustainability	Employees	4.1175	.38609	-7.325	.000
	External auditors	4.4250	.74550	-7.325	.000
Plan, implement and review sustainability policies and activities	Employees	4.0100	.36775	-9.878	.000
	External auditors	4.4250	.75551	-9.878	.000
Enhance the awareness of employees of environmental aspects of the job and make them responsible for minimizing environmental risks	Employees	4.0025	.46695	-9.911	.000
	External auditors	4.4375	.74329	-9.911	.000
Adequate communication with external stakeholders	Employees	3.7975	.61436	-13.006	.000
	External auditors	4.4275	.74910	-13.006	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized the importance of environmental committees in addressing environmental issues (mean = 4.9500, $p < 0.001$) in promoting environmental disclosure. However, external auditors scored higher on managing stakeholder conflicts (mean = 4.4250, $p < 0.001$), planning and reviewing sustainability policies (mean = 4.4250, $p < 0.001$), and enhancing employee awareness (mean = 4.4375, $p < 0.001$). They also highlighted that existence of environmental committee in the organisation ensures adequate communication with stakeholders (mean = 4.4275, $p < 0.001$).

The study's findings suggest that employees and external auditors have distinct perspectives on environmental committee effectiveness. These differences have implications for corporate sustainability strategies, stakeholder engagement, and environmental reporting practices. By establishing effective environmental committees, companies can enhance governance, promote transparency, and contribute to environmental sustainability. The results underscore the importance of collaborative efforts in addressing environmental challenges and ensuring long-term organizational success.

4.3.2.13 Size of the Firm

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of firm size on environmental disclosure, stakeholder pressure, and corporate accountability. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to public pressure, investor attraction, reporting costs, agency costs, and corporate reputation.

Table 4.22

Comparative Analysis of Employees' and External auditors' Perceptions on Size of the Firm - Independent Sample T Test

Size of the firm	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Big companies face more pressure from public to disclose more information	Employees	4.9200	.41112	10.863	.000
	External auditors	4.3975	.86970	10.863	.000
Interested to disclose information to attract more investors and influence employees	Employees	4.1550	.36921	-5.415	.000
	External auditors	4.4075	.85632	-5.415	.000
Cost of reporting environmental information is very high and small firms cannot afford	Employees	4.0700	.37477	-6.834	.000
	External auditors	4.3925	.86621	-6.834	.000
Disclosing more information reduce agency cost and creates confidence among stakeholders	Employees	3.9750	.52446	-8.524	.000
	External auditors	4.4050	.86188	-8.524	.000
Minimize public criticism and pressure from government, more accountable for environmental issues and firm become aware of maintaining good corporate reputation	Employees	3.9200	.48393	-9.787	.000
	External auditors	4.4075	.87083	-9.787	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized that large firms face more public pressure to disclose environmental information (mean = 4.9200, $p < 0.001$), while external auditors highlighted the importance of disclosure in attracting investors (mean = 4.4075, $p < 0.001$) and reducing agency costs (mean = 4.4050, $p < 0.001$). They also emphasised that small firms cannot afford cost of reporting (mean = 4.3925, $p < 0.001$) and environmental reporting helps to minimise public criticism and government pressure of large firms making them more accountable for environmental issues (mean = 4.4075, $p < 0.001$).

The study's findings suggest that employees and external auditors have distinct perspectives on the relationship between firm size and environmental disclosure. These differences have implications for corporate sustainability strategies, stakeholder engagement, and environmental reporting practices. Large firms, in

particular, must prioritize transparency and accountability to maintain a positive corporate reputation and minimize public criticism. By disclosing environmental information, firms can demonstrate their commitment to sustainability and contribute to a more environmentally responsible business landscape.

4.3.2.14 Age of the Firm

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of firm age on environmental disclosure, reputation, and sustainability practices. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to business perception, environmental protection, disclosure, political pressure, and societal awareness.

Table 4.23

Comparative Analysis of Employees' and External auditors' Perceptions on Age of the Firm - Independent Sample T Test

Age of the firm	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Older firms must influence perception about their business and perform on new policies to sustain their business	Employees	4.9375	.25249	11.759	.000
	External auditors	4.4250	.83434	11.759	.000
As company matures, reputation increases and involvement in environmental protection activities also increase	Employees	4.0750	.29084	-8.527	.000
	External auditors	4.4425	.81138	-8.527	.000
Companies that have established for a long time disclose more information about environmental activities to reduce environmental costs and to improve quality	Employees	4.0675	.34386	-7.646	.000
	External auditors	4.4175	.84852	-7.646	.000
Old firms face more political pressure	Employees	3.8550	.62043	-11.082	.000
	External auditors	4.4300	.83176	-11.082	.000
Old firms have up to date information about recent developments and changes in the society	Employees	3.9225	.62648	-9.278	.000
	External auditors	4.4150	.85709	-9.278	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized that older firms must adapt to new policies and sustainability practices (mean = 4.9375, $p < 0.001$), while external auditors highlighted the increase in reputation and environmental involvement with firm maturity (mean = 4.4425, $p < 0.001$). They also highlighted that old firms report more environmental information to reduce environmental cost and improve quality (mean = 4.4175, $p < 0.001$), old firms face more political pressure (mean = 4.4300, $p < 0.001$) and have up to date information about recent changes and developments in the society (mean = 4.4150, $p < 0.001$).

The study's findings suggest that employees and external auditors have distinct perspectives on the relationship between firm age and environmental disclosure. These differences have implications for corporate sustainability strategies, stakeholder engagement, and environmental reporting practices. Older firms, with their established reputation, face increased pressure to disclose environmental information, reduce environmental costs, and contribute to societal well-being. By prioritizing transparency and sustainability, mature firms can maintain their reputation and contribute to a more environmentally responsible business landscape.

4.3.2.15 Number of Years Listed

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of listing on stock markets on environmental disclosure, stakeholder engagement, and sustainability practices. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to disclosure requirements, stakeholder engagement, communication, sustainability goals, and risk management.

Table 4.24

Comparative Analysis of Employees' and External auditors' Perceptions on Number of Years Listed - Independent Sample T Test

Number of years listed	Category of Respondents	Mean	Std. Deviation	T Value	P Value
The firm listed in stock market need to comply disclosure requirements and publish annual reports on environmental risks faced	Employees	4.9350	.34796	10.152	.000
	External auditors	4.5151	.75016	10.135	.000
Promotes stakeholder engagement	Employees	4.0200	.29971	-12.051	.000
	External auditors	4.5126	.76022	-12.029	.000
Improve communication with stakeholders	Employees	4.0925	.30689	-10.244	.000
	External auditors	4.5126	.76022	-10.226	.000
Listed companies have more sustainability related goals and targets to strengthen risk management	Employees	3.8325	.61676	-14.647	.000
	External auditors	4.5327	.72916	-14.641	.000
Listed companies demonstrate their sustainability objectives	Employees	3.6675	.69148	-17.105	.000
	External auditors	4.5302	.73272	-17.102	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized the importance of compliance with disclosure requirements (mean = 4.9350, $p < 0.001$), while external auditors highlighted the promotion of stakeholder engagement (mean = 4.5126, $p < 0.001$), improved communication (mean = 4.5126, $p < 0.001$), and sustainability-related goals (mean = 4.5327, $p < 0.001$). The external auditors gave due importance to the fact that those companies listed in stock exchange demonstrate their sustainability objectives (mean = 4.5302, $p < 0.001$).

The study's findings suggest that employees and external auditors have distinct perspectives on the relationship between listing on stock markets and environmental disclosure. These differences have implications for corporate sustainability strategies, stakeholder engagement, and environmental reporting practices. Listed companies must prioritize transparency, stakeholder engagement, and sustainability to maintain investor confidence and contribute to a more environmentally responsible business landscape.

By demonstrating sustainability objectives, listed companies can strengthen risk management and enhance their reputation.

4.3.2.16 Type of Industry

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of industry type on environmental disclosure, regulatory compliance, and stakeholder pressure. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to environmental sensitivity, emission effects, manufacturing firm disclosure, public sector transparency, and regulatory adherence.

Table 4.25

Comparative Analysis of Employees' and External auditors' Perceptions on Type of Industry - Independent Sample T Test

Type of industry	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Environmental sensitive industries activities affect environment directly and comply with environmental regulations	Employees	4.9000	.38778	12.271	.000
	External auditors	4.0827	1.27428	12.258	.000
The emission effect of their activities is more and face greater societal, NGO and environmental groups pressure	Employees	3.9800	.35343	-1.940	.053
	External auditors	4.1654	1.87892	-1.937	.053
Manufacturing firms disclose more environment related information to get high attention from community and to maintain healthy relationship between company and investment community	Employees	3.9075	.50456	-2.535	.011
	External auditors	4.0802	1.26554	-2.532	.012
Public sector companies disclose more environmental information to get more exposure	Employees	3.7475	.67815	-4.878	.000
	External auditors	4.0977	1.26530	-4.875	.000
Public sector companies follow stringent rules	Employees	3.4175	.70671	-6.304	.000
	External auditors	4.1830	2.32295	-6.298	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized that environmentally sensitive industries directly affect the environment (mean = 4.9000, $p < 0.001$), while external auditors highlighted the importance of manufacturing firms' disclosure (mean = 4.0802, $p = 0.012$) and public sector companies' transparency (mean = 4.0977, $p < 0.001$). They also emphasised that emission effect of their activities are more and face environmental group pressure and public sector company rules are more stringent with mean=4.1654 and 4.1830 ($p < 0.001$) respectively.

The study's findings suggest that employees and external auditors have distinct perspectives on industry type and environmental disclosure. These differences have implications for industry-specific sustainability strategies, stakeholder engagement, and environmental reporting practices. Environmentally sensitive industries must prioritize transparency, regulatory compliance, and stakeholder engagement to maintain a positive reputation and mitigate environmental risks. Public sector companies, in particular, must adhere to stringent rules and disclose environmental information to ensure accountability and transparency.

4.3.2.17 Uncertainty Avoidance

This table presents a comparative analysis of employees' and external auditors' perceptions regarding the impact of uncertainty avoidance and cultural dimensions on environmental disclosure. The analysis employed independent sample t-test to examine the mean scores and standard deviations of respondents' agreement on various statements related to risk aversion, short-term orientation, long-term orientation, individualism, and collectivism.

Table 4.26

Comparative Analysis of Employees' and External Auditors' Perceptions on Uncertainty Avoidance - Independent Sample T Test

Uncertainty Avoidance	Category of Respondents	Mean	Std. Deviation	T Value	P value
Society wishes to avoid risk and want to maintain more relaxed atmosphere	Employees	4.8075	.67571	21.614	.000
	External auditors	3.6275	.85766	21.614	.000
Short term orientation focuses on social status	Employees	3.9800	.39368	7.890	.000
	External auditors	3.6100	.85130	7.890	.000
Long term-oriented firms disclose more environmental information	Employees	3.7075	.65805	2.034	.042
	External auditors	3.5975	.85868	2.034	.042
Individualistic firms want to maintain less secrecy	Employees	3.8325	.56146	4.533	.000
	External auditors	3.6000	.85840	4.533	.000
People share common beliefs and ideas and extent of disclosure more in collectivistic societies	Employees	3.9750	.59182	7.180	.000
	External auditors	3.6025	.85224	7.180	.000

Source: Primary Data

The results reveal significant differences between employees' and external auditors' perceptions. Employees emphasized the importance of avoiding risk and maintaining a relaxed atmosphere (mean = 4.8075, $p < 0.001$) and short-term orientation focus on social status (mean = 3.980, $p < 0.001$) while external auditors scored lower on these dimensions. Employees also highlighted the role of collectivistic societies in promoting environmental disclosure (mean = 3.9750, $p < 0.001$) and the tendency of individualistic firms to maintain less secrecy (mean = 3.8325, $p < 0.001$). The majority of the employees emphasised that long term-oriented firms disclose more environmental information.

The study's findings suggest that employees and external auditors have distinct perspectives on the relationship between cultural dimensions and environmental disclosure. These differences have implications for corporate sustainability strategies, stakeholder engagement, and environmental reporting practices. Companies operating in collectivistic societies may prioritize environmental disclosure to maintain social

harmony, while individualistic firms may focus on transparency to protect their reputation. Understanding these cultural differences is crucial for developing effective environmental disclosure policies that align with societal values.

4.3.2.18 Employees' and External Auditors' Perceptions on Determinants of Environmental Disclosure

This study examines the perceptions of employees and external auditors regarding the determinants of environmental disclosure. The analysis compares the mean scores and standard deviations of 800 respondents (400 employees and 400 external auditors) across 17 variables. The study fixed the following alternate hypotheses.

Hypotheses: -

- H1:** There is significant difference between employees' and external auditors' perceptions on stakeholder pressure.
- H2:** There is significant difference between employees' and external auditors' perceptions on environmental awards and certification.
- H3:** There is significant difference between employees' and external auditors' perceptions on disclosure practices.
- H4:** There is significant difference between employees' and external auditors' perceptions on auditor type/quality.
- H5:** There is significant difference between employees' and external auditors' perceptions on pollution propensity.
- H6:** There is significant difference between employees' and external auditors' perceptions on political exposure.
- H7:** There is significant difference between employees' and external auditors' perceptions on media exposure.
- H8:** There is significant difference between employees' and external auditors' perceptions on board size.
- H9:** There is significant difference between employees' and external auditors' perceptions on board independence.

- H10:** There is significant difference between employees' and external auditors' perceptions on gender diversity.
- H11:** There is significant difference between employees' and external auditors' perceptions on board meetings.
- H12:** There is significant difference between employees' and external auditors' perceptions on environmental committees.
- H13:** There is significant difference between employees' and external auditors' perceptions on size of the firm.
- H14:** There is significant difference between employees' and external auditors' perceptions on age of the firm.
- H15:** There is significant difference between employees' and external auditors' perceptions on number of years listed.
- H16:** There is significant difference between employees' and external auditors' perceptions on type of industry.
- H17:** There is significant difference between employees' and external auditors' perceptions on uncertainty avoidance.

Table 4.27

Employees' and External Auditors' Perceptions on Determinants of Environmental Disclosure- One Way ANOVA

Perceptions on Determinants of Environmental Disclosure		N	Mean	Std. Deviation	F Value	P Value
Stake Holder Pressure	Employees	400	4.3120	.41988	.881	.348
	External auditors	400	4.3595	.92075		
	Total	800	4.3358	.71552		
Environmental awards and Certification	Employees	400	4.4410	.36805	14.875	.000
	External auditors	400	4.2320	1.01940		
	Total	800	4.3365	.77299		
Disclosure Practices	Employees	400	4.2770	.34375	41.799	.000
	External auditors	400	3.8815	1.17418		
	Total	800	4.0793	.88693		

Perceptions on Determinants of Environmental Disclosure		N	Mean	Std. Deviation	F Value	P Value
Auditor Type/Quality	Employees	400	4.4105	.29327	84.488	.000
	External auditors	400	3.7265	1.45912		
	Total	800	4.0685	1.10600		
Pollution Propensity	Employees	400	4.1925	.31062	9.350	.002
	External auditors	400	4.0260	1.04377		
	Total	800	4.1093	.77406		
Political Exposure	Employees	400	4.2635	.30049	46.155	.000
	External auditors	400	3.8005	1.32948		
	Total	800	4.0320	.99066		
Media Exposure	Employees	400	4.1595	.28330	17.884	.000
	External auditors	400	4.3345	.77764		
	Total	800	4.2470	.59138		
Board Size	Employees	400	4.1710	.29115	6.232	.013
	External auditors	400	4.2915	.92046		
	Total	800	4.2313	.68488		
Board Independence	Employees	400	4.2165	.32664	3.459	.063
	External auditors	400	4.3105	.95654		
	Total	800	4.2635	.71583		
Gender Diversity	Employees	400	4.2210	.46659	3.294	.070
	External auditors	400	4.3150	.92483		
	Total	800	4.2680	.73352		
Board meeting	Employees	400	4.0620	.24435	18.300	.000
	External auditors	400	4.2670	.92675		
	Total	800	4.1645	.68500		
Environmental committee	Employees	400	4.1755	.23159	42.510	.000
	External auditors	400	4.4275	.73750		
	Total	800	4.3015	.56062		

Perceptions on Determinants of Environmental Disclosure		N	Mean	Std. Deviation	F Value	P Value
Size of the firm	Employees	400	4.2080	.23849	19.224	.000
	External auditors	400	4.4020	.85218		
	Total	800	4.3050	.63283		
Age of the firm	Employees	400	4.1715	.24215	35.953	.000
	External auditors	400	4.4260	.81362		
	Total	800	4.2988	.61324		
Number of years listed	Employees	400	4.1095	.22900	118.536	.000
	External auditors	400	4.5206	.71945		
	Total	800	4.3145	.57130		
Type of industry	Employees	400	3.9905	.25253	4.135	.042
	External auditors	400	4.1218	1.26646		
	Total	800	4.0561	.91441		
Uncertainty avoidance	Employees	400	4.0605	.22173	109.276	.000
	External auditors	400	3.6075	.83785		
	Total	800	3.8340	.65305		
Determinants of the Environmental Disclosure	Employees	400	4.2025	.17821	.391	.532
	External auditors	400	4.1807	.67151		
	Total	800	4.1916	.49028		

Source: Primary Data

The one-way ANOVA analysis revealed significant differences between employees' and external auditors' perceptions on 14 out of 17 determinants of environmental disclosure. The variables with significant differences include environmental awards, disclosure practices, auditor type/quality, pollution propensity, political exposure, media exposure, board size, board meetings, environmental committees, size of the firm, age of the firm, number of years listed, type of industry, and uncertainty avoidance. No significant differences were found in stakeholder pressure, board independence, and gender diversity.

The study highlights the importance of considering diverse perspectives in environmental disclosure practices. Employees and external auditors prioritize

different factors influencing environmental disclosure. Companies should prioritize factors with significant differences to enhance environmental disclosure. Boards should emphasize regular meetings and establish environmental committees to drive sustainability initiatives. Understanding the determinants of environmental disclosure is crucial for developing effective sustainability strategies.

4.3.2.19 SEM

The study investigated the determinants of environmental disclosure among listed firms, examining the perspectives of both employees and external auditors. Environmental disclosure has become increasingly important for stakeholders seeking transparency on corporate environmental practices and performance. This research aimed to identify the key factors influencing environmental disclosure, comparing and contrasting the views of employees and external auditors.

Seventeen alternate hypotheses were formulated for both employees and external auditors, focusing on variables such as stakeholder pressure, environmental awards, disclosure practices, auditor type/quality, pollution propensity, political exposure, media exposure, board size, board independence, gender diversity, board meetings, environmental committees, firm size, firm age, years listed, industry type, and uncertainty avoidance. Utilizing structural equation modeling (SEM) technique, the study analyzed data from 800 respondents (400 employees and 400 external auditors) to determine the significant determinants of environmental disclosure.

- **Employees**

Hypotheses: -

- H1:** There is significant impact of stakeholder pressure on Environmental Disclosure
- H2:** There is significant impact of environmental awards and certification on Environmental Disclosure
- H3:** There is significant impact of disclosure practices on Environmental Disclosure
- H4:** There is significant impact of auditor type/quality on Environmental Disclosure

- H5:** There is significant impact of pollution propensity on Environmental Disclosure
- H6:** There is significant impact of political exposure on Environmental Disclosure
- H7:** There is significant impact of media exposure on Environmental Disclosure
- H8:** There is significant impact of board size on Environmental Disclosure
- H9:** There is significant impact of board independence on Environmental Disclosure
- H10:** There is significant impact of gender diversity on Environmental Disclosure
- H11:** There is significant impact of board meetings on Environmental Disclosure
- H12:** There is significant impact of environmental committees on Environmental Disclosure
- H13:** There is significant impact of size of the firm on Environmental Disclosure
- H14:** There is significant impact of age of the firm on Environmental Disclosure
- H15:** There is significant impact of number of years listed on Environmental Disclosure
- H16:** There is significant impact of type of industry on Environmental Disclosure
- H17:** There is significant impact of uncertainty avoidance on Environmental Disclosure

The table presents the model fit indices for the measurement model of determinants of environmental disclosure among employees. The fit indices used are Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA).

Table 4.28

Model Fit Indices- Determinant of Environmental Disclosure (Employees)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.97	.93	.94	.91	.032
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

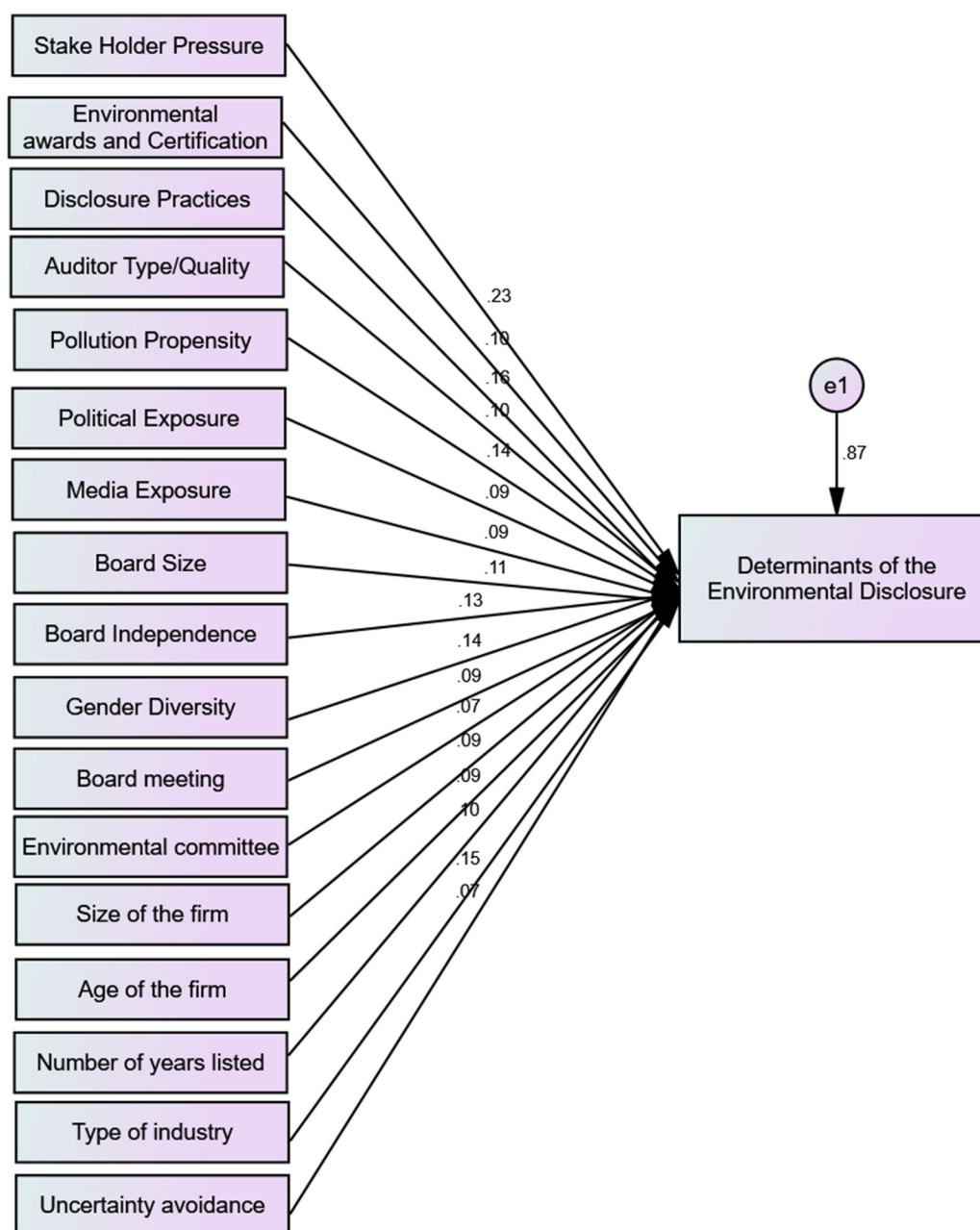
Source: Primary Data

The results indicate an excellent fit of the measurement model to the data. Specifically, the CFI (.97), GFI (.93), TLI (.94), and NFI (.91) values exceed the recommended threshold of 0.9, indicating a good fit. Additionally, the RMSEA value

(.032) is below the recommended threshold of 0.05, suggesting a reasonable error of approximation.

Figure 4.3

Determinants of Environmental Disclosure (Employees)



This table presents the results of hypothesis testing for the determinants of environmental disclosure among employees. The table displays the beta coefficients

and p-values for each hypothesis, indicating the significance of the relationships between the determinants and environmental disclosure.

Table 4.29

Testing of Hypotheses- Determinants of Environmental Disclosure (Employees)

Sl. no	Hypothesis	Beta Coefficient	P Value	Decision
1	There is significant impact of stakeholder pressure on Environmental Disclosure.	.225	<.005	Accepted
2	There is significant impact of environmental awards and certification on Environmental Disclosure.	.068	<.005	Accepted
3	There is significant impact of disclosure practices on Environmental Disclosure.	.102	<.005	Accepted
4	There is significant impact of auditor type/quality on Environmental Disclosure.	.152	<.005	Accepted
5	There is significant impact of pollution propensity on Environmental Disclosure.	.162	<.005	Accepted
6	There is significant impact of political exposure on Environmental Disclosure.	.097	<.005	Accepted
7	There is significant impact of media exposure on Environmental Disclosure.	.090	<.005	Accepted
8	There is significant impact of board size on Environmental Disclosure.	.095	<.005	Accepted
9	There is significant impact of board independence on Environmental Disclosure.	.136	<.005	Accepted
10	There is significant impact of gender diversity on Environmental Disclosure.	.089	<.005	Accepted
11	There is significant impact of board meetings on Environmental Disclosure.	.088	<.005	Accepted
12	There is significant impact of environmental committees on Environmental Disclosure.	.068	<.005	Accepted
13	There is significant impact of size of the firm on Environmental Disclosure.	.087	<.005	Accepted
14	There is significant impact of age of the firm on Environmental Disclosure.	.109	<.005	Accepted
15	There is significant impact of number of years listed on Environmental Disclosure.	.133	<.005	Accepted
16	There is significant impact of type of industry on Environmental Disclosure.	.144	<.005	Accepted
17	There is significant impact of uncertainty avoidance on Environmental Disclosure	.091	<.005	Accepted

Source: Primary Data

The results reveal that all 17 hypotheses are rejected, indicating significant impacts of the determinants on environmental disclosure. The beta coefficients range from 0.068 to 0.162, and all p-values are less than 0.005, signifying strong statistical significance. The determinants with the strongest impacts are pollution propensity ($\beta = 0.162$), auditor type/quality ($\beta = 0.152$), and number of years listed ($\beta = 0.133$).

The findings suggest that employees perceive all 17 determinants as significant factors influencing environmental disclosure. These determinants collectively contribute to the development of environmental disclosure practices within organizations. The study's results have implications for policymakers, managers, and researchers seeking to enhance environmental disclosure and transparency. By prioritizing these determinants, firms can improve their environmental reporting and stakeholder engagement, ultimately contributing to better environmental outcomes.

- **External Auditors**

Hypotheses: -

- H1:** There is significant impact of stakeholder pressure on Environmental Disclosure.
- H2:** There is significant impact of environmental awards and certification on Environmental Disclosure.
- H3:** There is significant impact of disclosure practices on Environmental Disclosure.
- H4:** There is significant impact of auditor type/quality on Environmental Disclosure.
- H5:** There is significant impact of pollution propensity on Environmental Disclosure.
- H6:** There is significant impact of political exposure on Environmental Disclosure.
- H7:** There is significant impact of media exposure on Environmental Disclosure.
- H8:** There is significant impact of board size on Environmental Disclosure.
- H9:** There is significant impact of board independence on Environmental Disclosure.
- H10:** There is significant impact of gender diversity on Environmental Disclosure.

- H11:** There is significant impact of board meetings on Environmental Disclosure.
- H12:** There is significant impact of environmental committees on Environmental Disclosure.
- H13:** There is significant impact of size of the firm on Environmental Disclosure.
- H14:** There is significant impact of age of the firm on Environmental Disclosure.
- H15:** There is significant impact of number of years listed on Environmental Disclosure.
- H16:** There is significant impact of type of industry on Environmental Disclosure.
- H17:** There is significant impact of uncertainty avoidance on Environmental Disclosure.

This table presents the model fit indices for the measurement model of determinants of environmental disclosure among external auditors. The fit indices used are Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA).

Table 4.30

Model Fit Indices- Determinants of Environmental Disclosure (External Auditors)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.95	.94	.91	.94	.035
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

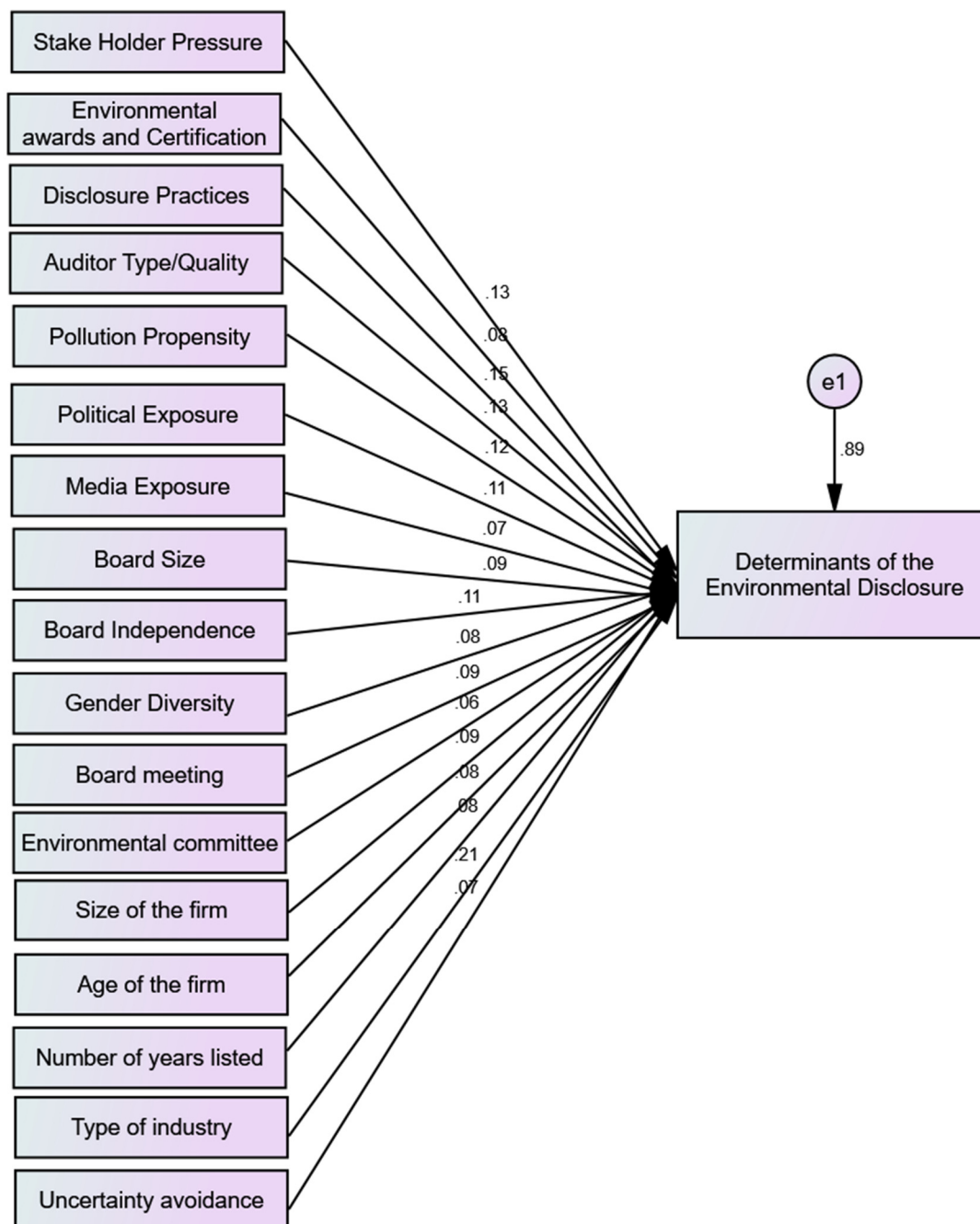
The results indicate a good fit of the measurement model to the data. Specifically, the CFI (.95), GFI (.94), TLI (.91), and NFI (.94) values exceed the recommended threshold of 0.9, indicating a satisfactory fit. Additionally, the RMSEA value (.035) is below the recommended threshold of 0.05, suggesting an acceptable error of approximation.

The satisfactory model fit indices suggest that the measurement model adequately represents the relationships between the determinants of environmental disclosure among external auditors. The findings support the validity and reliability

of the measurement model, providing a foundation for further analysis and interpretation of the structural model.

Figure 4.4

Determinants of Environmental Disclosure (External Auditors)



This table presents the results of hypothesis testing for the determinants of environmental disclosure among external auditors. The table displays the beta

coefficients and p-values for each hypothesis, indicating the significance of the relationships between the determinants and environmental disclosure.

Table 4.31

Testing of Hypotheses- Determinants of Environmental Disclosure (External Auditors)

Sl. no	Hypothesis	Beta Coefficient	P Value	Decision
1	There is significant impact of stakeholder pressure on Environmental Disclosure.	.125	<.005	Accepted
2	There is significant impact of environmental awards and certification on Environmental Disclosure.	.078	<.005	Accepted
3	There is significant impact of disclosure practices on Environmental Disclosure.	.158	<.005	Accepted
4	There is significant impact of auditor type/quality on Environmental Disclosure.	.132	<.005	Accepted
5	There is significant impact of pollution propensity on Environmental Disclosure.	.121	<.005	Accepted
6	There is significant impact of political exposure on Environmental Disclosure.	.114	<.005	Accepted
7	There is significant impact of media exposure on Environmental Disclosure.	.081	<.005	Accepted
8	There is significant impact of board size on Environmental Disclosure.	.094	<.005	Accepted
9	There is significant impact of board independence on Environmental Disclosure.	.061	<.005	Accepted
10	There is significant impact of gender diversity on Environmental Disclosure.	.112	<.005	Accepted
11	There is significant impact of board meetings on Environmental Disclosure.	.089	<.005	Accepted
12	There is significant impact of environmental committees on Environmental Disclosure.	.082	<.005	Accepted
13	There is significant impact of size of the firm on Environmental Disclosure.	.061	<.005	Accepted
14	There is significant impact of age of the firm on Environmental Disclosure.	.084	<.005	Accepted
15	There is significant impact of number of years listed on Environmental Disclosure.	.874	<.005	Accepted
16	There is significant impact of type of industry on Environmental Disclosure.	.210	<.005	Accepted
17	There is significant impact of uncertainty avoidance on Environmental Disclosure.	.071	<.005	Accepted

Source: Primary Data

The findings revealed that all the variables, including stakeholder pressure ($\beta = 0.125, p < 0.005$), environmental awards and certification ($\beta = 0.078, p < 0.005$), disclosure practices ($\beta = 0.158, p < 0.005$), auditor type/quality ($\beta = 0.132, p < 0.005$), pollution propensity ($\beta = 0.121, p < 0.005$), political exposure ($\beta = 0.114, p < 0.005$), media exposure ($\beta = 0.081, p < 0.005$), board size ($\beta = 0.094, p < 0.005$), board independence ($\beta = 0.061, p < 0.005$), gender diversity ($\beta = 0.112, p < 0.005$), board meetings ($\beta = 0.089, p < 0.005$), environmental committees ($\beta = 0.082, p < 0.005$), size of the firm ($\beta = 0.061, p < 0.005$), age of the firm ($\beta = 0.084, p < 0.005$), number of years listed ($\beta = 0.874, p < 0.005$), type of industry ($\beta = 0.210, p < 0.005$), and uncertainty avoidance ($\beta = 0.071, p < 0.005$), had a significant impact on environmental disclosure.

4.4 Summary

This chapter presents a detailed examination of environmental disclosure among selected automobile manufacturing industry in South India highlighting on 17 vital factors: Stakeholder pressure, Environmental awards and certification, Disclosure practices, Auditor type/quality, Pollution propensity, Political exposure, Media exposure, Board size, Board independence, Gender diversity, Board meeting, Environmental committee, Size of the firm, Age of the firm, Number of years listed, Type of industry and Uncertainty avoidance.

There were significant differences in the perception of employees and external auditors on various determinants of disclosure. The employees more strongly favoured the environmental awards and certifications, political exposure, disclosure practices, auditor type, pollution propensity and cultural factors as the important determinants of disclosure. On the other hand, the external auditors prioritised media exposure, board size, board meeting, environmental committee, size of the firm, age of the firm and number of years listed as the significant factors affecting environmental disclosure. Both of them equally agree stakeholder pressure, board independence, gender diversity and type of industry as the important determinants of disclosure.

The employees perceived that frequent pressure from various stakeholders including shareholders, creditors, government and NGO's drive environmental reporting. The appointment of high-quality auditors for the audit of environmental accounts of the company have a positive effect on disclosure. The firms which are exposed to media and politics show transparency in reporting. The environmentally certified firms will be more conscious about environmental issues and have a tendency to disclose more quality environmental information.

The external auditors highlighted that type of industry has a significant effect on disclosure. There is a tendency to disclose more information for exposure in case of manufacturing, long term oriented and public sector firms. The presence of environmental committee helps to deal with environmental issues and is a monitoring mechanism for improving corporate disclosure. It demonstrates the accountability of the company towards its various stakeholders. They also pointed out that the established firms tend to disclose more to improve public image. Large firms are very familiar and have great responsibility towards community and have high level of disclosure.

Both the employees and external auditors agreed that the proper disclosure of environmental information enable the companies to satisfy employees, avail tax subsidies and secure environmental certification. They also pointed out that the existence of large number of members in board do not pose any difficulties in coordination and gender diversity in board do not result in any difference in environmental reporting. The role of board meetings and independent directors in increasing the quality of environmental information was emphasised. The disclosure should be highlighted in the chairman's statement.

The application of both descriptive statistics and inferential analysis revealed that all the factors have significant impact on environmental disclosure. The determinants with strongest impact on environmental disclosure include number of years listed, stakeholder pressure, type of industry, pollution propensity, disclosure practices and auditor type and quality.

The results suggest that environmental disclosure is influenced by a wide range of factors, including firm characteristics, governance structures, and external pressures. The findings have implications for policymakers, regulators, and corporate managers who aim to promote environmental disclosure and sustainability reporting. By understanding the determinants of environmental disclosure, stakeholders can develop effective strategies to encourage transparency and accountability in environmental reporting.

Chapter 5

DISCLOSURE TRENDS AND EFFECT OF FINANCIAL PERFORMANCE ON ENVIRONMENTAL REPORTING

5.1	Introduction	240
5.2	Analysis of Variables and Testing of Hypothesis.....	241
5.3	Analysis of Variables and Testing of Hypothesis.....	290
5.4	Summary.....	325

Chapter 5

DISCLOSURE TRENDS AND EFFECT OF FINANCIAL PERFORMANCE ON ENVIRONMENTAL REPORTING

5.1 Introduction

This chapter presents the analysis of second and third objective of the study which is divided into two parts. The first part deals with the second objective of the study which involves analysing the trends of environmental disclosure in selected automobile manufacturing companies. This part is divided into three sections. The first section deals with data analysis using percentage analysis, weighted average mean score and independent sample T test. The second section deals with measurement scale validation and the third section employs descriptive statistics to summarize and describe the environmental disclosure practices of the sampled companies, providing an overview of the current state of disclosure. Additionally, Path analysis was applied to know the trends of disclosure made by the selected automobile manufacturing companies.

This objective helps to assess the manner in which selected automobile manufacturing companies currently report their environmental activities, their impacts and sustainability efforts. It involves analysing the nature, extent and quality of environmental disclosure made through sustainability reports. From the analysis of these variables, a proper evaluation of transparency and accountability of the environmental performance of selected companies can be made thereby offering insights into the industry trends and gaps in reporting.

This part presents the findings of the empirical analysis conducted to achieve objective two of the study, which aimed to evaluate the present environmental disclosure practices of selected companies in the automobile industry. The results presented in this section provide insights into the extent and quality of environmental information disclosed by automobile companies, highlighting areas of strength and weakness in their disclosure practices. The findings of this analysis contribute to the

existing literature on environmental disclosure and sustainability reporting in the automobile industry, offering valuable implications for stakeholders, policymakers, and future research.

The second part analyse the third objective of the study to analyse the effect of financial performance on environmental reporting. This objective helps to evaluate whether and how disclosure of environmental information impacts a company's financial outcomes such as profitability, market value and investor confidence. It seeks to determine if transparent and responsible environmental reporting contributes to financial benefits by enhancing reputation, reducing regulatory risks, attracting investors and promoting long term value creation. The section employed two main variables: financial performance, which comprised seven sub-variables, and corporate environmental disclosure, which also consisted of seven sub-variables.

The analysis employed several statistical tools to examine the relationship between financial performance and corporate environmental disclosure. Descriptive statistics were used to summarize the characteristics of the variables, while independent sample t-test was used to compare the means of the variables. Furthermore, structural equation modeling (SEM) was employed to examine the causal relationships between the variables.

PART I

5.2 Analysis of Variables and Testing of Hypothesis

The key aspects of this objective includes type of environmental information disclosed, length of environmental disclosure, frequency of publishing environmental disclosure, key environmental metrics of disclosure, format of disclosure adopted by the company, verification of environmental information disclosed, long term targets set in disclosure, general trend of disclosure, trend of commitment of companies to reduce vehicle emission, level of awareness of reports and reporting formats and most preferred medium in which environmental information is disclosed.

SECTION A**5.2.1 Type of Environmental Information Disclosed**

The table provided below presents the opinion of 800 respondents who took part in the study (employees and external auditors), providing insight into the type of Environmental information reported. The table categorises the respondents' opinion into four distinct types of environmental information disclosure: Disclosure of Qualitative information only, disclosure of Quantitative information only, both qualitative and quantitative information disclosed and not at all applicable. The frequency and percentage distributions of each type are presented, along with the cumulative percentage, to provide a comprehensive understanding of the respondents' opinion on the type of Environmental information disclosed.

Table 5.1*Type of Environmental Information Disclosed*

Type	Frequency	Percent	Cumulative Percent
Qualitative information only	266	33	33
Quantitative information only	174	22	55
Both Qualitative and Quantitative	342	43	98
Not applicable	18	2	100
Total	800	100	

Source: Primary Data

An analysis of table 5.1 provided above reveals that the respondents have different opinion on type of Environmental information disclosed. The majority of the respondents (43 percent) emphasised that both qualitative and quantitative information is disclosed, indicating a significant presence of respondents who recognise the importance of integrated disclosure of environmental matters combining numerical and descriptive aspects. A moderate proportion of respondents (33 percent), emphasised that only qualitative information is disclosed indicating a moderate proportion of respondents supporting subjective type of disclosure followed by a low moderate proportion of respondents (22 percent) opined that only quantitative information form part of annual reports suggesting a very low moderate

category of respondents favouring numerical disclosure of environmental information. A very negligible portion of respondents (2 percent) were of the view that environmental information is not disclosed by the company whether qualitative or quantitative.

The cumulative percentage distribution shows that 98 percent of the respondents favoured the qualitative and quantitative disclosure, while only 2 percent argued that no environmental information is disclosed in the annual accounts of the organisation. This suggests that the sample was dominated by respondents favouring disclosure of both subjective and statistical disclosure of Environmental information in annual accounts.

5.2.2 Length of Environmental Disclosure

The table provided below presents the opinion of 800 respondents who took part in the study (employees and external auditors), providing insight into the length of Environmental information reported. The table categorises the respondents' views on the length of environmental information reported into five distinct types: Zero page, less than a half page, half to one page, one to two pages and more than two pages. The frequency and percentage distributions of each type are presented, along with the cumulative percentage, to provide a comprehensive understanding of the respondents' opinion on the length of Environmental disclosure.

Table 5.2

Length of Environmental Disclosure

Length	Frequency	Percent	Cumulative Percent
Zero page	12	1	1
Less than a half page	112	14	15
Half to One page	460	58	73
One to two pages	200	25	98
More than two pages	16	2	100
Total	800	100	

Source: Primary Data

An analysis of table 5.2 provided above reveals that the respondents have different opinion on length of Environmental information disclosed. The majority of the respondents (58 percent) emphasised that companies disclosed environmental information in half to one page, indicating a significant presence of respondents who recognise that the companies provide only a brief summary of their environmental impact. A moderate proportion of respondents (25 percent), emphasised that companies disclosed environmental information in one to two pages indicating that companies provide a slightly more detailed summary of their environmental impact followed by a low moderate proportion of respondents (14 percent) opined that environmental information is disclosed in less than a half page suggesting a very low moderate category of respondents favouring a very concise disclosure of environmental information. A negligible portion of respondents (2 percent) were of the view that environmental information is disclosed by the company in more than two pages indicating a more comprehensive and detailed approach to environmental reporting followed by a very negligible portion (1 percent) viewed that no environmental information is disclosed due to their unawareness of environmental disclosure.

The cumulative percentage distribution shows that 98 percent of the respondents were of the opinion that the companies disclosed environmental information from half to two pages, while only 2 percent argued that environmental information is disclosed in more than two pages. This suggests that the sample was dominated by respondents favouring disclosure of Environmental information in half to one page where companies are reporting environmental information in condensed form.

5.2.3 Frequency of Publishing Environmental Information

The table provided below presents the opinion of 800 respondents who took part in the study (employees and external auditors), providing insight into the frequency of publishing Environmental information. The table categorises the respondents' views on the frequency of reporting environmental information into five distinct types: Annually, Biannually, Every few years, only when required

by regulations and the companies does not publish Environmental disclosures. The frequency and percentage distributions of each type are presented, along with the cumulative percentage, to provide a comprehensive understanding of the respondents' opinion on the frequency of publishing Environmental information.

Table 5.3*Frequency of Publishing Environmental Information*

Frequency of publishing	Frequency	Percent	Cumulative Percent
Annually	452	57	57
Biannually	112	14	71
Every few years	30	4	75
Only when required by regulation	190	23	98
Does not publish environmental information	16	2	100
Total	800	100	

Source: Primary Data

An analysis of table 5.3 provided above reveals that the respondents have different opinion on frequency of publishing Environmental information. The majority of the respondents (57 percent) emphasised that companies published environmental information annually, indicating a significant presence of respondents who recognise that the companies regularly release information of their environmental impact and sustainability practices. A moderate proportion of respondents (23 percent), emphasised that companies published environmental information only when required by regulation indicating that companies release information of their environmental impact only when laws or regulatory bodies mandate it followed by a low moderate proportion of respondents (14 percent) opined that environmental information is published biannually suggesting a very low moderate category of respondents favouring the frequent releasing of environmental information. A negligible portion of respondents (4 percent) were of the view that environmental information is published by the company in every few years indicating release of information about their environmental impact at irregular or less frequent intervals followed by a very negligible portion (2 percent) viewed

that no environmental information is published due to risk of criticism or lack of transparency.

The cumulative percentage distribution shows that 98 percent of the respondents were of the opinion that the companies published environmental information, while only 2 percent argued that environmental information is not published by the company. This suggests that the sample was dominated by respondents favouring that the companies publish Environmental information regularly or less frequent intervals or as and when required by law.

5.2.4 Key Environmental Metrics of Disclosure

The table provided below presents the opinion of 800 respondents who took part in the study (employees and external auditors), providing insight into the metrics used by the company to disclose environmental information. The table categorises the respondents' views on the environmental metrics used for reporting into six distinct categories: Greenhouse gas emissions, Energy consumption and efficiency, Water usage, Waste management and recycling initiatives, Biodiversity and None of the above. The frequency and percentage distributions of each type are presented, along with the cumulative percentage, to provide a comprehensive understanding of the respondents' opinion on the key Environmental metrics of disclosure.

Table 5.4

Key Environmental Metrics of Disclosure

Environmental Metrics	Frequency	Percent	Cumulative Percent
Greenhouse gas emissions	24	2	2
Energy consumption	404	51	53
Waste management and recycling initiatives	180	23	76
Water usage	162	20	96
Biodiversity	26	3	99
None of the above	4	1	100
Total	800	100	

Source: Primary Data

An analysis of table 5.4 provided above reveals that the respondents have different opinion on Environmental metrics used by the company for reporting. The majority of the respondents (51 percent) emphasised that energy consumption metrics is used for disclosure by the companies, indicating a significant presence of respondents who recognise that the companies measure and report their environmental impact based on their energy usage. A moderate proportion of respondents (23 percent), emphasised that waste management and sustainability initiatives used as a metrics of disclosure indicating that companies measure environmental impact on how they handle waste and implement sustainability programs followed by a low moderate proportion of respondents (20 percent) opined that water usage was the key environmental metrics used for disclosure by companies indicating that companies measure their environmental impact based on amount of water consumed. A negligible portion of respondents (3 percent and 2 percent) were of the view that Biodiversity and Greenhouse gas emissions were the environmental metrics used for disclosing information respectively followed by extremely negligible portion (1 percent) viewed that none of the above-mentioned metrics used for disclosing environmental information.

The cumulative percentage distribution shows that 99 percent of the respondents were of the opinion that the companies disclosed environmental information on the basis of proper environmental metrics, while only 1 percent argued that none of the mentioned metrics were used for disclosure. This suggests that the sample was dominated by respondents favouring the usage of proper metrics for disclosure of Environmental information.

5.2.5 Format of Environmental Disclosure

The table provided below presents the opinion of 800 respondents who took part in the study (Employees and External auditors), providing insight into the formats of Environmental disclosure. The table categorises the respondents' views on the basis of format of disclosure into four distinct types: Online Sustainability report, infographics and videos, printed reports, and no particular format. The frequency and percentage distributions of each type are presented, along with the

cumulative percentage, to provide a comprehensive understanding of the respondents' opinion on the format of Environmental disclosure.

Table 5.5

Format of Environmental Disclosure

Format	Frequency	Percent	Cumulative Percent
Online Sustainability report	152	19	19
Infographics and videos	188	24	43
Printed reports	210	26	69
No particular format	250	31	100
Total	800	100	

Source: Primary Data

An analysis of table 5.5 provided above reveals that the respondents have different opinion on format of Environmental information disclosed. The majority of the respondents (31 percent) emphasised that companies do not have a particular format for disclosure, indicating a significant presence of respondents who recognise that the companies do not follow a format due to lack of standardisation and varied disclosure practices. A moderate proportion of respondents (26 percent), emphasised that companies prepare printed environmental reports indicating that information will be presented in a uniform manner easier for stakeholders to understand and compare followed by a low moderate proportion of respondents (24 percent) opined that environmental information is disclosed in the form of infographics and videos suggesting a low moderate category of respondents favouring presentation of more complex information in a way easy to understand and catchy. A minor portion of respondents (19 percent) were of the view that sustainability reports are uploaded online in the official websites of the company indicating easy accessibility and reduce paper usage aligning with sustainability goals.

The cumulative percentage distribution shows that 69 percent of the respondents were of the opinion that the companies follow a particular format for disclosure, while only 31 percent argued that there is no specific format for disclosure. This suggests that the sample was dominated by respondents favouring a printed and graphics format for

disclosing environmental information where companies are following a standardised format for disclosure of environmental information.

5.2.6 Verification of Environmental Information Disclosed

The table provided below presents the opinion of 800 respondents who took part in the study (employees and external auditors), providing insight into the verification by external party of Environmental information reported. The table categorises the respondents' views on the verification of environmental information reported into four distinct types: Independent external auditor, limited assurance from a third-party provider, Internal auditor and no verification conducted. The frequency and percentage distributions of each type are presented, along with the cumulative percentage, to provide a comprehensive understanding of the respondents' opinion on the verification of Environmental information disclosed.

Table 5.6

Verification of Environmental Information Disclosed

Verification	Frequency	Percent	Cumulative Percent
Independent external auditor	452	57	57
Limited assurance from third party provider	100	12	69
Internal auditor	204	25	94
No verification	44	6	100
Total	800	100	

Source: Primary Data

An analysis of table 5.6 provided above reveals that the respondents have different opinion on verification of Environmental information disclosed. The majority of the respondents (57 percent) emphasised that disclosure of environmental information is verified by an independent external auditor, indicating a significant presence of respondents who recognise that the verification by external auditor ensure accuracy, reliability and compliance with regulations. A moderate proportion of respondents (25 percent), emphasised that information disclosed by environmental information is checked by internal auditor indicating to ensure whether companies report align with internal policies and industry trends followed by a low moderate

proportion of respondents (12 percent) opined that environmental information ensure limited assurance from third party provider suggesting a commitment to transparency. A negligible portion of respondents (6 percent) were of the view that environmental information disclosed by the company is not subject to any verification by internal or external agency.

The cumulative percentage distribution shows that 94 percent of the respondents were of the opinion that the disclosure of environmental information by the company was verified by third party, while only 6 percent argued that environmental information is not subject to any verification. This suggests that the sample was dominated by respondents favouring verification of Environmental information by external or internal auditors.

5.2.7 Setting of Long-Term Environmental Targets in Disclosure

The table provided below presents the opinion of 800 respondents who took part in the study (employees and external auditors), providing insight into the setting of long-term environmental targets in disclosure. The table categorises the respondents' views on setting of long-term environmental targets in disclosure into four distinct types: Specific and measurable goals, general with no specific targets, planning to set targets in future and no long-term targets set in disclosure. The frequency and percentage distributions of each type are presented, along with the cumulative percentage, to provide a comprehensive understanding of the respondents' opinion on the setting of long-term environmental targets in disclosure.

Table 5.7

Setting of Long-Term Targets in Disclosure

Long term targets	Frequency	Percent	Cumulative Percent
Specific and measurable goals	206	26	26
General with no specific targets	430	54	80
Planning to set targets in future	90	11	91
No long-term targets set	74	9	100
Total	800	100	

Source: Primary Data

An analysis of table 5.7 provided above reveals that the respondents have different opinion on setting of long-term targets in disclosure. The majority of the respondents (54 percent) emphasised that general goals are set with no specific targets, indicating a significant presence of respondents who recognise that the general goals set due to lack of clear commitments and ambiguity in sustainability strategies. A moderate proportion of respondents (26 percent), emphasised that specific and measurable goals are disclosed indicating a clear and measurable commitments and alignment with sustainability standards followed by a very low moderate proportion of respondents (11 percent) opined that companies are planning to set targets in future suggesting a future commitment to sustainability. A negligible portion of respondents (9 percent) were of the view that no long-term targets are set by the company.

The cumulative percentage distribution shows that 91 percent of the respondents were of the opinion that the general or specific targets set by the company or the company has plan to set targets in future, while only 9 percent argued that no environmental targets are set. This suggests that the sample was dominated by respondents favouring the setting of environmental targets.

5.2.8 General Trend of Environmental Disclosure

Table provided below presents the frequency distribution of 800 respondents' opinion regarding the trend of disclosure in companies, including the companies are providing sustainable report, sustainable items are well reported in existing accounting practices of the company, accounting treatment of sustainable items disclosed in financial report, the company disclose total expenditure on environmental factors and current and past expenditure on sustainable items disclosed.

The trend levels are categorized as Never (N), Very Rarely (VR), Rarely (R), Occasionally (O), Frequently (F) and Very Frequently (VF). This table provides insights into stakeholders' view points on trend of disclosure adopted in companies, enabling an understanding of their engagement with corporate social responsibility and sustainability initiatives.

Table 5.9

General Trend of Environmental Disclosure

	N	VR	R	O	F	VF
The companies are providing sustainable report	6	18	16	218	72	470
Sustainable items are well reported in existing accounting practices of the company	10	24	22	220	446	78
Accounting treatment of sustainable items disclosed in financial report	316	314	98	38	16	18
The company disclose total expenditure on environmental factors	6	30	192	216	100	256
Current and past expenditure on sustainable items disclosed	272	134	220	106	52	16

Note: N: Never, VR: Very Rarely, R: Rarely, O: Occasionally, F: Frequently and VF: Very Frequently

Source: Compiled by the researcher

The results indicate that the companies are providing sustainable report garnered a significantly high frequency of Environmental disclosure (470, 59 percent) followed by the company disclose total expenditure on environmental factors with 256 respondents (32 percent) being very frequent trend of disclosure. Conversely, the highest proportion of respondents (316, 40 percent) opined that accounting treatment of sustainable items are not disclosed in financial report followed by current and past expenditure on sustainable items are not disclosed (272,34 percent). These findings suggest that stakeholders prioritize that companies are providing sustainable report and total expenditure on environmental factors are disclosed by the company, likely due to the commitment of the company towards corporate social responsibility and due to their environmental concerns. The relatively lower frequency of current and past expenditure may indicate lack of proper recording of current and past expenditure on sustainable items. The variation in trend of disclosure highlights the need for emergence of uniform guidelines for disclosure of Environmental information.

The table provided below depicts the average weighted mean score of frequency of responses of employees and external auditors on Trend of Environmental Disclosure.

Table 5.9*Trend of Environmental Disclosure*

	N	VR	R	O	F	VF	Total weighted Mean Score	Weighted Average Mean Score
Weights	1	2	3	4	5	6		
The companies are providing sustainable report	6	36	48	872	360	2820	4142	5.1775
Sustainable items are well reported in existing accounting practices of the company	10	48	66	880	2230	468	3702	4.6275
Accounting treatment of sustainable items disclosed in financial report	316	628	294	152	80	108	1578	1.9725
The company disclose total expenditure on environmental factors	6	60	576	864	500	1536	3542	4.4275
Current and past expenditure on sustainable items disclosed	272	268	660	424	260	96	1980	2.475

Source: Compiled by the researcher

The result indicates that the companies are providing sustainable report with a highest weighted average mean score of 5.1775 followed by Sustainable items are well reported in existing accounting practices of the company (Mean score =4.6275) and the company disclose total expenditure on environmental factors (Mean score =4.4275) as the very frequent trend of disclosure adopted by the company in contrast to Current and past expenditure on sustainable items disclosed (Mean score =2.475) and Accounting treatment of sustainable items disclosed in financial report (Mean score =1.9725) respectively. The significant differences in the weighted average mean scores reflects an increasing shift towards greater transparency and stakeholder engagement.

5.2.9 Trend of Commitment of Companies to Reduce Vehicle Emission

Table provided below presents the frequency distribution of 800 respondents' opinion regarding the trend of commitment of companies to reduce vehicle emissions, including the companies achieve net zero emission with a publicly stated target and time line, No clear timeline or strategy, Evaluate the feasibility

of commitment to reduce vehicle emission and Specific targets are fixed to reduce vehicle emissions.

The trend levels of commitment are categorized as Strongly Disagree (SD), Disagree(D), Neutral (N), Agree (A) and Strongly Agree (SA). This table provides insights into stakeholders' view points on trend of commitment of companies to reduce vehicle emissions, enabling an understanding of their engagement with CSR.

Table 5.10

Trend of Commitment of Companies to Reduce Vehicle Emission

	SD	D	N	A	SA
The companies achieve net zero emission with a publicly stated target and time line	80	90	50	130	450
There is no clear time line or strategy for achieving net zero emission	440	132	40	96	92
The companies evaluate the feasibility of commitment to reduce vehicle emission	44	100	60	126	470
Specific targets are fixed to reduce vehicle emissions	46	92	70	192	400

Note: SD: Strongly Disagree, D: Disagree, N: Neutral, A: Agree and SA: Strongly Agree

Source: Compiled by the researcher

The results indicate that the highest proportion of respondents (470,59 percent) strongly agree that companies evaluate the feasibility of commitment to reduce vehicle emission followed by the companies achieve net zero emission with a publicly stated target and time line with 450 respondents (56 percent) being trend of commitment to reduce vehicle emission. Conversely, the highest proportion of respondents (440, 55 percent) strongly disagree that there is no clear time line or strategy for achieving net zero emission. These findings suggest that stakeholders prioritize that companies evaluate the feasibility of commitment to reduce vehicle emission, likely to take competitive advantage, to attract investors and contribute to sustainability goals. The relatively lower level of agreement of no clear time limit for achieving net zero emission may indicate lack of urgency and accountability. The variation in commitment of companies highlights the need for emergence of uniform guidelines for disclosure of Environmental information.

The table provided below depicts the average weighted mean score of frequency of responses of employees and external auditors on Trend of commitment of companies to reduce vehicle emissions.

Table 5.11

Trend of Commitment of Companies to Reduce Vehicle Emission (Weighted Average Mean Score)

	SD	D	N	A	SA	Total weighted Mean Score	Weighted Average Mean Score
Weights	1	2	3	4	5		
The companies achieve net zero emission with a publicly stated target and time line	80	180	150	520	2250	3180	3.975
There is no clear time line or strategy for achieving net zero emission	440	264	120	384	460	1668	2.085
The companies evaluate the feasibility of commitment to reduce vehicle emission	44	200	180	504	2350	3278	4.0975
Specific targets are fixed to reduce vehicle emissions	46	184	210	768	2000	3208	4.01

Source: Compiled by the researcher

The result indicates that the companies evaluate the feasibility of commitment to reduce vehicle emission with a highest weighted average mean score of 4.0975 followed by specific targets are fixed to reduce vehicle emissions (Mean score =4.01) and the companies achieve net zero emission with a publicly stated target and time line (Mean score =3.975) as the very frequent trend of commitment of companies to reduce vehicle emission in contrast to there is no clear time line or strategy for achieving net zero emission (Mean score =2.085) . The significant differences in the weighted average mean scores reflects an increasing shift towards greater transparency and accountability.

5.2.10 Frequency of Reports Published by the Companies together with Annual Reports

Table provided below presents the distribution of respondents' opinion regarding frequency of reports published by companies in the automobile industry,

including CSR reports, Sustainability reports, Health, Safety, and Environment reports, and Informal reports. The frequency levels are categorized as Very Rarely (VR), Rarely (R), Occasionally (O), Frequently (F), and Very Frequently (VF). This table provides insights into stakeholders' familiarity regarding the frequency of disclosure of various reports, enabling an understanding of their engagement with corporate social responsibility and sustainability initiatives.

Table 5.12

Frequency of Reports Published by the Companies together with Annual Reports

	VR	R	O	F	VF
CSR report	13	22	8	157	600
Sustainability report	14	37	11	293	445
Health, Safety and Environment report	44	157	49	261	289
Informal report	133	96	96	219	256

Note: VR: Very Rarely, R: Rarely, O: Occasionally, F: Frequently, VF: Very Frequently

Source: Compiled by the researcher

The results indicate that CSR reports garnered the highest Extreme frequency (600, 75 percent), followed by sustainability reports, with 445 respondents (56 percent) being most frequently published by the companies. Conversely, the highest proportion of respondents reported that informal reports were very rarely published by the companies (133, 17 percent). Health, Safety, and Environment reports showed a relatively balanced frequency distribution. These findings suggest that stakeholders prioritize CSR and Sustainability reports, likely due to their relevance to corporate social responsibility and environmental concerns. The relatively lower frequency of Informal reports may indicate lack of communication or accessibility. The variation in frequency levels across reports highlights the need for targeted communication strategies.

Table provided below presents a comparative analysis of frequency levels regarding reports published by companies (CSR, Sustainability, Health, Safety, and Environment, and Informal reports) between Employees and External auditors. Frequency levels are categorized as Very Rarely (VR), Rarely (R), Occasionally (O), Frequently (F), and Very Frequently (VF).

Table 5.13

Frequency of Reports Published by the Companies together with Annual Reports- Comparison between Employees and External Auditors

		VR	R	O	F	VF	
Category of Respondents	Employees	CSR report	5	2	0	49	344
		Sustainability report	6	14	2	187	191
		Health, Safety and Environment report	36	136	41	152	35
		Informal report	125	75	88	108	4
	External auditors	CSR report	8	20	8	108	256
		Sustainability report	8	23	9	106	254
		Health, Safety and Environment report	8	21	8	109	254
		Informal report	8	21	8	111	252

Note: VR: Very Rarely, R: Rarely, O: Occasionally, F: Frequently, VF: Very Frequently

Source: Compiled by the researcher

The results indicate significant differences in perceptions between Employees and external auditors regarding the frequency of reports published by company. Employees demonstrated lower frequency of Informal reports (125, 31 percent) and higher frequency of CSR reports (344, 86 percent). The external auditors exhibited lower frequency for all types of report (8, 2 percent) and higher frequency for CSR reports (256, 64 percent). Conversely, external auditors reported higher moderate frequency of Informal reports (111, 28 percent) and Health, Safety and Environmental reports and CSR reports (109, 27 percent and 108, 26 percent) respectively. These findings suggest that employees prioritize CSR reports, while external auditors focus on all types of reports equally. The disparities in perception level highlight the importance of tailored communication strategies for different stakeholder groups.

The following table presents the results of the Independent Sample T-Test analysis, comparing the mean frequency scores of reports published by companies (CSR, Sustainability, Health, Safety, and Environment, and Informal reports) between Employees and external auditors. For this, the study fixed the following alternate hypotheses.

Hypothesis: -

- H1:** There is significant difference in the mean frequency score of CSR reports between employees and external auditors.
- H2:** There is significant difference in the mean frequency score of Sustainability reports between employees and external auditors.
- H3:** There is significant difference in the mean frequency score of Health, Safety, and Environment reports between employees and external auditors.
- H4:** There is significant difference in the mean frequency score of Informal reports between employees and external auditors.

Table 5.14

Frequency of Reports Published by the Companies together with Annual Reports-Independent Sample T Test

	Category of Respondents	Mean	Std. Deviation	T value	P value
CSR report	Employees	4.8000	.66416	6.030	.000
	External auditors	4.4600	.91130		
Sustainability report	Employees	4.3475	.84173	-1.429	.153
	External auditors	4.4375	.93717		
Health, Safety and Environment report	Employees	3.0275	1.21261	-	.000
	External auditors	4.4500	.91903		
Informal report	Employees	2.4750	1.21988	-	.000
	External auditors	4.4450	.91874		

Source: Primary Data

The results revealed significant differences in mean frequency scores between Employees and External auditors for three types of reports. Employees demonstrated higher mean frequency scores for CSR reports ($M = 4.80$, $SD = 0.664$), while External auditors showed higher mean frequency scores for Health, Safety, and Environment reports ($M = 4.450$, $SD = 0.919$) and Informal reports ($M = 4.445$, $SD = 0.919$). The differences were statistically significant for CSR reports ($t(420) =$

6.030, $p < 0.001$), Health, Safety, and Environment reports ($t(420) = -18.698$, $p < 0.001$), and Informal reports ($t(420) = -25.800$, $p < 0.001$). These findings suggest that employees and external auditors prioritize different reports, with employees focusing on CSR reports and external auditors emphasizing Health, Safety, and Environment reports and Informal reports. The significant differences in frequency scores highlight the need for targeted communication strategies. The employees and external auditors have same perception that most of the companies used sustainability reports ($p=0.153$) for reporting environmental information. The majority of the companies are preparing sustainability reports for communicating their environmental, social and governance performance and its commitment to sustainable practices.

5.2.11 Frequency of Reporting Formats

Table provided below presents the perceptions of respondents' regarding frequency of various reporting formats, including Global Reporting Initiative (GRI), Global Compact Initiative (GCI), and Sectoral guidance adopted by automobile manufacturing companies. The frequency levels are categorized as Very rarely (VR), Rarely (R), Occasionally (O), Frequently (F) and Very frequently (VF). This table provides insights into stakeholders' perception of frequency of prominent reporting frameworks adopted by the company.

Table 5.15

Frequency of Reporting Formats

Reporting Format	VR	R	O	F	VF
Global Reporting Initiative (GRI)	165	97	38	106	394
Global Compact Initiative (GCI)	171	129	69	310	121
Sectoral guidance	241	151	212	160	36

Note: VR: Very Rarely, R: Rarely, O: Occasionally, F: Frequently, VF: Very Frequently

Source: Compiled by the researcher

The results indicate that GRI garnered the highest Extreme frequency (394, 49 percent). Conversely, Sectoral guidance had the highest proportion of Very rarely used reporting format by respondents (241, 30 percent). GCI showed a relatively balanced frequency distribution. These findings suggest that stakeholders highlighted

that the majority of the companies use GRI, likely due to its widespread adoption. The relatively lower adoption of Sectoral guidance may indicate a need for increased promotion or education. The variation in frequency across reporting formats highlights the importance of tailored communication strategies.

Table provided below presents a comparative analysis of perception levels regarding frequency of usage of various reporting formats (Global Reporting Initiative, Global Compact Initiative, and Sectoral guidance) between employees and external auditors. Frequency levels are categorized as Very rarely (VR), Rarely (R), Occasionally (O), Frequently (F), and Very Frequently (VF).

Table 5.16

Frequency of Reporting Formats- Comparison between Employees and External Auditors

			VR	R	O	VF	F
Category of Respondents	Employees	Global Reporting Initiative (GRI)	1	0	0	36	363
		Global Compact Initiative (GCI)	7	34	30	241	88
		Sectoral guidance	79	55	173	90	3
	External auditors	Global Reporting Initiative (GRI)	164	97	38	70	31
		Global Compact Initiative (GCI)	164	95	39	69	33
		Sectoral guidance	162	96	39	70	33

Note: VR: Very Rarely, R: Rarely, O: Occasionally, F: Frequently, VF: Very Frequently

Source: Compiled by the researcher

The results revealed significant differences in perception levels between Employees and external auditors regarding the frequency of reporting formats adopted by the company. Employees demonstrated higher Extreme frequency of GRI (363, 91 percent) and GCI (88, 22 percent). Conversely, external auditors showed higher very rarely responses for GRI (164, 41 percent) and Sectoral guidance (162, 40.5 percent). These findings suggest that Employees possess greater knowledge of GRI and GCI, likely due to their involvement in sustainability reporting. External auditors' lower awareness may indicate a need for targeted training. The disparity in perception levels highlights the importance of tailored communication strategies.

Table provided below presents the results of the Independent Sample T-Test analysis, comparing the mean frequency scores of reporting formats (Global Reporting Initiative, Global Compact Initiative, and Sectoral guidance) between Employees and external auditors. The study fixed the following alternate hypotheses.

Hypothesis: -

- H1:** There is significant difference in the mean frequency score of Global Reporting Initiative (GRI) between employees and external auditors.
- H2:** The mean frequency scores of Global Compact Initiative (GCI) differ significantly between employees and external auditors.
- H3:** Employees and external auditors have different mean awareness scores for Sectoral guidance.

Table 5.17

Frequency of Reporting Formats- Independent Sample T Test

	Category of Respondents	Mean	SD	T Value	P Value
Global Reporting Initiative (GRI)	Employees	4.9000	.34684	37.647	.000
	External auditors	2.2675	1.35482	37.647	.000
Global Compact Initiative (GCI)	Employees	3.9200	.89756	20.066	.000
	External auditors	2.2800	1.36611	20.066	.000
Sectoral guidance	Employees	2.7075	1.04866	4.849	.000
	External auditors	2.2900	1.36586	4.849	.000

Source: Primary Data

The results revealed significant differences in mean frequency scores between employees and external auditors for all three reporting formats. Employees demonstrated higher mean frequency scores for GRI ($M = 4.90$, $SD = 0.34684$), GCI ($M = 3.92$, $SD = 0.89756$), and Sectoral guidance ($M = 2.7075$, $SD = 1.04866$). The differences were statistically significant for GRI ($t(420) = 37.647$, $p < 0.001$), GCI ($t(420) = 20.066$, $p < 0.001$), and Sectoral guidance ($t(420) = 4.849$, $p < 0.001$). These findings suggest that Employees possess greater knowledge of sustainability reporting formats and company's disclosure practices compared to external auditors. The

significant differences in perception scores highlight the need for targeted training and communication strategies.

Path Analysis

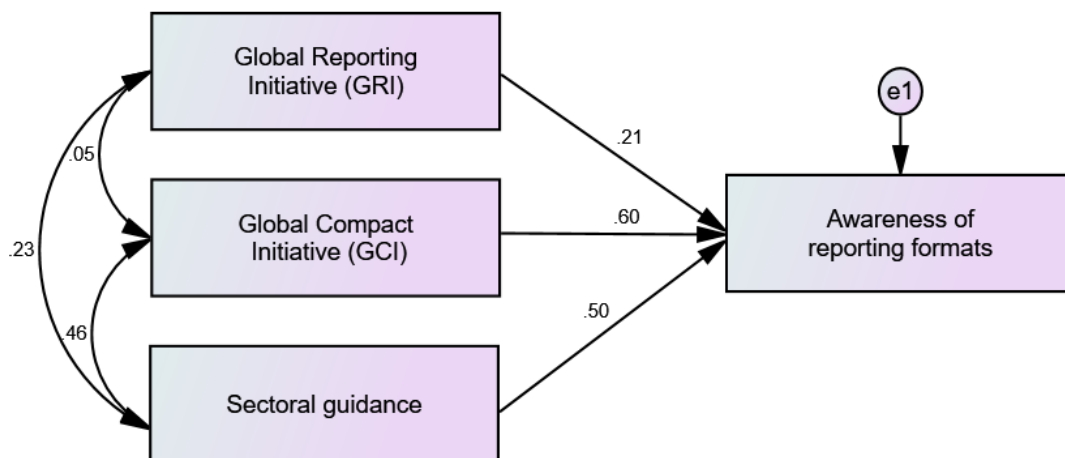
- **Employees**

Hypothesis

- H1:** There is significant impact of 'Global Reporting Initiative (GRI)' on frequency of reporting formats used for disclosure.
- H2:** There is significant impact of 'Global Compact Initiative (GCI)' on frequency of reporting formats used for disclosure.
- H3:** There is significant impact of 'Sectoral Guidance' on frequency of reporting Formats used for disclosure.
- H4:** There is significant impact of 'Global Reporting Initiative (GRI)' on 'Global Compact Initiative (GCI)'.
- H5:** There is significant impact of 'Global Compact Initiative (GCI)' on 'Sectoral Guidance'.
- H6:** There is significant impact of 'Sectoral Guidance' on 'Global Reporting Initiative (GRI)'.

Figure 5.1

Frequency of Reporting Formats- Employees



The table presents the model fit indices for the measurement model assessing employees' perception of frequency of reporting formats used for disclosure. These indices provide an evaluation of how well the proposed model fits the observed data.

Table 5.18

Model Fit Indices- Frequency of Reporting Formats- Employees

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.97	.94	.95	.94	.024
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicate that the measurement model demonstrates an excellent fit to the data. The Comparative Fit Index (CFI) is 0.97, the Goodness of Fit Index (GFI) is 0.94, the Tucker-Lewis Index (TLI) is 0.95, and the Normed Fit Index (NFI) is 0.94, all exceeding the threshold of 0.9. Additionally, the Root Mean Square Error of Approximation (RMSEA) is 0.024, which is below the threshold of 0.05, indicating a close fit. The findings suggest that the proposed model provides a satisfactory representation of employees' perception on frequency of reporting formats. The excellent fit indices provide confidence in the validity of the model, allowing for meaningful interpretations of the relationships between the variables.

The table presents the results of hypothesis testing for the impact of various initiatives on employees' awareness of reporting formats. The table provides the beta coefficient, p-value, and decision for each hypothesis.

Table 5.19*Testing of Hypothesis- Frequency of Reporting Formats- Employees*

Sl. No	Hypothesis	Beta Coefficient	P Value	Decision
1	There is significant impact of 'Global Reporting Initiative (GRI)' on frequency of reporting formats.	.21	<.05	Accepted
2	There is significant impact of 'Global Compact Initiative (GRI)' on frequency of reporting Formats.	.60	<.05	Accepted
3	There is significant impact of 'Sectoral Guidance' on frequency of reporting Formats.	.50	<.05	Accepted
4	There is significant impact of 'Global Reporting Initiative (GRI)' on 'Global Compact Initiative (GCI)'.	.05	<.05	Accepted
5	There is significant impact of 'Global Compact Initiative (GCI)' on 'Sectoral Guidance'.	.46	<.05	Accepted
6	There is significant impact of 'Sectoral Guidance' on 'Global Reporting Initiative (GRI)'.	.23	<.05	Accepted

Source: Primary Data

The results indicate that all three initiatives, namely Global Reporting Initiative (GRI), Global Compact Initiative (should be noted that the acronym for Global Compact is UNGC), and Sectoral Guidance, have a significant impact on employees' perception of frequency of reporting formats adopted by companies. The beta coefficients for GRI, GCI, and Sectoral Guidance are 0.21, 0.60, and 0.50, respectively, indicating a positive relationship. The p-values for all three initiatives are less than 0.05, indicating statistical significance. These reporting formats have a significant effect on each other although the relationship is weaker.

The findings suggest that these initiatives play a crucial role in enhancing frequency of reporting formats as perceived by employees'. The significant impact of GRI, GCI, and Sectoral Guidance implies that these initiatives can be used to inform and educate employees about reporting formats, ultimately improving organizational reporting practices.

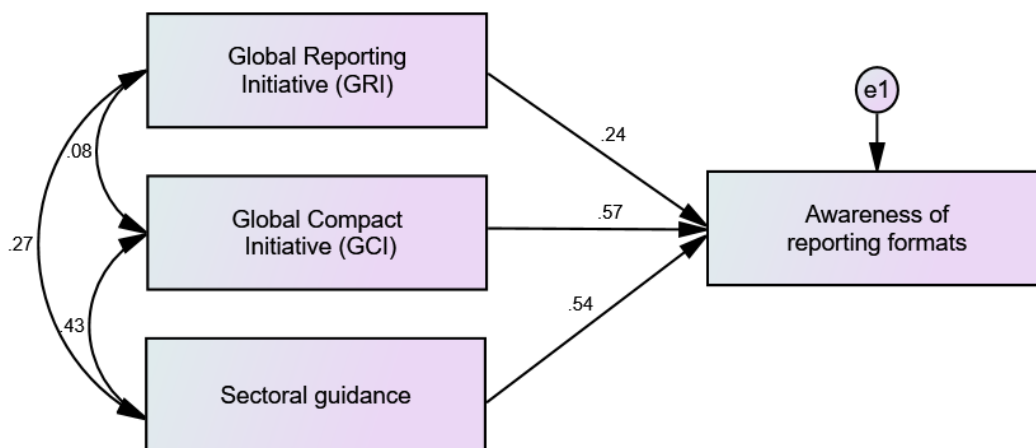
- **External auditors**

Hypothesis

- H1:** There is significant impact of 'Global Reporting Initiative (GRI)' on frequency of reporting Formats.
- H2:** There is significant impact of 'Global Compact Initiative (GCI)' on frequency of reporting Formats.
- H3:** There is significant impact of 'Sectoral Guidance' on frequency of reporting Formats.
- H4:** There is significant impact of 'Global Reporting Initiative (GRI)' on 'Global Compact Initiative (GCI)'.
- H5:** There is significant impact of 'Global Compact Initiative (GCI)' on 'Sectoral Guidance'.
- H6:** There is significant impact of 'Sectoral Guidance' on 'Global Reporting Initiative (GRI)'.

Figure 5.2

Frequency of Reporting Formats- External Auditors



The table presents the model fit indices for the measurement model assessing external auditors' perception of frequency of reporting formats. These indices provide an evaluation of how well the proposed model fits the observed data.

Table 5.20

Model Fit Indices- Frequency of Reporting Formats- External Auditors

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.95	.96	.94	.95	.026
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicate that the measurement model demonstrates an excellent fit to the data. The Comparative Fit Index (CFI) is 0.95, the Goodness of Fit Index (GFI) is 0.96, the Tucker-Lewis Index (TLI) is 0.94, and the Normed Fit Index (NFI) is 0.95, all exceeding the threshold of 0.9. Additionally, the Root Mean Square Error of Approximation (RMSEA) is 0.026, which is below the threshold of 0.05, indicating a close fit. The findings suggest that the proposed model provides a satisfactory representation of external auditors' perception of reporting formats.

The table presents the results of hypothesis testing for the impact of various initiatives on external auditors' perception of frequency of reporting formats. The table provides the beta coefficient, p-value, and decision for each hypothesis.

Table 5.21

Testing of Hypothesis- Frequency of Reporting Formats- External Auditors

Sl. No	Hypothesis	Beta Coefficient	P Value	Decision
1	There is significant impact of 'Global Reporting Initiative (GRI)' on Frequency of reporting Formats.	.24	<.05	Accepted
2	There is significant impact of 'Global Compact Initiative (GRI)' on frequency of reporting Formats.	.57	<.05	Accepted
3	There is significant impact of 'Sectoral Guidance' on frequency of reporting Formats.	.54	<.05	Accepted
3	There is significant impact of 'Global Reporting Initiative (GRI)' on 'Global Compact Initiative (GCI)'.	.08	<.05	Accepted
4	There is significant impact of 'Global Compact Initiative (GCI)' on 'Sectoral Guidance'.	.43	<.05	Accepted
5	There is significant impact of 'Sectoral Guidance' on 'Global Reporting Initiative (GRI)'.	.27	<.05	Accepted

Source: Primary Data

The results indicate that all three initiatives, namely Global Reporting Initiative (GRI), Global Compact Initiative (UNGC, not GRI), and Sectoral Guidance, have a

significant impact on external auditors' perception of frequency of reporting formats. The beta coefficients for GRI, Global Compact Initiative, and Sectoral Guidance are 0.24, 0.57, and 0.54, respectively, indicating a positive relationship. The p-values for all three initiatives are less than 0.05, indicating statistical significance. These reporting formats have a significant effect on each other although the relationship is weaker.

The findings suggest that these initiatives play a crucial role in enhancing external auditors' perceptions of reporting formats. The significant impact of GRI, Global Compact Initiative, and Sectoral Guidance implies that these initiatives can be used to inform and educate external auditors' about reporting formats, ultimately improving the quality of financial reporting and decision-making.

5.2.12 Medium of Environmental Disclosure

Table provided below presents the frequency distribution of respondents' opinion regarding the medium of disclosure of environmental information by the companies, which includes Main body of financial statements, footnotes to financial statements, Director's report, Separate Annexure to financial statements and separate Environmental statements.

The agreement levels of respondents are categorized as Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) and Strongly Agree (SA). This table provides insights into employees' and external auditors' view points on place of disclosure of environmental information by the companies, enabling an understanding of their engagement with corporate social responsibility and level of awareness on sustainability initiatives of the company.

Table 5.22

Medium of Environmental Disclosure

	SD	D	N	A	SA
Main body of financial statements	22	53	46	447	232
Footnotes to the financial statements	24	66	47	432	231
Director's report	53	126	46	266	309
Separate Annexure to financial statements	77	116	46	267	294
Separate environmental statements	121	187	45	187	260

Note: SD: Strongly Disagree, D: Disagree, N: Neutral, A: Agree, SA: Strongly Agree

Source: Compiled by the researcher

The results indicate that the Directors' report garnered a significantly high level of agreement among the respondents regarding the disclosure medium of Environmental information (309, 39 percent). Conversely, the highest proportion of respondents (121, 15 percent) strongly disagreed to separate Environmental statements as disclosure medium followed by disclosure of environmental information as separate annexure to financial statements (77, 10 percent). These findings highlight that respondents' emphasised Directors' report as disclosure medium, likely due to high level of authority and credibility and due to company's commitment to transparency and to meet stakeholder expectations. The relatively lower level of agreement to separate environmental statements as a disclosure medium may indicate lack of detailed focus and limited accessibility and transparency. The variation in level of agreement regarding the place of disclosure highlights the need for emergence of standardised regulatory framework and proper understanding of environmental issues.

Table provided below presents a comparative analysis of agreement levels regarding medium of environmental disclosure between employees and external auditors. Agreement levels are categorized as Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA).

Table 5.23

Medium of Environmental Disclosure- Comparison between Employees and External Auditors

			SD	D	N	A	SA
Category of Respondents	Employees	Main body of financial statements	3	7	0	282	108
		Footnotes to the financial statements	6	25	0	268	101
		Director's report	36	86	0	100	178
		Separate Annexure to financial statements	59	76	0	100	165
		Separate environmental statements	106	147	0	21	126
	External auditors	Main body of financial statements	19	46	46	165	124
		Footnotes to the financial statements	18	41	47	164	130
		Director's report	17	40	46	166	131
		Separate Annexure to financial statements	18	40	46	167	129
		Separate environmental statements	15	40	45	166	134

Note: SD: Strongly Disagree, D: Disagree, N: Neutral, A: Agree, SA: Strongly Agree

Source: Compiled by the researcher

The results revealed significant differences in agreement levels of disclosure medium between Employees and external auditors. Employees demonstrated higher Strongly Agree responses for the Director's report (178, 45 percent) and separate annexure to financial statements (165, 41 percent). External auditors showed higher Strongly Agree responses for separate environmental statements (134, 34 percent) followed by Director's report (131, 33 percent) and foot notes to financial statements (130, 32.5 percent) respectively. These findings suggest that Employees more strongly agree with narrative disclosures (Director's report), while external auditors' higher level of agreement is with standalone environmental statements. The disparities in agreement levels highlight the importance of tailored reporting and training. The employees strongly disagreed that the companies disclose environmental information as separate environmental statements in contrast to external auditors' level of disagreement to disclosure of information made in main body of financial statements. The level of agreement among external auditors were high for separate environmental statements (300, 75 percent) and directors report (297, 74 percent). At the same time the level of agreement among employees were high for main body of financial statements (390, 98 percent) and footnotes to financial statements (369, 92 percent). The external auditors are increasingly involved in environmental reporting and this trend may indicate a growing recognition of importance of environmental reporting within the accounting profession.

Table provided below presents the results of the Independent Sample T-Test analysis, comparing the mean agreement scores of environmental disclosure medium (Main body of financial statements, Footnotes to the financial statements, Director's report, Separate Annexure to financial statements and Separate environmental statements) between employees and external auditors. The study fixed the following alternate hypotheses.

Hypotheses: -

- H1:** There is significant difference in the mean agreement score of Main body of financial statements between employees and external auditors.
- H2:** The mean agreement scores of footnotes to financial statements differ significantly between employees and external auditors.
- H3:** Employees and external auditors have different mean agreement scores for Directors Report.
- H4:** The mean agreement scores of separate annexures to financial statements differ significantly between employees and external auditors.
- H5:** There is significant difference in the mean agreement score of separate environmental statements between employees and external auditors.

Table 5.24*Medium of Environmental Disclosure- Independent Sample T Test*

	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Main body of financial statements	Employees	1.7850	.60803	-6.104	.000
	External auditors	2.1775	1.13323	-6.104	.000
Footnotes to the financial statements	Employees	1.9175	.79516	-3.140	.002
	External auditors	2.1325	1.11492	-3.140	.002
Director's report	Employees	2.2525	1.43663	1.519	.129
	External auditors	2.1150	1.10219	1.519	.129
Separate Annexure to financial statements	Employees	2.4100	1.52897	2.992	.003
	External auditors	2.1275	1.10875	2.992	.003
Separate environmental statements	Employees	3.2150	1.64333	11.422	.000
	External auditors	2.0900	1.08621	11.422	.000

Source: Primary Data

The results revealed significant differences in mean agreement scores between Employees and External auditors for disclosure locations. Employees demonstrated

lower mean agreement scores for the main body of financial statements ($M = 1.785$, $SD = 0.60803$) and footnotes ($M = 1.9175$, $SD = 0.79516$) but higher scores for the separate annexure ($M = 2.4100$, $SD = 1.52897$) and separate environmental statements ($M = 3.2150$, $SD = 1.64333$). The differences were statistically significant. These findings suggest that Employees and External auditors have different levels of agreement with environmental disclosure mediums, depending on the disclosure location. Employees strongly agree with narrative and standalone environmental disclosures, while external auditors more agree with financial statement disclosures. Both the employees and external auditors emphasised on the disclosure of environmental information in the directors' report. The majority of the Environmental disclosures of the companies requiring compulsory disclosure are found in Director's report.

SECTION B

This phase employed various statistical tests, including Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), convergent validity, discriminant validity, and reliability assessment using Cronbach's alpha. Additionally, normality tests, such as the One-Sample Kolmogorov-Smirnov (K-S) test, skewness, and kurtosis, were conducted to verify the assumptions of parametric analysis.

5.2.13 Exploratory Factor Analysis

Table provided below presents the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity, assessing the suitability of the data for factor analysis.

Table 5.25

KMO and Bartlett's Test: Actual Disclosure Practices of Automobile Manufacturing Companies

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.874
Approx. Chi-Square	32821.551
Bartlett's Test of Sphericity	df
	153
	Sig.
	.000

Source: Primary Data

The KMO measure yielded a value of 0.874, exceeding the recommended threshold of 0.6, indicating satisfactory sampling adequacy. Bartlett's test of sphericity produced a significant result ($\chi^2 = 32821.551$, $df = 153$, $p < 0.001$), rejecting the null hypothesis of no correlation among variables. These findings supported the factorability of the data, confirming the existence of underlying relationships between variables measuring actual disclosure practices of automobile manufacturing companies.

Table 5.26*Communalities- Actual Disclosure Practices of Automobile Manufacturing Companies*

	Initial	Extraction
Waste Management	1.000	.943
Tree plantation and other environment CSR activities	1.000	.897
Pollution control measures	1.000	.874
Conservation of natural resources	1.000	.891
Measures regarding use and efficiency of electricity, water, CO2 emissions, waste management, and fuels	1.000	.854
Impact of organizational activities on the environment	1.000	.952
Significant accounting and reporting practices	1.000	.897
Value of intangible environmental investments (e.g., research and development expenditures, emission permits)	1.000	.904
Expenditure (e.g., fines paid for disregarding environmental norms)	1.000	.938
Contributions to Environmental fund	1.000	.947
Cost for controlling environmental impact (e.g., preventing pollution, noise, educating employees, designing new environmental -friendly products)	1.000	.938
Awards obtained for Environmental protection	1.000	.926
Cost for controlling environmental impact like preventing pollution, noise, cost for educating employees, designing new environmentally friendly products etc.	1.000	.943
Environmental objectives	1.000	.957
Environmental management system	1.000	.952
Environmental auditing	1.000	.976
Environment management certificate of ISO 140001	1.000	.942
Environmental budget	1.000	.967
Extraction Method: Principal Component Analysis.		

Source: Primary Data

The communalities ranged from 0.854 to 0.976, indicating a substantial portion of variance in each variable was explained by the extracted components. High communalities (e.g., Environmental auditing: 0.976, Environmental objectives: 0.957) suggested strong relationships between these variables and the underlying factors.

Table 5.27

Total Variance Extracted- Actual Disclosure Practices of Automobile Manufacturing Companies

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	9.654	53.631	53.631	9.654	53.631	53.631	6.422	35.677	35.677
2	3.807	21.150	74.781	3.807	21.150	74.781	5.446	30.256	65.934
3	3.236	17.979	92.760	3.236	17.979	92.760	4.829	26.826	92.760
4	.272	1.513	94.273						
5	.234	1.298	95.571						
6	.229	1.272	96.843						
7	.190	1.054	97.897						
8	.078	.434	98.331						
9	.069	.385	98.716						
10	.053	.296	99.012						
11	.048	.264	99.276						
12	.037	.206	99.482						
13	.027	.151	99.634						
14	.025	.138	99.771						
15	.016	.089	99.861						
16	.011	.061	99.922						
17	.008	.045	99.967						
18	.006	.033	100.000						

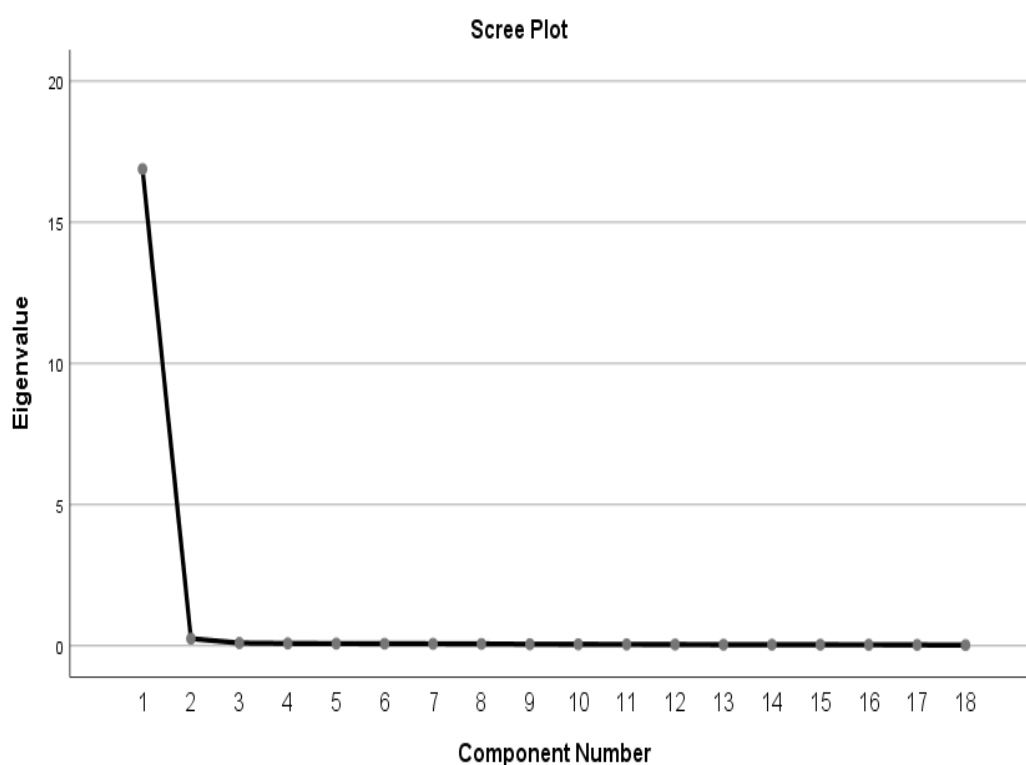
Extraction Method: Principal Component Analysis.

Source: Primary Data

The analysis extracted three components, explaining 92.760% of the total variance. Component 1 accounted for 53.631% of the variance, indicating a dominant factor. The scree plot suggested retention of three factors, explaining 92.760% of the variance.

Figure 5.3

Actual Disclosure Practices of Automobile Manufacturing Companies



These findings supported the factor analysis approach, revealing underlying factors explaining significant actual disclosure practices. The results provided statistical justification for reducing data dimensionality, facilitating interpretation of complex relationships between variables. Specifically, the extracted factors highlighted key areas for improvement in environmental disclosure, such as waste management, pollution control, and environmental auditing.

Table 5.28

Component Matrix- Actual Disclosure Practices of Automobile Manufacturing Companies

	Component		
	1	2	3
Expenditure (e.g., fines paid for disregarding environmental norms)	.845	-.056	-.471
Contributions to Environmental fund	.843	-.054	-.482
Cost for controlling environmental impact (e.g., preventing pollution, noise, educating employees, designing new environmental-friendly products)	.840	-.072	-.476
Significant accounting and reporting practices	.837	-.070	-.437
Cost for controlling environmental impact like preventing pollution, noise, cost for educating employees, designing new environmentally friendly products etc.	.834	-.060	-.494
Awards obtained for Environmental protection	.831	-.069	-.481
Value of intangible environmental investments (e.g., research and development expenditures, emission permits)	.821	-.059	-.476
Impact of organizational activities on the environment	.728	-.433	.485
Waste Management	.724	-.430	.484
Tree plantation and other environment CSR activities	.716	-.413	.463
Conservation of natural resources	.709	-.422	.458
Pollution control measures	.704	-.405	.464
Measures regarding use and efficiency of electricity, water, CO2 emissions, waste management, and fuels	.684	-.429	.450
Environmental auditing	.592	.746	.262
Environmental budget	.591	.743	.255
Environmental management system	.584	.737	.260
Environment management certificate of ISO 140001	.578	.733	.265
Environmental objectives	.595	.723	.282

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Source: Primary Data

Component 1 comprised variables related to environmental expenditures and investments (e.g., Expenditure: .845, Contributions to Environmental fund: .843). Component 2 included variables related to environmental management and auditing (e.g., Environmental auditing: .746, Environmental budget: .743). Component 3 consisted of variables related to environmental impact and conservation (e.g., Impact of organizational activities: .485, Waste Management: .484).

Table 5.29

Rotated Component Matrix- Actual Disclosure Practices of Automobile Manufacturing Companies

	A Component		
	Environmental Accounting and Reporting	Environmental Performance and Impact	Environmental Management and Governance
Cost for controlling environmental impact like preventing pollution, noise, cost for educating employees, designing new environmentally friendly products etc.	.941	.191	.148
Contributions to Environmental fund	.938	.201	.161
Cost for controlling environmental impact (e.g., preventing pollution, noise, educating employees, designing new environmental-friendly products)	.934	.212	.147
Expenditure (e.g., fines paid for disregarding environmental norms)	.931	.210	.163
Awards obtained for Environmental protection	.930	.203	.143
Value of intangible environmental investments (e.g., research and development expenditures, emission permits)	.919	.195	.149
Significant accounting and reporting practices	.904	.235	.159
Impact of organizational activities on the environment	.209	.947	.106
Waste Management	.206	.943	.107
Tree plantation and other environment CSR activities	.214	.916	.111
Conservation of natural resources	.213	.914	.099
Pollution control measures	.204	.906	.113
Measures regarding use and efficiency of electricity, water, CO ₂ emissions, waste management, and fuels	.202	.898	.079
Environmental auditing	.167	.103	.968
Environmental budget	.171	.099	.963
Environmental objectives	.157	.130	.957
Environmental management system	.164	.102	.956
Environment management certificate of ISO 140001	.156	.104	.952

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

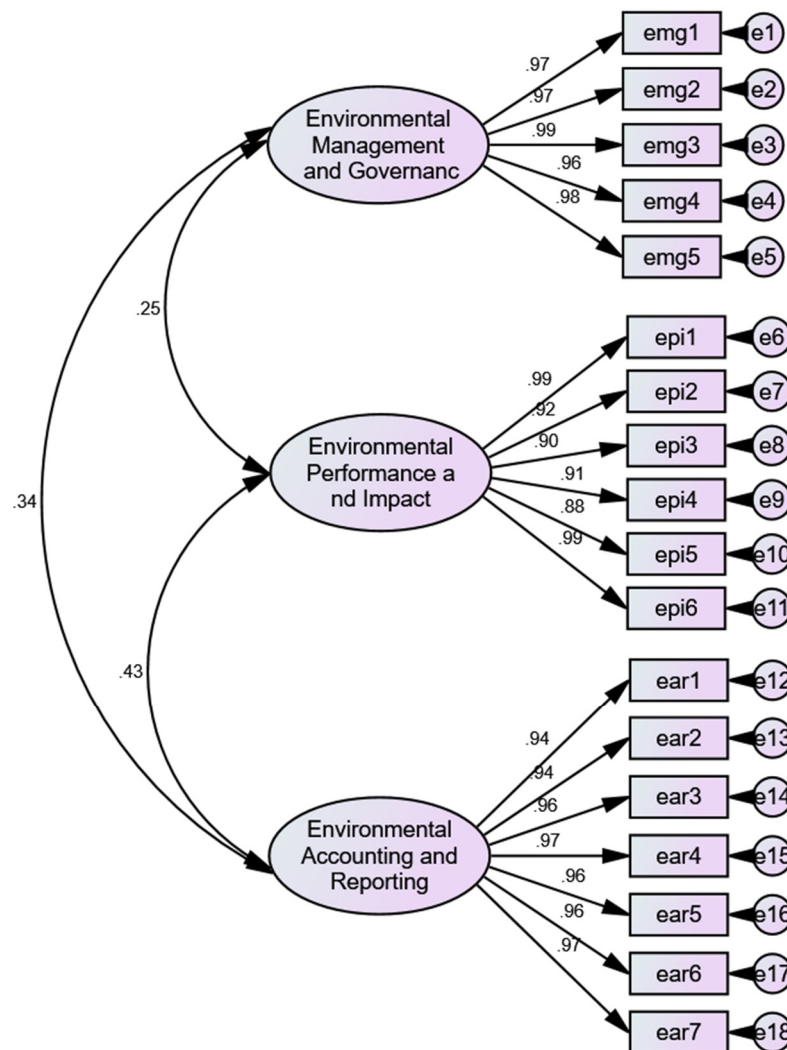
Source: Primary Data

The analysis revealed three distinct components: Environmental Accounting and Reporting (e.g., Cost for controlling environmental impact: .941), Environmental Performance and Impact (e.g., Impact of organizational activities: .947), and Environmental Management and Governance (e.g., Environmental auditing: .968). The components explained 92.760% of the total variance. These findings supported the existence of distinct factors influencing environmental disclosure practices. The extracted components provided valuable insights into the relationships between variables, facilitating identification of key drivers.

5.2.14 Confirmatory Factor Analysis

Figure 5.4

CFA- Actual Disclosure Practices of Automobile Manufacturing Companies



The Model Fit Indices table presents the results of the confirmatory factor analysis (CFA) model, which assesses the fit of the proposed factor structure to the data. The model fit indices provide a statistical evaluation of the model's performance in reproducing the observed data.

Table 5.30*Model Fit Indices- Actual Disclosure Practices of Automobile Manufacturing Companies*

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.93	.92	.94	.95	.042
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated satisfactory model fit: Comparative Fit Index (CFI) = 0.93, Goodness-of-Fit Index (GFI) = 0.92, Tucker-Lewis Index (TLI) = 0.94, and Normed Fit Index (NFI) = 0.95. The Root Mean Square Error of Approximation (RMSEA) was 0.042, below the recommended threshold of 0.05. These findings supported the validity of the measurement model, confirming adequate fit to the data.

Table 5.31*Summary of Scale Validation- Actual Disclosure Practices of Automobile Manufacturing Companies*

Sl.no	Criteria	Result
1	Exploratory Factor Analyses	Explored 3 Factors
2	Confirmatory factor analysis	Confirmed
3	Reliability	Satisfied
4	Convergent validity	Satisfied
5	Discriminant validity	Satisfied
6	Normality	Satisfied

Source: Compiled by the researcher

The results indicated satisfactory scale validation outcomes. Exploratory Factor Analysis (EFA) revealed three underlying factors, while Confirmatory Factor Analysis (CFA) confirmed the factor structure. Reliability analysis yielded satisfactory results, and Convergent Validity and Discriminant Validity assessments demonstrated adequate construct validity. Normality testing also yielded satisfactory results. These findings supported the validity and reliability of the measurement scale for environmental reporting.

SECTION C

This section aimed to analyse the actual environmental disclosure practices of companies. Three key variables were examined: Environmental Accounting and Reporting, Environmental Performance and Impact, and Environmental Management and Governance. These interconnected variables facilitated a comprehensive assessment of transparency in environmental-related financial information, disclosure of environmental performance metrics and impact assessments, and the presence of environmental management systems, policies, and governance structures, ultimately providing valuable insights into compliance and gaps in environmental disclosure practices among companies. A multi-faceted analytical approach was employed, incorporating descriptive statistics, independent sample t-test, and regression analysis to investigate the relationships and discrepancies on actual disclosure practices.

5.2.15 Environmental Management and Governance

Table provided below presents the frequency distribution of respondents' perceptions regarding the frequency with which Environmental Management and Governance aspects, including Environmental Objectives, Environmental Management System, Environmental Auditing, Environment Management Certificate of ISO 140001, and Environmental Budget disclosed by the companies. Frequency levels are categorized as Very rarely (VR), Rarely (R), Occasionally (O), Frequently (F), and Very Frequently (VF).

Table 5.32

Environmental Management and Governance

	VR	R	O	F	VF
Environmental objectives	9	137	99	282	273
Environmental management system	9	142	100	278	271
Environmental auditing	12	137	98	279	274
Environment management certificate of ISO 140001	9	139	98	277	277
Environmental budget	10	142	92	280	276

Note: - VR: Very Rarely, R: Rarely, O: Occasionally, F: Frequently, VF: Very Frequently.

Source: Primary Data

The results revealed that the majority of respondents considered all aspects of Environmental Management and Governance as Frequently or Very Frequently disclosed item. Environmental Objectives (F = 282, 35 percent; VF = 273, 34 percent), Environmental Management System (F = 278, 35 percent; VF = 271, 34 percent), and Environmental Auditing (F = 279, 35 percent; VF 274,34 percent) received high ratings. These findings suggest that stakeholders prioritize Environmental Management and Governance aspects, emphasizing their critical role in organizational sustainability. The high frequency ratings indicate a recognition of the need for robust environmental management practices.

5.2.16 Environmental Management and Governance between Employees and External Auditors.

Table provided below presents the results of the Independent Sample T-Test analysis, comparing the mean scores of Environmental Management and Governance between Employees and External auditors.

Hypothesis: -

H1: There is significant difference in the mean score of Environmental Management and Governance between Employees and External auditors.

Table 5.33

Environmental Management and Governance between Employees and External Auditors- Independent Sample T Test

	Category of Respondents	Mean	Std. Deviation	T Value	P value
Environmental Management and Governance	Employees	3.8890	1.06344	1.392	.164
	External auditors	3.7825	1.09974	1.392	.164

Source: Primary Data

The results revealed no significant difference in the mean score of Environmental Management and Governance between Employees (M = 3.889, SD = 1.06344) and External auditors (M = 3.7825, SD = 1.09974). The T-value (1.392) and corresponding p-value (.164) indicate that the difference is statistically insignificant. This finding suggests that Employees and External auditors share

similar perceptions regarding environmental management and governance. The lack of significant difference indicates a shared understanding of environmental issues, highlighting the importance of stakeholder consensus in organizational sustainability. This consensus can facilitate effective environmental management practices within organizations.

5.2.17 Environmental Performance and Impact

The table provided below presents the frequency distribution of respondents' perceptions regarding the importance of Environmental Performance and Impact aspects, including Waste Management, Tree Plantation and other environment CSR activities, Pollution Control Measures, Conservation of Natural Resources, Measures regarding use and efficiency of resources, and Impact of organizational activities on the environment. Importance levels are categorized as Very rarely (VR), Rarely (R), Occasionally (O), Frequently (F), and Very Frequently (VF).

Table 5.34

Environmental Performance and Impact

	VR	R	O	F	VF
Waste Management	11	131	95	284	279
Tree plantation and other environment CSR activities	9	136	94	279	282
Pollution control measures	9	134	97	283	277
Conservation of natural resources	9	136	96	284	275
Measures regarding use and efficiency of electricity, water, CO2 emissions, waste management, and fuels	11	136	95	280	278
Impact of organizational activities on the environment	9	134	98	285	274

Note: SD: Strongly Disagree, D: Disagree, N: Neutral, A: Agree, SA: Strongly Agree

Source: Primary Data

The results revealed that the majority of respondents considered all aspects of environmental performance and impact as Frequently or Very Frequently disclosed practice of the company. Waste Management (F=284,36 percent: VF 279,35 percent) and Tree Plantation and other environment CSR activities (F=279,35 percent; VF=282,36 percent) received high frequency ratings. These findings suggest that stakeholders prioritize Environmental Performance and Impact aspects, emphasizing

their critical role in organizational sustainability. The high importance ratings indicate a recognition of the need for proactive environmental management.

5.2.18 Environmental Performance and Impact between Employees and External Auditors

The table provided below presents the results of the Independent Sample T-Test analysis, comparing the mean scores of Environmental Performance and Impact between Employees and External auditors. The study fixed the following hypothesis.

Hypothesis: -

H1: There is significant difference in the mean score of Environmental Performance and Impact between Employees and External auditors.

Table 5.35

Environmental Performance and Impact between Employees and External Auditors-Independent Sample T Test

	Category of Respondents	Mean	Std. Deviation	T Value	P value
Environmental Performance and Impact	Employees	3.9104	1.06413	1.453	.147
	External auditors	3.7988	1.10868	1.453	.147

Source: Primary Data

The results revealed no significant difference in the mean score of Environmental Performance and Impact between Employees ($M = 3.9104$, $SD = 1.06413$) and External auditors ($M = 3.7988$, $SD = 1.10868$). The T-value (1.453) and corresponding p-value (.147) indicate that the difference is statistically insignificant. This finding suggests that Employees and External auditors share similar perceptions regarding environmental performance and impact. The lack of significant difference indicates a shared understanding of environmental issues, highlighting the importance of stakeholder consensus in organizational sustainability. This consensus can facilitate effective environmental performance and impact reduction strategies within organizations, ultimately contributing to a more sustainable future.

5.2.19 Environmental Accounting and Reporting

The table provided below presents the frequency distribution of respondents' perceptions regarding the importance of Environmental Accounting and Reporting aspects, including Significant Accounting and Reporting Practices, Value of Intangible Environmental Investments, Expenditure, Contributions to Environmental Fund, Cost for Controlling Environmental Impact, and Awards Obtained for Environmental Protection. Importance levels are categorized as Very rarely (VR), Rarely (R), Occasionally (O), Frequently (F), and Very Frequently (VF).

Table 5.36

Environmental Accounting and Reporting

	VR	R	O	F	VF
Significant accounting and reporting practices	9	136	92	283	280
Value of intangible environmental investments (e.g., research and development expenditures, emission permits)	10	131	100	282	277
Expenditure (e.g., fines paid for disregarding environmental norms)	10	137	95	278	280
Contributions to Environmental fund	9	136	98	280	277
Cost for controlling environmental impact (e.g., preventing pollution, noise, educating employees)	9	138	98	282	273
Awards obtained for Environmental protection	9	133	95	284	279
Cost of designing new environmental-friendly products	9	138	97	278	278

Note: SD: Strongly Disagree, D: Disagree, N: Neutral, A: Agree, SA: Strongly Agree

Source: Primary Data

The results revealed that the majority of respondents considered all aspects of Environmental Accounting and Reporting as Frequent or Very Frequent disclosure practice of the company. Significant Accounting and Reporting Practices (F = 283, 35.4 percent; VF = 280, 35 percent) and Awards Obtained for Environmental Protection (F = 284, 36 percent; VF = 279, 34 percent) received high frequency ratings. These findings suggest that stakeholders prioritize Environmental Accounting and Reporting aspects, emphasizing their critical role in organizational transparency and accountability. The high importance ratings indicate a recognition of the need for robust environmental accounting and reporting practices.

5.2.20 Environmental Accounting and Reporting between Employees and External Auditors

The table provided below presents the results of the Independent Sample T-Test analysis, comparing the mean scores of Environmental Accounting and Reporting between employees and external auditors. The study fixed the following alternate hypothesis.

Hypothesis: -

H1: There is significant difference in the mean score of Environmental Accounting and Reporting between Employees and External auditors.

Table 5.37

Environmental Accounting and Reporting- between Employees and External Auditors- Independent Sample T Test

	Category of Respondents	Mean	Std. Deviation	T Value	P value
Environmental Accounting and Reporting	Employees	3.9139	1.05962	1.488	.137
	External auditors	3.7989	1.12473	1.488	.137

Source: Primary Data

The results revealed no significant difference in the mean score of Environmental Accounting and Reporting between Employees (M = 3.9139, SD = 1.05962) and External auditors (M = 3.7989, SD = 1.12473). The T-value (1.488) and corresponding p-value (.137) indicate that the difference is statistically insignificant. This finding suggests that Employees and External auditors share similar perceptions regarding environmental accounting and reporting. The lack of significant difference indicates a shared understanding of environmental disclosure requirements, highlighting the importance of stakeholder consensus in organizational transparency and accountability. This consensus can facilitate effective environmental accounting and reporting practices within organizations, ultimately contributing to informed decision-making and sustainability.

- **Employees**

Hypothesis

H1: There is significant impact of ‘Environmental management and Governance’ on ‘Disclosure Practices.’

H2: There is significant impact of ‘Environmental Performance and Impact’ on ‘Disclosure Practices.’

H3: There is significant impact of ‘Environmental Accounting and Reporting’ on ‘Disclosure Practices.’

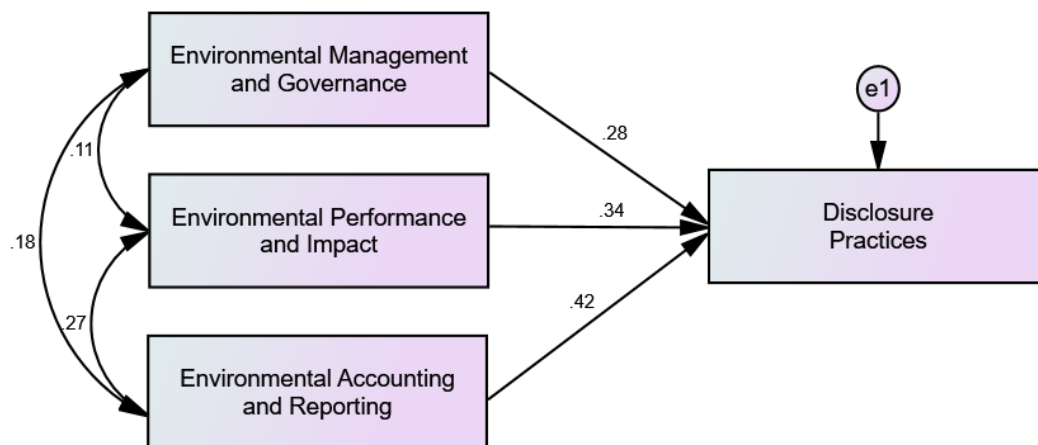
H4: There is significant impact of ‘Environmental Accounting and Reporting’ on ‘Environmental management and Governance.’

H5: There is significant impact of ‘Environmental management and Governance’ on ‘Environmental Performance and Impact.’

H6: There is significant impact of ‘Environmental Performance and Impact’ on ‘Environmental Accounting and Reporting.’

Figure 5.5

Disclosure Practices- Employees



The table presents the model fit indices for the measurement model assessing employees' disclosure practices. These indices provide an evaluation of how well the proposed model fits the observed data.

Table 5.38

Model Fit Indices- Disclosure Practices- Employees

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.93	.94	.93	.94	.032
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicate that the measurement model demonstrates an excellent fit to the data. The Comparative Fit Index (CFI) is 0.93, the Goodness of Fit Index (GFI) is 0.94, the Tucker-Lewis Index (TLI) is 0.93, and the Normed Fit Index (NFI) is 0.94, all exceeding the threshold of 0.9. Additionally, the Root Mean Square Error of Approximation (RMSEA) is 0.032, which is below the threshold of 0.05, indicating a close fit. The findings suggest that the proposed model provides a satisfactory representation of employees' disclosure practices. The excellent fit indices provide confidence in the validity of the model, allowing for meaningful interpretations of the relationships between the variables.

The table presents the results of hypothesis testing for the impact of various environmental factors on employees' disclosure practices. The table provides the beta coefficient, p-value, and decision for each hypothesis.

Table 5.39

Testing of Hypothesis- Disclosure Practices- Employees

Sl. No	Hypothesis	Beta Coefficient	P Value	Decision
1	There is significant impact of 'Environmental management and Governance' on 'Disclosure Practices'	.28	<.05	Accepted
2	There is significant impact of 'Environmental Performance and Impact' on 'Disclosure Practices'	.34	<.05	Accepted
3	There is significant impact of 'Environmental Accounting and Reporting' on 'Disclosure Practices'	.42	<.05	Accepted
4	There is significant impact of 'Environmental Accounting and Reporting' on 'Environmental management and Governance.'	.18	<.05	Accepted
5	There is significant impact of 'Environmental management and Governance' on 'Environmental Performance and Impact.'	.11	<.05	Accepted
6	There is significant impact of 'Environmental Performance and Impact' on 'Environmental Accounting and Reporting.'	.27	<.05	Accepted

Source: Primary Data

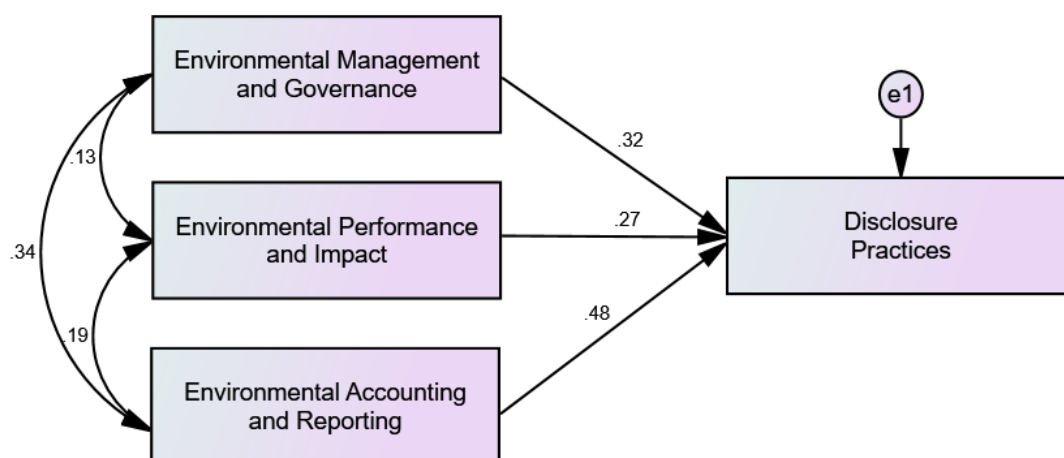
The results indicate that all three environmental factors, namely Environmental Management and Governance, Environmental Performance and Impact, and Environmental Accounting and Reporting, have a significant impact on employees' disclosure practices. The beta coefficients for these factors are 0.28, 0.34, and 0.42, respectively, indicating a positive relationship. The p-values for all three factors are less than 0.05, indicating statistical significance. These factors have a significant effect on each other although the relationship is weaker.

The findings suggest that these environmental factors play a crucial role in shaping employees' disclosure practices. The significant impact of Environmental Management and Governance, Environmental Performance and Impact, and Environmental Accounting and Reporting imply that these factors can be used to inform and improve employees' disclosure practices, ultimately enhancing organizational transparency and accountability.

- **External Auditors**

Hypothesis

- H1:** There is significant impact of 'Environmental management and Governance' on 'Disclosure Practices.'
- H2:** There is significant impact of 'Environmental Performance and Impact' on 'Disclosure Practices.'
- H3:** There is significant impact of 'Environmental Accounting and Reporting' on 'Disclosure Practices.'
- H4:** There is significant impact of 'Environmental Accounting and Reporting' on 'Environmental management and Governance.'
- H5:** There is significant impact of 'Environmental management and Governance' on 'Environmental Performance and Impact.'
- H6:** There is significant impact of 'Environmental Performance and Impact' on 'Environmental Accounting and Reporting.'

Figure 5.6*Disclosure Practices- External Auditors*

The table presents the model fit indices for the measurement model assessing external auditors disclosure practices. These indices provide an evaluation of how well the proposed model fits the observed data.

Table 5.40*Model Fit Indices- Disclosure Practices- External Auditors*

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.94	.92	.95	.93	.034
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicate that the measurement model demonstrates an excellent fit to the data. The Comparative Fit Index (CFI) is 0.94, the Goodness of Fit Index (GFI) is 0.92, the Tucker-Lewis Index (TLI) is 0.95, and the Normed Fit Index (NFI) is 0.93, all exceeding the threshold of 0.9. Additionally, the Root Mean Square Error of Approximation (RMSEA) is 0.034, which is below the threshold of 0.05, indicating a close fit. The findings suggest that the proposed model provides a satisfactory representation of external auditors' disclosure practices. The excellent fit indices provide confidence in the validity of the model, allowing for meaningful interpretations of the relationships between the variables.

The table presents the results of hypothesis testing for the impact of various environmental factors on external auditors' disclosure practices. The table provides the beta coefficient, p-value, and decision for each hypothesis.

Table 5.41

Testing of Hypothesis- Disclosure Practices- External Auditors

Sl. No	Hypothesis	Beta Coefficient	P Value	Decision
1	There is significant impact of 'Environmental management and Governance' on 'Disclosure Practices'	.32	<.05	Accepted
2	There is significant impact of 'Environmental Performance and Impact' on 'Disclosure Practices'	.27	<.05	Accepted
3	There is significant impact of 'Environmental Accounting and Reporting' on 'Disclosure Practices'	.48	<.05	Accepted
4	There is significant impact of 'Environmental Accounting and Reporting' on 'Environmental management and Governance.'	.34	<.05	Accepted
5	There is significant impact of 'Environmental management and Governance' on 'Environmental Performance and Impact.'	.13	<.05	Accepted
6	There is significant impact of 'Environmental Performance and Impact' on 'Environmental Accounting and Reporting.'	.19	<.05	Accepted

Source: Primary Data

The results indicate that all three environmental factors, namely Environmental Management and Governance, Environmental Performance and Impact, and Environmental Accounting and Reporting, have a significant impact on external auditors' disclosure practices. The beta coefficients for these factors are 0.32, 0.27, and 0.48, respectively, indicating a positive relationship. The p-values for all three factors are less than 0.05, indicating statistical significance. These factors have a significant effect on each other although the relationship is weaker.

The findings suggest that these environmental factors play a crucial role in shaping external auditors' disclosure practices. The significant impact of Environmental Management and Governance, Environmental Performance and Impact, and Environmental Accounting and Reporting imply that these factors can be used to inform and improve external auditors' disclosure practices, ultimately enhancing the quality and transparency of financial reporting.

PART II

5.3 Analysis of Variables and Testing of Hypothesis

The second part deals with the analysis of third objective of the study to assess the impact of financial performance on environmental reporting. The financial performance is independent variable and environmental reporting is dependent variable. Both primary and secondary data are used for the fulfilment of this objective. The primary data was analysed using the respondents' perceptions on the aspects of financial performance and environmental reporting through a well-structured questionnaire. The secondary data has been obtained from the annual reports of the selected automobile manufacturing companies.

The second part is divided into 4 sections. The first section deals with analysing the perceptions of employees and external auditors on various aspects of financial performance and environmental reporting using descriptive statistics and independent sample t test. The second section deals with measurement scale validation for analysing the effect of financial performance on environmental reporting and the third section deals with analysis of impact of financial performance on environmental reporting using Structural Equation Modelling. The final section involves analysing the effect of financial performance parameters on Environmental Reporting parameters using secondary data.

SECTION D

The perceptions of employees and external auditors are compared using independent sample T test.

5.3.1 Financial Performance

The table presents a comparative analysis of the perceptions of employees and external auditors regarding the relationship between financial performance and environmental disclosure. The data spans across five categories: SD (Strongly Disagree), D (Disagree), N (Neutral), A (Agree), and SA (Strongly Agree), with eight sub-categories related to financial performance and environmental disclosure. The table provides a comprehensive overview of the perceptions and attitudes of employees and external auditors towards the importance of financial performance in shaping environmental disclosure practices, highlighting areas of agreement and disagreement.

Table 5.42

Financial Performance-Employees and External Auditors

		SD	D	N	A	SA
		Count	Count	Count	Count	Count
Category	Employees					
	Priority given to economic demands in case of low profitability	0	0	56	176	168
	More Commitment of top management towards addressing environmental issues in case of high profitability	0	0	58	176	166
	Gaining competitive advantage results in increase in profitability	2	3	58	175	162
	Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure	1	4	59	172	164
	Profitable firms exposed to high social pressures but have necessary funds for disclosure	0	4	57	174	165
	Profitable companies more trusted by the public to increase stakeholder expectations and attract investors	0	2	60	172	166
	Profitability is an indicator in managing firm's environmental assets	0	3	59	175	163

		SD	D	N	A	SA
		Count	Count	Count	Count	Count
External auditors	Priority given to economic demands in case of low profitability	4	16	35	158	187
	More Commitment of top management towards addressing environmental issues in case of high profitability	4	15	37	155	189
	Gaining competitive advantage results in increase in profitability	4	16	35	152	193
	Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure	4	14	35	155	192
	Profitable firms exposed to high social pressures but have necessary funds for disclosure	4	15	35	155	191
	Profitable companies more trusted by the public to increase stakeholder expectations and attract investors	4	15	35	155	191
	Profitability is an indicator in managing firm's environmental assets	4	16	35	159	186

Source: Primary Data

The table reveals several notable trends and patterns in the perceptions of employees and external auditors regarding financial performance and environmental disclosure. Firstly, the majority of employees and auditors agree that profitable firms are more likely to prioritize environmental disclosure and contribute to the welfare of stakeholders. This suggests that financial performance may be an important driver of environmental disclosure practices.

Secondly, the table indicates a significant difference in perceptions between employees and external auditors where the auditors tend to agree more strongly with the statement that profitable firms are exposed to high social pressures but have the necessary funds for disclosure. This suggests that external auditors may be more likely to recognize the role of social pressures in shaping environmental disclosure practices.

Thirdly, the data reveals a notable emphasis on the importance of gaining competitive advantage through environmental disclosure among employees and

external auditors. A significant proportion of respondents agree that gaining competitive advantage results in an increase in profitability, highlighting the potential economic benefits of environmental disclosure.

Lastly, the table suggests that companies may be facing significant challenges in terms of managing their environmental assets. A significant proportion of employees and external auditors agree that profitability is an indicator in managing firms' environmental assets, highlighting the importance of financial performance in shaping environmental management practices.

Table provided below presents the results of the descriptive analysis of the respondents' perceptions of the financial performance of their companies. The table displays the frequency distribution of the respondents' responses to seven statements related to financial performance, using a five-point Likert scale ranging from "Strongly Disagree" (SD) to "Strongly Agree" (SA).

Table 5.43

Financial Performance

Statements	SD	D	N	A	SA
Priority given to economic demands in case of low profitability	4	16	91	334	355
More Commitment of top management towards addressing environmental issues in case of high profitability	4	15	95	331	355
Gaining competitive advantage results in increase in profitability	6	19	93	327	355
Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure	5	18	94	327	356
Profitable firms exposed to high social pressures but have necessary funds for disclosure	4	19	92	329	356
Profitable companies more trusted by the public to increase stakeholder expectations and attract investors	4	17	95	327	357
Profitability is an indicator in managing firms' environmental assets	4	19	94	334	349

Source: Primary Data

The results of the descriptive analysis revealed that the majority of the respondents agreed or strongly agreed with the statements related to financial

performance. For example, out of total of 800 respondents, 689 respondents (86 percent) agreed with the statement "Priority given to economic demands in case of low profitability", while 682 respondents (85 percent) agreed with the statement "Gaining competitive advantage results in increase in profitability". The results also showed that the majority of the respondents had a relatively high level of agreement with the statements related to financial performance.

These findings suggested that the respondents generally perceived financial performance as an important aspect of their companies' operations. The results also indicated that the respondents believed that financial performance was closely related to other aspects of corporate operations, such as stakeholder expectations and environmental management. The findings have implications for the development of strategies to improve financial performance and corporate environmental disclosure.

5.3.2 Financial Performance between External Auditors and Employees

Table provided below presents the results of the independent samples t-test, which was conducted to examine the differences in the perceptions of financial performance between external auditors and employees. The table displays the mean, standard deviation, t-value, and p-value for each group. The study fixed the following alternate hypothesis.

Hypothesis: -

H1: There is significant difference in the perceptions of financial performance between external auditors and employees.

Table 5.44

Financial performance- between External Auditors and Employees

Category of Respondents		Mean	Std. Deviation	T Value	P value
Financial Performance	Employees	4.2521	.69140	-.518	.604
	External auditors	4.2800	.82315	-.518	.604

Source: Primary Data

The results of the independent samples t-test revealed that there was no significant difference in the perceptions of financial performance between external auditors and employees. The t-value was -0.518, and the p-value was 0.604, which was greater than the significance level of 0.05. This indicated that the alternate hypothesis of difference between the two groups could be accepted.

These findings suggested that external auditors and employees had similar perceptions of financial performance. The results implied that both groups had a similar understanding of the financial performance of their companies. The findings have implications for the development of strategies to improve financial performance and corporate environmental disclosure, as they suggest that both external auditors and employees can provide valuable insights into the financial performance of their companies.

5.3.3 Corporate Environmental Disclosure

Table provided below presents the results of the descriptive analysis of the respondents' perceptions of corporate environmental disclosure. The table displays the frequency distribution of the respondents' responses to eight statements related to corporate environmental disclosure, using a five-point Likert scale ranging from "Strongly Disagree" (SD) to "Strongly Agree" (SA).

The table presents a comparative analysis of the perceptions of employees and external auditors regarding the relationship between corporate environmental disclosure and financial performance. The data spans across five categories: SD (Strongly Disagree), D (Disagree), N (Neutral), A (Agree), and SA (Strongly Agree), with eight sub-categories related to environmental disclosure and financial performance. The table provides a comprehensive overview of the perceptions and attitudes of employees and external auditors towards the importance of environmental disclosure in shaping financial performance, highlighting areas of agreement and disagreement.

Table 5.45

Corporate Environmental Disclosure-Employees and External Auditors

		SD	D	N	A	SA
		Count	Count	Count	Count	Count
Category	Employees					
	Disclosure of environmental costs creates awareness among investors	0	8	66	169	157
	Cost of environmental deterioration of its own activities and waste collection reduce profit	0	9	65	168	158
	Proper disposal of waste generates revenue	0	9	65	167	159
	Employee health and safety cost increase knowledge of employees, profit increases	0	9	65	168	158
	Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases	0	10	69	167	154
	Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability	0	9	70	165	156
	Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability	0	9	70	166	155
	External auditors					
	Disclosure of environmental costs creates awareness among investors	12	46	42	146	154
	Cost of environmental deterioration of its own activities and waste collection reduce profit	12	47	42	145	154
	Proper disposal of waste generates revenue	12	46	43	145	154
	Employee health and safety cost increase knowledge of employees, profit increases	12	46	42	145	155
	Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases	12	46	42	145	155
	Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability	12	46	42	145	155
	Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability	12	47	42	144	155

Source: Primary Data

Table reveals several notable trends and patterns in the perceptions of employees and external auditors regarding corporate environmental disclosure and financial performance. Firstly, the majority of employees and external auditors agree that

disclosure of environmental costs creates awareness among investors, suggesting that environmental disclosure may be an important factor in shaping investor perceptions.

Secondly, the table indicates a significant difference in perceptions between employees and external auditors and the auditors tend to disagree more strongly with the statement that cost of environmental deterioration reduces profit, suggesting that auditors may be more likely to recognize the potential financial benefits of environmental sustainability.

Thirdly, the data reveals a notable emphasis on the importance of proper waste disposal and employee health and safety costs among employees and external auditors. A significant proportion of respondents agree that proper disposal of waste generates revenue and that employee health and safety costs increase knowledge and productivity of employees, highlighting the potential economic benefits of environmental sustainability.

Lastly, the table suggests that companies may be facing significant challenges in terms of ignoring health and safety costs, which can cause occupational accidents and financial losses. A significant proportion of employees and external auditors agree that ignoring health and safety costs adversely affects profitability, highlighting the importance of prioritizing employee health and safety.

Table 5.46

Corporate Environmental Disclosure

	SD	D	N	A	SA
Disclosure of environmental costs creates awareness among investors	11	54	108	315	312
Cost of environmental deterioration of its own activities and waste collection reduce profit	11	56	107	313	313
Proper disposal of waste generates revenue	11	55	108	312	314
Employee health and safety cost increase knowledge of employees, profit increases	11	55	107	313	314
Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases	11	56	111	312	310
Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability	11	55	112	310	312
Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability	11	56	112	310	311

Source: Primary Data

The results of the descriptive analysis revealed that the majority of the respondents agreed or strongly agreed with the statements related to corporate environmental disclosure. For example, 627 respondents (78 percent) agreed with the statement "Disclosure of environmental costs creates awareness among investors" and "Employee health and safety cost increase knowledge of employees, profit increases", while 621 respondents (78 percent) agreed with the statement "Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability ". The results also showed that the majority of respondents had a relatively high level of agreement with the statements related to corporate environmental disclosure.

5.3.4 Corporate Environmental Disclosure between External Auditors and Employees

Table provided below presents the results of the independent samples t-test, which was conducted to examine the differences in the perceptions of corporate environmental disclosure between external auditors and employees. The table displays the mean, standard deviation, t-value, and p-value for each group. The study fixed the following alternate hypothesis.

Hypothesis: -

H1: There is significant difference in the perceptions of corporate environmental disclosure between external auditors and employees.

Table 5.47

Corporate Environmental Disclosure between External Auditors and Employees

	Category of Respondents	Mean	Std. Deviation	T Value	P value
Corporate Environmental disclosure	Employees	4.1789	.76251	3.222	.001
	External auditors	3.9671	1.07074	3.221	.001

Source: Primary Data

The results of the independent sample t-test revealed that there was a significant difference in the perceptions of corporate environmental disclosure

between external auditors and employees. The t-value was 3.222, and the p-value was 0.001, which was less than the significance level of 0.05. This indicated that the alternate hypothesis of difference between the two groups could be accepted. Specifically, the results showed that employees had a higher mean score (4.1789) than external auditors (3.9671) with respect to corporate environmental disclosure. The employees have higher level of agreement on corporate Environmental disclosure as compared to External auditors.

These findings suggested that employees and external auditors had different perceptions of corporate environmental disclosure. The results implied that employees may have a more positive view of corporate environmental disclosure than auditors.

SECTION E

5.3.5 Measurement Scale Validation of the effect of Financial Performance on Corporate Environmental Disclosure

The measurement scale validation process involved the use of several statistical tools to ensure the validity, reliability, and normality of the data. Specifically, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to examine the factor structure of the variables. Convergent validity and discriminant validity were also assessed to evaluate the relationships between the variables. Additionally, reliability was examined using Cronbach's alpha, while normality was assessed using the one-sample Kolmogorov-Smirnov (K-S) test, skewness, and kurtosis.

5.3.6 Exploratory Factor Analysis

Table provided below presents the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. These statistical tests were conducted to determine the suitability of the data for factor analysis, which was used to examine the factor structure of the variables employed in the study.

Table 5.48

KMO and Bartlett's Test- Effect of Financial Performance on Corporate Environmental Disclosure

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.961
Bartlett's Test of Sphericity	Approx. Chi-Square
	22076.302
	df
	91
	Sig.
	.000

Source: Primary Data

The results of the KMO measure of sampling adequacy revealed a value of 0.961, which was above the recommended threshold of 0.5. This indicated that the data was suitable for factor analysis. The results of Bartlett's test of sphericity revealed a significant p-value of 0.000, which indicated that the data was not an identity matrix and was therefore suitable for factor analysis. These findings suggested that the data was suitable for factor analysis, and that the factor analysis results could be relied upon to provide a valid representation of the underlying factor structure of the variables.

Table 5.49

Communalities- Effect of Financial Performance on Corporate Environmental Disclosure

	Initial	Extraction
Priority given to economic demands in case of low profitability	1.000	.937
More Commitment of top management towards addressing environmental issues in case of high profitability	1.000	.943
Gaining competitive advantage results in increase in profitability	1.000	.885
Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure	1.000	.924
Profitable firms exposed to high social pressures but have necessary funds for disclosure	1.000	.921
Profitable companies more trusted by the public to increase stakeholder expectations and attract investors	1.000	.932
Profitability is an indicator in managing firm's environmental assets	1.000	.898
Disclosure of environmental costs creates awareness among investors	1.000	.960
Cost of environmental deterioration of its own activities and waste collection reduce profit	1.000	.952

	Initial	Extraction
Proper disposal of waste generates revenue	1.000	.945
Employee health and safety cost increase knowledge of employees, profit increases	1.000	.950
Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases	1.000	.939
Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability	1.000	.945
Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability	1.000	.937
Extraction Method: Principal Component Analysis.		

Source: Primary Data

The results of the communalities analysis revealed that all 14 variables had high extraction communalities, ranging from 0.885 to 0.960. This indicated that a large proportion of the variance in each variable was explained by the underlying factors. The high communalities values suggested that the variables were well-represented by the underlying factors, and that the factor analysis results could be relied upon to provide a valid representation of the underlying factor structure.

These findings suggested that the variables used to measure the effect of financial performance on corporate environmental disclosure shared common underlying factors. The results provided evidence of the construct validity of the variables, and suggested that the variables could be reduced to a smaller set of underlying factors.

Table provided below presents the results of the principal component analysis (PCA), which was conducted to examine the underlying factor structure of the variables used to measure the effect of financial performance on corporate environmental disclosure. The table displays the initial eigenvalues, extraction sums of squared loadings, rotation sums of squared loadings, and the percentage of variance explained by each component.

Table 5.50

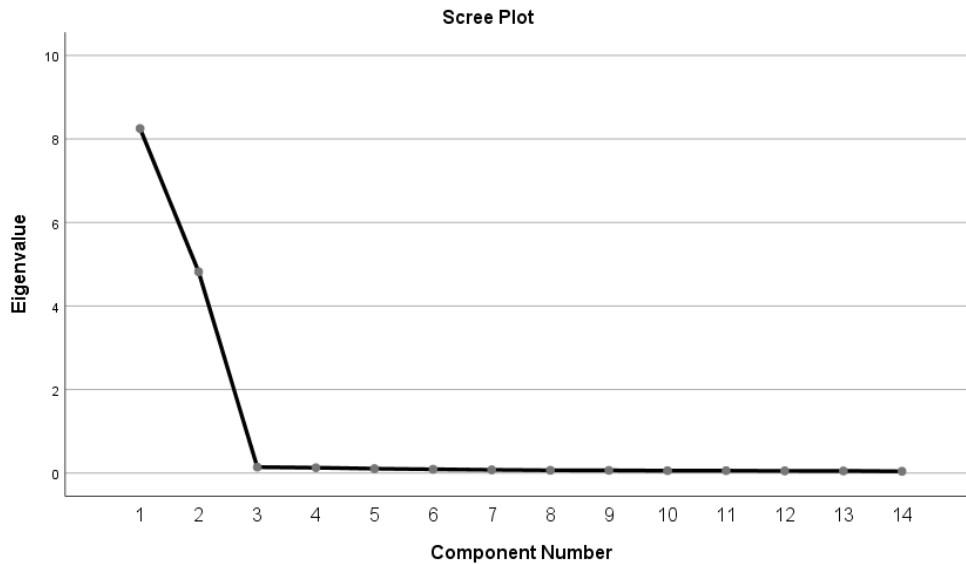
Total Variance Explained- Effect of Financial Performance on Corporate Environmental Disclosure

Componen	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	8.250	58.930	58.930	8.250	58.930	58.930	6.627	47.338	47.338
2	4.820	34.426	93.355	4.820	34.426	93.355	6.442	46.017	93.355
3	.142	1.012	94.367						
4	.128	.913	95.280						
5	.105	.750	96.030						
6	.090	.646	96.676						
7	.076	.546	97.222						
8	.067	.476	97.698						
9	.063	.453	98.150						
10	.058	.411	98.561						
11	.057	.404	98.965						
12	.052	.371	99.336						
13	.051	.362	99.699						
14	.042	.301	100.000						

Extraction Method: Principal Component Analysis.

Source: Primary Data

The results of the PCA revealed that the first two components explained a significant proportion of the variance, with 58.930% and 34.426% respectively. The cumulative percentage of variance explained by the first two components was 93.355%. The results also showed that the first component had an eigenvalue of 8.250, indicating that it was a strong factor. The second component had an eigenvalue of 4.820, indicating that it was also a significant factor.

Figure 5.7*Effect of Financial Performance on Corporate Environmental Disclosure*

These findings suggested that the variables used to measure the effect of financial performance on corporate environmental disclosure shared common underlying factors that explained a significant proportion of the variance. The results provided evidence of the construct validity of the variables, and suggested that the variables could be reduced to a smaller set of underlying factors.

Table 5.51*Component Matrix- Effect of Financial Performance on Corporate Environmental Disclosure*

	Component	
	1	2
Proper disposal of waste generates revenue	.793	-.563
Employee health and safety cost increase knowledge of employees, profit increases	.792	-.568
Disclosure of environmental costs creates awareness among investors	.792	-.578
Cost of environmental deterioration of its own activities and waste collection reduce profit	.789	-.574
Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability	.787	-.571
Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability	.785	-.566

	Component	
	1	2
Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases	.782	-.571
Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure	.763	.586
Profitable companies more trusted by the public to increase stakeholder expectations and attract investors	.752	.605
Profitable firms exposed to high social pressures but have necessary funds for disclosure	.751	.598
Priority given to economic demands in case of low profitability	.748	.614
Gaining competitive advantage results in increase in profitability	.746	.573
More Commitment of top management towards addressing environmental issues in case of high profitability	.743	.626
Profitability is an indicator in managing firm's environmental assets	.719	.617

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Source: Primary Data

The results of the PCA revealed that the variables loaded onto two distinct components. Component 1 had high loadings for variables related to environmental costs and benefits, such as "Proper disposal of waste generates revenue" and "Disclosure of environmental costs creates awareness among investors". Component 2 had high loadings for variables related to financial performance and stakeholder expectations, such as "Profitable firms contribute to welfare of stakeholders" and "Profitable companies more trusted by the public to increase stakeholder expectations and attract investors".

These findings suggested that the variables used to measure the effect of financial performance on corporate environmental disclosure could be grouped into two distinct components. The results provided evidence of the construct validity of the variables, and suggested that the variables could be reduced to a smaller set of underlying factors.

Table provided below presents the results of the rotated component matrix, which was obtained through a varimax rotation with Kaiser normalization. The rotation was conducted to simplify the interpretation of the component loadings and to identify the underlying factors that explain the relationships between the variables.

Table 5.52

Rotated Component Matrix- Effect of Financial Performance on Corporate Environmental Disclosure

	Component	
	Corporate Environmental Disclosure	Financial Performance
Disclosure of environmental costs creates awareness among investors	.972	.125
Cost of environmental deterioration of its own activities and waste collection reduce profit	.968	.126
Employee health and safety cost increase knowledge of employees, profit increases	.965	.133
Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability	.964	.127
Proper disposal of waste generates revenue	.963	.137
Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases	.961	.123
Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability	.959	.130
More Commitment of top management towards addressing environmental issues in case of high profitability	.109	.965
Priority given to economic demands in case of low profitability	.121	.960
Profitable companies more trusted by the public to increase stakeholder expectations and attract investors	.130	.957
Profitable firms exposed to high social pressures but have necessary funds for disclosure	.134	.950
Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure	.151	.950
Profitability is an indicator in managing firm's environmental assets	.097	.943
Gaining competitive advantage results in increase in profitability	.148	.929

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Source: Primary Data

The results of the rotated component matrix revealed that the variables loaded onto two distinct components. Component 1, labeled as "Corporate Environmental Disclosure", had high loadings for variables related to environmental costs and benefits, such as "Disclosure of environmental costs creates awareness among investors" and "Proper disposal of waste generates revenue". Component 2, labeled as "Financial Performance", had high loadings for variables related to financial performance and stakeholder expectations, such as "More Commitment of top management towards addressing environmental issues in case of high profitability" and "Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure". These findings suggested that the variables used to measure the effect of financial performance on corporate environmental disclosure could be grouped into two distinct components that represent corporate environmental disclosure and financial performance.

5.3.7 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was employed to further validate the measurement model and to confirm the hypothesized relationships between the observed variables and their corresponding latent constructs. CFA is a statistical technique that allows researchers to test a priori hypotheses about the relationships between observed variables and their underlying latent factors. By using CFA, the study aimed to provide a more rigorous test of the measurement model and to determine whether the data supported the hypothesized factor structure. The CFA model was estimated using maximum likelihood estimation, and the results were evaluated based on various fit indices, including the chi-square statistic, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI).

Table 5.8

CFA- Effect of Financial Performance on Corporate Environmental Disclosure.

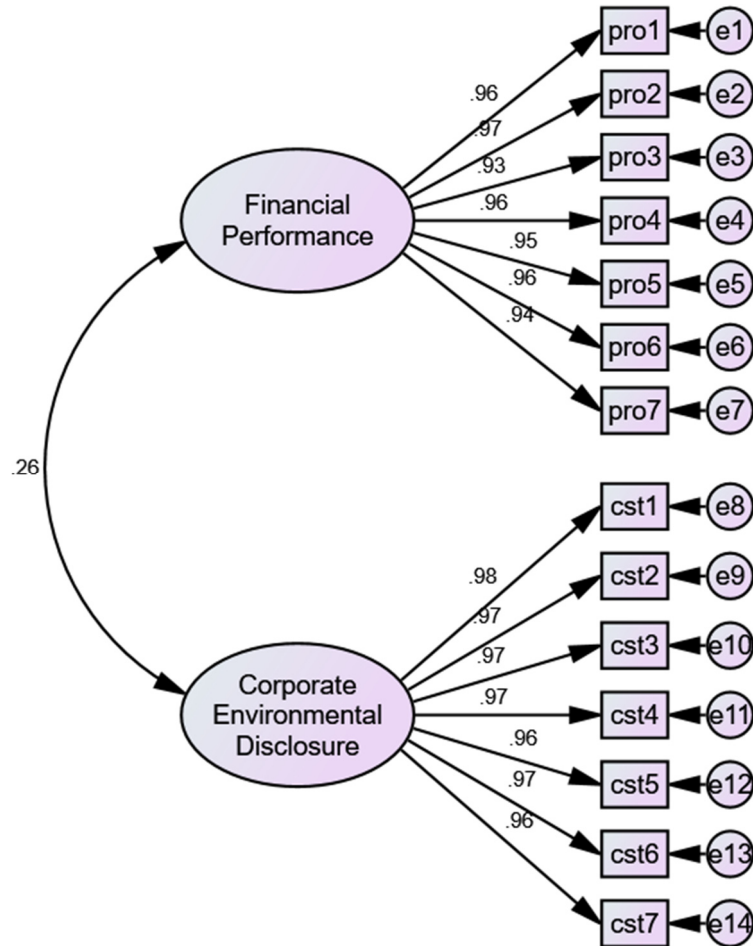


Table provided below presents the results of the confirmatory factor analysis (CFA) model fit indices, which were used to evaluate the fit of the measurement model to the data. The model fit indices included the comparative fit index (CFI), the goodness-of-fit index (GFI), the Tucker-Lewis index (TLI), the normed fit index (NFI), and the root mean square error of approximation (RMSEA).

Table 5.53

Model Fit Indices- Effect of Financial Performance on Corporate Environmental Disclosure

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.94	.97	.95	.94	.047
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results of the model fit indices revealed that the measurement model fit the data well. The CFI, GFI, TLI, and NFI values were all above the recommended threshold of 0.9, indicating a good fit. The RMSEA value was 0.047, which was below the recommended threshold of 0.05, indicating a good fit. These findings suggested that the measurement model was valid and reliable, and that the data supported the hypothesized factor structure. The results provided evidence of the construct validity of the variables, and suggested that the variables could be used to measure the underlying constructs.

Table 5.54

Summary of Scale Validation-Effect of Financial Performance on Corporate Environmental Disclosure

Sl.no	Criteria	Result
1	Exploratory Factor Analyses	Explored 2 Factors
2	Confirmatory factor analysis	Confirmed
3	Reliability	Satisfied
4	Convergent validity	Satisfied
5	Discriminant validity	Satisfied
6	Normality	Satisfied

Source: Compiled by the researcher

The results of the scale validation process revealed that all the criteria were satisfied. The exploratory factor analysis revealed a clear factor structure, while the confirmatory factor analysis confirmed the hypothesized factor structure. The reliability analysis revealed that the scales had high internal consistency, while the convergent validity and discriminant validity tests revealed that the scales were valid and distinct. Finally, the normality tests revealed that the data was normally distributed. These findings suggested that the measurement scales used to measure the effect of financial performance on corporate environmental disclosure were valid and reliable. The results provided evidence of the construct validity of the scales, and suggested that the scales could be used to measure the underlying constructs.

SECTION F

5.3.8 SEM

This section presents the results of the structural equation modeling (SEM) analysis, which was conducted to examine the effect of financial performance on corporate environmental disclosure. SEM is a statistical technique that allows for the examination of complex relationships between variables, and is particularly useful for testing hypotheses about the relationships between latent variables. In this study, SEM was used to test the hypothesis that financial performance has a positive effect on corporate environmental disclosure. The study fixed the following alternate hypothesis.

Hypothesis: -

H1: Financial performance has a significant positive effect on corporate environmental disclosure.

Figure 5.9

Financial Performance on Corporate Environmental Disclosure- SEM

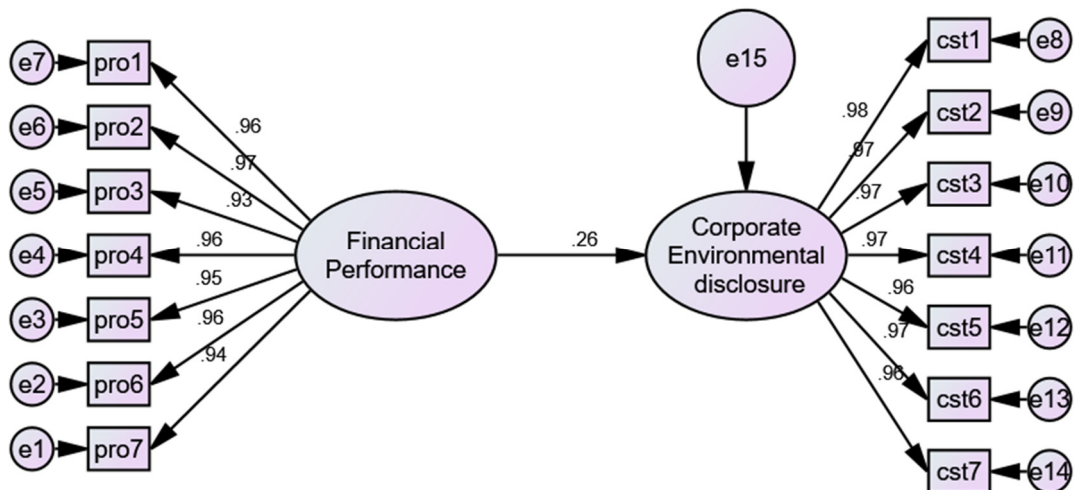


Table provided below presents the results of the model fit indices for the structural equation model (SEM) used to examine the effect of financial performance on corporate environmental disclosure. The model fit indices included the comparative fit index (CFI), the goodness-of-fit index (GFI), the Tucker-Lewis index (TLI), the normed fit index (NFI), and the root mean square error of approximation (RMSEA).

Table 5.55

Model Fit Indices- Financial Performance on Corporate Environmental Disclosure- Structural Equation Modelling

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.95	.96	.95	.92	.028
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results of the model fit indices revealed that the SEM fit the data well. The CFI, GFI, TLI, and NFI values were all above the recommended threshold of 0.9, indicating a good fit. The RMSEA value was 0.028, which was below the recommended threshold of 0.05, indicating a good fit. These findings suggested that the SEM provided a good representation of the relationships between financial performance and corporate environmental disclosure. The results provided evidence of the construct validity of the model, and suggested that the model could be used to predict the effect of financial performance on corporate environmental disclosure.

Table provided below presents the results of the hypothesis testing using structural equation modeling (SEM), which was conducted to examine the effect of financial performance on corporate environmental disclosure. The table displays the hypothesis, beta coefficient, p-value, and decision for each hypothesis.

Table 5.56

Testing of Hypotheses- Financial Performance on Corporate Environmental Disclosure- Structural Equation Modelling

Sl.no	Hypothesis	Beta Coefficient	P Value	Decision
1	Financial performance has a significant positive effect on corporate environmental disclosure.	.26	<.05	Accepted

Source: Primary Data

The results of the hypothesis testing revealed that the alternate hypothesis was accepted. The beta coefficient was 0.26, indicating a positive relationship between financial performance and corporate environmental disclosure. The p-value was less than 0.05, indicating that the relationship was statistically significant. This suggested

that financial performance had a significant positive effect on corporate environmental disclosure. These findings suggested that companies with better financial performance were more likely to disclose environmental information. The results implied that financial performance was an important factor in determining the level of corporate environmental disclosure.

SECTION G

5.3.9 Correlation and Regression

This section involves analysing the effect of financial performance on environmental reporting through secondary data obtained from the annual reports of the company. The tools used for the study include Correlation and regression analysis. The financial performance indicators used include ROA, EPS, ROCE, Debt equity ratio, Leverage, Current ratio and Quick ratio. The environmental reporting parameters applied include Energy intensity, Emission intensity, Water intensity, Waste intensity and Environmental completeness ratio.

Table 5.57

Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
ROCE	65	-63.72	66.00	15.1533	13.64456
EPS	65	-84.90	1779.06	109.7435	251.25564
ROA	65	-63.70	24.70	5.1123	7.38522
Leverage	65	0.00	62.57	2.5887	9.27147
Debt Equity Ratio	65	-0.20	3.43	0.6039	0.78213
Current Ratio	65	0.00	3.35	1.2767	0.48321
Quick Ratio	65	0.00	3.02	0.9243	0.43089
Energy Intensity (kWh)	65	90.00	21010.00	1570.8138	3344.22776
Greenhouse Gas Emission (CO ₂)	65	0.14	75.70	5.1275	10.56484
Water Intensity (KL)	65	0.00	16.14	3.7229	3.30817
Waste Intensity (kg)	65	82.00	25000.00	1550.1154	3845.04191
Environmental Reporting Completeness Ratio	65	0.50	1.00	0.7973	0.11409

Source: Secondary Data

Table 5.57 presents the descriptive statistics of financial and environmental performance metrics of 65 companies from 2019 to 2024. Range of Return on Capital Employed (ROCE) is -63.72 to 66.00, mean of 15.15, and standard deviation of 13.64. This shows a moderate variation in the level of efficiency of companies in creating profits out of capital, with some companies running on a negative basis. Earnings Per Share (EPS) shows a large variability that varies from -84.90 to 1779.06, having a high mean of 109.74 and a very large standard deviation of 251.26, indicating high spread and a potential for outliers in profitability of companies.

Return on Assets (ROA) is from -63.70 to 24.70, with an average of 5.11 and standard deviation of 7.39. Negative values of ROCE and ROA depict the involvement of loss-making firms. Leverage varies from 0.00 to 62.57, with an average of 2.59 and a relatively high standard deviation of 9.27, indicating a wide range of corporate use of debt financing. The Debt-Equity Ratio varies from -0.20 to 3.43 and has a mean of 0.60 with a 0.78 standard deviation, indicating fairly low gearing by companies, albeit possibly data unreliability or financial trouble indicated by the presence of a negative figure.

Ratios of liquidity such as Quick Ratio and Current Ratio record averages of 1.28 and 0.92, respectively, which mean most companies are in good short-term financial health with both measures' low figure of 0.00 here pointing toward potential liquidity issues for most companies.

In the context of environmental metrics, Energy Intensity (kWh) and Waste Intensity (kg) vary widely. Energy Intensity varies from 90.00 to 21010.00 with a highest mean of 1570.81 and standard deviation of 3344.23. Waste Intensity also has a very large range (82.00–25000.00) and mean of 1550.12, indicating huge variations in environmental efficiency. Greenhouse Gas Emissions (CO₂) varies from 0.14 to 75.70 with a mean of 5.13 and standard deviation of 10.56 whereas Water Intensity (KL) varies from 0.00 to 16.14 with a mean of 3.72 and standard deviation of 3.31 showing variations in environmental effects between the firms. Finally, the Environmental Reporting Completeness Ratio also varies between 0.50 and 1.00 but

averages 0.80 with a comparatively low standard deviation of 0.11, indicating that most firms release relatively complete environmental reports, although variation does exist.

Table 5.58*Correlation Analysis*

Variables	Pearson Correlation	Sig. (2-tailed)	N
ROCE ↔ EPS	.303**	.000	65
ROCE ↔ ROA	.638**	.000	65
ROCE ↔ Leverage	-.125	.083	65
ROCE ↔ Debt Equity Ratio	-.161*	.024	65
ROCE ↔ Current Ratio	.317**	.000	65
ROCE ↔ Quick Ratio	.287**	.000	65
ROCE ↔ Energy Intensity (kWh)	-.132	.066	65
ROCE ↔ Greenhouse Gas Emission (CO2)	-.007	.922	65
ROCE ↔ Water Intensity (KL)	.358**	.000	65
ROCE ↔ Waste Intensity (kg)	.012	.865	65
ROCE ↔ Environmental Reporting Completeness Ratio	.172*	.016	65
EPS ↔ ROA	.201**	.005	65
EPS ↔ Leverage	-.013	.860	65
EPS ↔ Debt Equity Ratio	-.223**	.002	65
EPS ↔ Current Ratio	.079	.274	65
EPS ↔ Quick Ratio	.066	.362	65
EPS ↔ Energy Intensity (kWh)	-.111	.124	65
EPS ↔ Greenhouse Gas Emission (CO2)	-.040	.579	65
EPS ↔ Water Intensity (KL)	.096	.182	65
EPS ↔ Waste Intensity (kg)	-.072	.315	65
EPS ↔ Environmental Reporting Completeness Ratio	-.013	.860	65
ROA ↔ Leverage	-.219**	.002	65
ROA ↔ Debt Equity Ratio	-.186**	.009	65
ROA ↔ Current Ratio	.435**	.000	65
ROA ↔ Quick Ratio	.440**	.000	65
ROA ↔ Energy Intensity (kWh)	-.313**	.000	65
ROA ↔ Greenhouse Gas Emission (CO2)	.104	.146	65
ROA ↔ Water Intensity (KL)	.112	.118	65
ROA ↔ Waste Intensity (kg)	.059	.409	65
ROA ↔ Environmental Reporting Completeness Ratio	.247**	.001	65
Leverage ↔ Debt Equity Ratio	-.087	.228	65
Leverage ↔ Current Ratio	-.278**	.000	65

Variables	Pearson Correlation	Sig. (2-tailed)	N
Leverage ↔ Quick Ratio	-.283**	.000	65
Leverage ↔ Energy Intensity (kWh)	.007	.924	65
Leverage ↔ Greenhouse Gas Emission (CO2)	.098	.175	65
Leverage ↔ Water Intensity (KL)	-.086	.233	65
Leverage ↔ Waste Intensity (kg)	-.073	.308	65
Leverage ↔ Environmental Reporting Completeness Ratio	-.186**	.009	65
Debt Equity Ratio ↔ Current Ratio	-.354**	.000	65
Debt Equity Ratio ↔ Quick Ratio	-.294**	.000	65
Debt Equity Ratio ↔ Energy Intensity (kWh)	.010	.893	65
Debt Equity Ratio ↔ Greenhouse Gas Emission (CO2)	.146*	.041	65
Debt Equity Ratio ↔ Water Intensity (KL)	-.135	.061	65
Debt Equity Ratio ↔ Waste Intensity (kg)	-.132	.066	65
Debt Equity Ratio ↔ Environmental Reporting Completeness Ratio	.161*	.025	65
Current Ratio ↔ Quick Ratio	.874**	.000	65
Current Ratio ↔ Energy Intensity (kWh)	-.287**	.000	65
Current Ratio ↔ Greenhouse Gas Emission (CO2)	-.143**	.047	65
Current Ratio ↔ Water Intensity (KL)	.307**	.000	65
Current Ratio ↔ Waste Intensity (kg)	.007	.918	65
Current Ratio ↔ Environmental Reporting Completeness Ratio	.066	.359	65
Quick Ratio ↔ Energy Intensity (kWh)	-.337**	.000	65
Quick Ratio ↔ Greenhouse Gas Emission (CO2)	-.157**	.029	65
Quick Ratio ↔ Water Intensity (KL)	.295**	.000	65
Quick Ratio ↔ Waste Intensity (kg)	.037	.611	65
Quick Ratio ↔ Environmental Reporting Completeness Ratio	.070	.334	65
Energy Intensity (kWh) ↔ Greenhouse Gas Emission (CO2)	.003	.964	65
Energy Intensity (kWh) ↔ Water Intensity (KL)	-.156	.029	65
Energy Intensity (kWh) ↔ Waste Intensity (kg)	.055	.449	65
Energy Intensity (kWh) ↔ Environmental Reporting Completeness Ratio	-.233**	.001	65
Greenhouse Gas Emission (CO2) ↔ Water Intensity (KL)	-.257	.000	65
Greenhouse Gas Emission (CO2) ↔ Waste Intensity (kg)	.030	.678	65
Greenhouse Gas Emission (CO2) ↔ Environmental Reporting Completeness Ratio	-.149**	.037	65
Water Intensity (KL) ↔ Waste Intensity (kg)	.016	.827	65
Water Intensity (KL) ↔ Environmental Reporting Completeness Ratio	-.068	.346	65
Waste Intensity (kg) ↔ Environmental Reporting Completeness Ratio	-.064	.371	65

Source: Secondary Data

Table 5.58 indicates Pearson correlation tests of financial and environmental factor inter-relationships among 65 firms. ROA and ROCE have a strong positive

inter-relationship ($r = 0.638$, $p < 0.01$), which indicates that firms with higher return on assets also have higher return on capital employed. ROCE also correlates positively strongly with EPS ($r = 0.303$, $p < 0.01$), Current Ratio ($r = 0.317$, $p < 0.01$), Quick Ratio ($r = 0.287$, $p < 0.01$), Water Intensity ($r = 0.358$, $p < 0.01$), and Environmental Reporting Completeness Ratio ($r = 0.172$, $p < 0.05$), and the results show that the companies that are more profitable and financially stable report higher environmental information and use more water. Curiously, ROCE has a negative correlation with the Debt-Equity Ratio ($r = -0.161$, $p < 0.05$), indicating that firms with higher returns may have less external debt.

EPS is strongly correlated with ROA ($r = 0.201$, $p < 0.01$) but negatively correlated with Debt-Equity Ratio ($r = -0.223$, $p < 0.01$), suggesting that more successful firms have lesser financial leverage. However, EPS is not significantly correlated with environmental indicators. ROA has strong positive correlations with Current Ratio ($r = 0.435$, $p < 0.01$), Quick Ratio ($r = 0.440$, $p < 0.01$), and Environmental Reporting Completeness Ratio ($r = 0.247$, $p < 0.01$), and negatively correlating with Leverage ($r = -0.219$, $p < 0.01$), Debt-Equity Ratio ($r = -0.186$, $p < 0.01$), and Energy Intensity ($r = -0.313$, $p < 0.01$). This indicates that efficient asset use is linked with improved liquidity, lower use of debt, and increased use of renewable energy practices.

Leverage is negatively correlated with liquidity ratios—Current Ratio ($r = -0.278$, $p < 0.01$) and Quick Ratio ($r = -0.283$, $p < 0.01$)—and with Environmental Reporting Completeness ($r = -0.186$, $p < 0.01$), suggesting that majority of leveraged firms are less liquid and less environmentally disclosing in reporting. Similarly, Debt-Equity Ratio is inversely related to liquidity and is directly related to CO₂ emissions ($r = 0.146$, $p < 0.05$) and environmental reporting ($r = 0.161$, $p < 0.05$), having mixed findings in ecologically intensive firms. Current Ratio and Quick Ratio are strongly correlated with each other ($r = 0.874$, $p < 0.01$) and have strong negative correlations with Energy Intensity and CO₂ Emissions, and positive correlation with Water Intensity, indicating that the more liquid firms can be environmentally energy efficient but not necessarily water efficient. Neither of the ratios has any significant relationship with waste intensity.

Regarding environmental indicators, Energy Intensity is also highly and negatively related to ROA and Environmental Reporting Completeness ($r = -0.233$, $p < 0.01$), in that more energy-intensive companies are less profitable and less transparent. CO₂ Emissions are also inversely related to Environmental Reporting Completeness ($r = -0.149$, $p < 0.05$), while Greenhouse Gas Emissions and Water Intensity are highly and negatively related ($r = -0.257$, $p < 0.01$). The majority of environmental indicators lack significant associations with profitability measures, noting a potential mismatch between environmental performance and financial performance for various companies.

Generally, the correlation analysis indicates significant associations between financial performance, liquidity, leverage, and certain environmental indicators, notably energy and emissions, with environmental reporting practices acting as an intermediary between financial health and sustainability transparency.

Table 5.59

Regression Model Justification on the impact of Financial Metrics on Energy Intensity (KWH)

Model	R-Squared	Adjusted R-Squared	F-Statistic	Prob (F-Statistic)	Durbin-Watson
1	0.195	0.165	6.462	0.000	1.503185

Source: Secondary Data

Table 5.59 presents the regression model summary determining the effect of the financial variables on Energy Intensity (kWh). The model has an R-squared value of 0.195, and this indicates that the selected financial variables account for approximately 19.5% of the energy intensity variation. The adjusted R-squared of 0.165 accounts for the number of predictors and reiterates the moderate explanatory ability. The F-statistic value of 6.462 with p -value = 0.000 suggests that the model is significant statistically, i.e., the group of financial variables altogether has some significant effect on energy consumption. The Durbin-Watson statistic value of 1.503 is close to the reference value of 2, which suggests no severe problem of autocorrelation between the residuals, although there might be a little positive autocorrelation.

Table 5.60

Regression Model Justification on the Impact of Financial Metrics on Energy Intensity (KWH)

Variables	Coefficient	Std. Error	T-Statistic	Prob.
(Constant)	4847.322	834.657	5.808	0.000
ROCE	35.135	21.577	1.628	0.105
EPS	-1.454	0.936	-1.553	0.122
ROA	-135.215	41.439	-3.263	0.001
Leverage	-53.893	25.440	-2.118	0.035
Debt Equity Ratio	-677.997	313.901	-2.160	0.032
Current Ratio	-134.950	971.404	-0.139	0.890
Quick Ratio	-2420.147	1065.708	-2.271	0.024

Source: Secondary Data

Table 5.60 presents single finance variable regression coefficients and significance levels. ROA (Return on Assets) has a statistically significant negative coefficient (-135.215, $p = 0.001$), showing that firms of higher asset efficiency use less energy, maybe due to more efficient or greener operations. Similarly, Leverage (coefficient = -53.893, $p = 0.035$) and Debt-Equity Ratio (coefficient = -677.997, $p = 0.032$) are also significantly negatively correlated with energy intensity, implying that firms that are more dependent on borrowed capital may do business under stricter cost constraints and hence with lower energy usage.

Quick Ratio is also an important negative predictor (coefficient = -2420.147, $p = 0.024$), which implies that the firms with better short-term liquidity utilize significantly less energy. However, ROCE and EPS reflect positive but statistically insignificant relations with energy intensity ($p = 0.105$ and 0.122 , respectively), meaning that profitability does not directly predict energy consumption. Current Ratio is not substantial either ($p = 0.890$) and is of little forecasting power for energy intensity here.

In summary, the regression estimates illustrate that energy efficiency is highly correlated with in-house operational efficiency (as indicated by ROA) and financial structure (leverage-related metrics), rather than absolute measures of profitability like EPS or ROCE. This inference highlights the significance of efficient utilization of assets as well as monetary prudence in promoting more efficient trends of energy consumption among firms.

Table 5.61

Regression Model Justification on the Impact of Financial Metrics on Greenhouse Gas Emission

Model	R-Squared	Adjusted R-Squared	F-Statistic	Prob (F-Statistic)	Durbin-Watson Stat
1	0.095	0.061	2.791	0.009	1.503185

Source: Secondary Data

Table 5.61 shows the summary of the regression model that measures to what extent various financial variables are driving Greenhouse Gas Emissions. The R-squared value of the model is 0.095, implying that the included financial variables explain approximately 9.5% of the variability in emissions. While this is quite a low explanatory ability, it is still a sign of a moderate relationship. The adjusted R-squared that corrects for the number of predictors is 0.061, again confirming the statistically significant but small explanatory power of the model. The F-statistic for the overall model of 2.791 and its corresponding p-value of 0.009 is an indication that the overall model is statistically significant at the 1% level. The value of 1.503 for the Durbin-Watson statistic is an indication of weak positive autocorrelation, although not at a high point of alarm.

Table 5.62

Regression Analysis on the Impact of Financial Metrics on Greenhouse Gas Emission

Variables	Coefficient	Std. Error	T-Statistic	Prob.
(Constant)	-	2.796	2.501	0.013
ROCE	-.109	0.072	-1.164	0.246
EPS	-.026	0.003	-0.343	0.732
ROA	.311	0.139	3.206	0.002
Leverage	.110	0.085	1.474	0.142
Debt Equity Ratio	.136	1.052	1.750	0.082
Current Ratio	.014	3.254	0.094	0.925
Quick Ratio	-.202	3.570	-1.387	0.167

Source: Secondary Data

Table 5.62 presents financial predictors' coefficients and significance levels for individual financial predictors. Of all the variables, only ROA (Return on Assets) is a statistically significant predictor (coefficient = 0.311, p = 0.002), implying that firms

with higher ROA have a tendency to emit more greenhouse gases. This quite counterintuitive result might be an indication that more asset-intensive or operationally more productive firms would also be in the industrial business on a larger scale, which could be tied to greater emissions unless subdued by green technology.

The other control variables, such as ROCE, EPS, Leverage, Debt-Equity Ratio, Current Ratio, and Quick Ratio, are insignificant with p-values very much higher than 0.05. This means that profitability, capital efficiency, and liquidity do not affect greenhouse gas emissions directly or in any consistent way in this sample. Significantly, Debt-Equity Ratio is almost significant ($p = 0.082$), which indicates a possible relationship worth exploring in larger or industry-level data.

Lastly, the regression result reveals operational effectiveness (ROA) to be the key financial driver influencing greenhouse gas emissions among the selected indicators. However, the low R-squared value and limited number of significant predictors point towards non-financial drivers, such as technology use, regulatory framework, and energy consumption, will play a much stronger role to determine a firm's emissions profile.

Table 5.63

Regression Model Justification on the Impact of Financial Metrics on Water Intensity

Model	R-Squared	Adjusted R-Squared	F-Statistic	Prob (F-Statistic)	Durbin-Watson Stat
1	0.229	0.200	7.943	0.000	1.503185

Source: Secondary Data

Table 5.63 shows the summary of the regression model in evaluating the effect of financial performance measures on Water Intensity (KL). The model has an R-squared of 0.229, which means that approximately 22.9% of the water use intensity variation is accounted for by the financial measures under evaluation. The 0.200 adjusted R-squared supports further that the model also has a moderate explanatory power, particularly in relation to the number of independent variables. The F-statistic of 7.943 at a p-value of 0.000 supports that the regression model is statistically significant, which implies that, in total, the financial metrics actually impact water intensity. The Durbin-Watson value

of 1.503 is very close to the optimal value of 2, indicating slight positive autocorrelation in the residuals but not to the extent of being problematic.

Table 5.64

Regression Analysis on the Impact of Financial Metrics on Water Intensity

Variables	Coefficient	Std. Error	T-Statistic	Prob.
(Constant)		0.808	0.494	0.622
ROCE	.474	0.021	5.498	0.000
EPS	-.009	0.001	-0.128	0.898
ROA	-.332	0.040	-3.706	0.000
Leverage	-.014	0.025	-0.201	0.841
Debt Equity Ratio	-.024	0.304	-0.331	0.741
Current Ratio	.134	0.940	0.978	0.330
Quick Ratio	.177	1.031	1.318	0.189

Source: Secondary Data

Individual financial variable coefficients and significance are presented in Table 5.64. Of these, ROCE (Return on Capital Employed) has a highly significant and positive effect on water intensity (coefficient = 0.474, $p = 0.000$). This implies that more capital-efficient firms have greater intensity of water use, perhaps reflecting larger-scale operations or capital-intensive processes with greater water requirements. ROA (Return on Assets) is negatively related to water intensity (coefficient = -0.332, $p = 0.000$) strongly, which indicates that firms that utilize their assets most intensively might better control or reduce their water use.

The other financial variables—EPS, Leverage, Debt-Equity Ratio, Current Ratio, and Quick Ratio—also fail to demonstrate statistically significant associations with water intensity since their respective p -values are significantly greater than 0.05. This explains that short-run liquidity and capital structure have very weak explanatory power in predicting water use behaviour across the firms in the sample.

In conclusion, the regression analysis indicates that capital and asset efficiency (ROCE and ROA) are significant predictors of water intensity. whereas ROCE is linked to higher water use, presumably a reflection of scale and investment in resource-intensive operations. ROA is related to lower water use, and that efficient

asset use can underpin more sustainable resource use. The irrelevance of other fiscal variables strengthens the argument that water usage habits are more likely being influenced by operational flows and industry-specific features than solely by fiscal structure or profitability.

Table 5.65

Regression Model Justification on the impact of Financial Metrics on Waste Intensity

Model	R-Squared	Adj R-Squared	F-Statistic	Prob (F-Statistic)	Durbin-Watson Stat
1	0.049	0.013	1.365	0.223	1.503185

Source: Secondary Data

Table 5.65 presents the regression model that tests the effect of financial performance variables on Waste Intensity (kg). R-squared of 0.049 means the model accounts for a mere 4.9% of the variation in waste intensity, whereas adjusted R-squared falls to 0.013, reflecting extremely poor explanatory power after accounting for model complexity. F-statistic = 1.365 and p-value = 0.223, so the overall model is not significant at standard levels. This implies that, together, the financial metrics that have been added to the model do not significantly impact waste intensity in the firms belonging to this sample. The Durbin-Watson statistic is 1.503, which implies slight positive autocorrelation, although it is not extreme enough to render the model assumptions inadequate.

Table 5.66

Regression Analysis on the impact of Financial Metrics on Waste Intensity

Variables	Coefficient	Std. Error	T-Statistic	Prob.
(Constant)		1043.132	3.326	0.001
ROCE	-.007	26.967	-0.069	0.945
EPS	-.120	1.170	-1.575	0.117
ROA	.070	51.789	0.704	0.482
Leverage	-.104	31.794	-1.353	0.178
Debt Equity Ratio	-.196	392.305	-2.458	0.015
Current Ratio	-.201	1214.034	-1.319	0.189
Quick Ratio	.105	1331.893	0.701	0.484

Source: Secondary Data

Table 5.66 presents the coefficients and significance levels for all financial variables. Of these, only the Debt-Equity Ratio is a statistically significant predictor (coefficient = -0.196, $p = 0.015$), suggesting that firms with higher reliance on equity financing (lower debt-equity ratio) tend to generate more waste, or inversely, those with higher debt levels produce less waste. This could potentially reflect more stringent cost controls or operational discipline in firms with higher financial leverage, though this relationship is speculative and may be context-dependent.

All the other variables such as ROCE, EPS, ROA, Leverage, Current Ratio, and Quick Ratio are not statistically significant (p -values substantially higher than 0.05), suggesting no strong linear relationship between those financial metrics and waste intensity in the present model. For example, even though EPS and Leverage have negligible negative coefficients, their impacts are not strong enough to be viewed as statistically significant.

In summary, the regression model offers very little support for the argument that financial performance measures are significant drivers of waste intensity in the firms examined. The only exception is the Debt-Equity Ratio, where there exists a weak but positive inverse relationship. In general, these results imply that waste generation practices are more likely to be driven by industry type, operational processes, waste management systems, or compliance with regulations than by financial performance or structure.

Table 5.67

Regression Model Justification on the impact of Financial metrics on Environmental Reporting Completeness Ratio

Model	R-Squared	Adjusted R-Squared	F-Statistic	Prob (F-Statistic)	Durbin-Watson Stat
1	0.120	0.087	3.631	0.001	1.503185

Source: Secondary Data

Table 5.67 shows the rationale for the regression model measuring the effect of the financial measures on the Environmental Reporting Completeness Ratio. The model has a low R-squared measure of 0.120, suggesting that approximately 12% of the variation in environmental reporting completeness can be explained by the

financial variables used. Adjusted R-squared decreases to 0.087, which controls for number of predictors and sample size, still indicating weak explanatory capability. The F-statistic value of 3.631 is statistically significant ($p = 0.001$), indicating that overall, the model account for a statistically significant amount of variance in the dependent variable. The Durbin-Watson statistic value of 1.503 is within acceptable limits and indicates no serious autocorrelation of residuals.

Table 5.68

Regression Analysis on the impact of Financial Metrics on Environmental Reporting Completeness Ratio

Variables	Coefficient	Std. Error	T-Statistic	Prob.
(Constant)	.050	0.030	25.688	0.000
ROCE	-.034	0.001	0.544	0.587
EPS	.242	0.000	-0.466	0.642
ROA	-.117	0.001	2.530	0.012
Leverage	.191	0.001	-1.592	0.113
Debt Equity Ratio	.024	0.011	2.486	0.014
Current Ratio	0.006	0.035	0.163	0.871
Quick Ratio	-0.013	0.038	-0.329	0.742

Source: Secondary Data

Table 5.68 gives precise regression coefficients and significance levels for every predictor variable. Among the financial variables, ROA (Return on Assets) and Debt-Equity Ratio are statistically significant predictors. ROA indicates a negative and significant correlation with completeness of environmental reporting (coefficient = -0.117, $p = 0.012$), indicating that companies which are more profitable compared to their assets will report less comprehensively on environmental measures. This may indicate a potential deprioritization of environmental reports in more profitable firms or those that are more asset-efficient.

On the other hand, the Debt-Equity Ratio has a positive and significant impact (coefficient = 0.024, $p = 0.014$), which suggests that companies that use more financial leverage will have a higher likelihood of generating fuller environmental reports. This may be due to increased scrutiny or reporting

requirement being enforced by creditors or regulatory agencies over companies with higher debt.

Other controls such as ROCE, EPS, Leverage, Current Ratio, and Quick Ratio do not show statistically significant relationships ($p > 0.05$) and thus imply that the above financial parameters do not directly influence significantly the level of environmental disclosure completeness in the sample under investigation. Interestingly, ROCE and EPS, the frequently referenced finance performance metrics, also seem to bear very small relationships with environmental reporting discourse within this model.

In total, although the overall explanatory capability of the model is moderate, it does indicate that ROA and Debt-Equity Ratio are the important financial determinants of environmental reporting completeness. These results indicate that profitability and capital structure could influence the transparency and depth of environmental disclosures by firms, possibly as a function of strategic, regulatory, or stakeholder pressures.

Table 5.69

Summary Result of Hypotheses

Hypothesis	Significant Value (0.000 - 0.050)	Result
ROCE positively impacts Energy Intensity	0.105	Not Supported
EPS negatively impacts Energy Intensity	0.122	Not Supported
ROA negatively impacts Energy Intensity	0.001	Supported
Leverage negatively impacts Energy Intensity	0.035	Supported
Debt Equity Ratio negatively impacts Energy Intensity	0.032	Supported
Current Ratio negatively impacts Energy Intensity	0.890	Not Supported
Quick Ratio negatively impacts Energy Intensity	0.024	Supported
ROA positively impacts Greenhouse Gas Emission	0.002	Supported
ROCE negatively impacts Greenhouse Gas Emission	0.246	Not Supported
EPS negatively impacts Greenhouse Gas Emission	0.732	Not Supported
Leverage positively impacts Greenhouse Gas Emission	0.142	Not Supported
Debt Equity Ratio positively impacts Greenhouse Gas Emission	0.082	Marginally Supported

Hypothesis	Significant Value (0.000 - 0.050)	Result
ROCE positively impacts Water Intensity	0.000	Supported
ROA negatively impacts Water Intensity	0.000	Supported
EPS negatively impacts Water Intensity	0.898	Not Supported
Leverage negatively impacts Water Intensity	0.841	Not Supported
Debt Equity Ratio negatively impacts Water Intensity	0.741	Not Supported
ROA negatively impacts Environmental Reporting Completeness Ratio	0.012	Supported
Debt Equity Ratio positively impacts Environmental Reporting Completeness Ratio	0.014	Supported
ROCE negatively impacts Environmental Reporting Completeness Ratio	0.587	Not Supported
EPS positively impacts Environmental Reporting Completeness Ratio	0.642	Not Supported
Leverage positively impacts Environmental Reporting Completeness Ratio	0.113	Not Supported
Current Ratio positively impacts Environmental Reporting Completeness Ratio	0.871	Not Supported
Quick Ratio negatively impacts Environmental Reporting Completeness Ratio	0.742	Not Supported

Source: Compiled by the researcher

5.4 Summary

The analysis of the second objective of examining the current trend of environmental disclosure of the selected companies reveal that most of the companies are disclosing qualitative and quantitative information in half to one page annually. The energy consumption is the item disclosed most frequently by the companies and they are verified by external auditor. There is no prescribed format of disclosure. The findings suggested that the respondents generally perceived corporate environmental disclosure as an important aspect of their companies' operations. The results also indicated that the respondents believed that corporate environmental disclosure was closely related to other aspects of corporate operations, such as financial performance and stakeholder expectations.

Chapter 6

EFFECT OF ENVIRONMENTAL REPORTING ON CORPORATE ENVIRONMENTAL PERFORMANCE AND MODERATING ROLE OF FINANCIAL PERFORMANCE AS WELL AS THE MEDIATING ROLES OF ENVIRONMENTAL POLICY, SEPARATE ENVIRONMENTAL DEPARTMENT, ENVIRONMENTAL MANAGEMENT SYSTEM AND EMPLOYEE TRAINING IN LINKING THE RELATIONSHIP BETWEEN ENVIRONMENTAL REPORTING AND ENVIRONMENTAL PERFORMANCE

6.1	Introduction	327
6.2	Analysis of Variables and Testing of Hypothesis.....	328
6.3	Effect of Environmental Reporting on Corporate Environmental Performance.....	329
6.4	Moderating role of Financial Performance and Mediating role of Environmental Policy, Separate Environmental Department, Environmental Management System and Employee Training in linking Environmental Reporting with Environmental Performance	361
6.5	Summary.....	392

Chapter 6

EFFECT OF ENVIRONMENTAL REPORTING ON CORPORATE ENVIRONMENTAL PERFORMANCE AND MODERATING ROLE OF FINANCIAL PERFORMANCE AS WELL AS THE MEDIATING ROLES OF ENVIRONMENTAL POLICY, SEPARATE ENVIRONMENTAL DEPARTMENT, ENVIRONMENTAL MANAGEMENT SYSTEM AND EMPLOYEE TRAINING IN LINKING THE RELATIONSHIP BETWEEN ENVIRONMENTAL REPORTING AND ENVIRONMENTAL PERFORMANCE

6.1 Introduction

This chapter deals with analysis of the fourth objective of the study to examine the effect of Environmental Reporting on corporate environmental performance and the moderating role of financial performance and mediating role of environmental policy, separate environmental department, environmental management system and employee training in linking environmental reporting and environmental performance. The chapter begins with a brief profile of the objective and it covers both the moderation effect of financial performance and mediation effect of environmental policy, separate environmental department, environmental management system and employee training in connecting environmental reporting and environmental performance in automobile industry. The first part of the chapter explains the impact of environmental reporting on corporate environmental performance which is divided into two sections. The first section explains the assessment of environmental reporting on environmental performance using the validated measurement scales and the second section deals with the detailed analysis of the impact of environmental reporting on environmental performance. The second part of the chapter explains the moderation effect of financial performance and mediating role of environmental policy, separate environmental department, environmental management system and employee training. The section explains the assessment of moderation and mediation effect with detailed analysis of the moderating and mediating variables in linking environmental reporting with environmental performance.

6.2 Analysis of Variables and Testing of Hypothesis

The first part of objective aims in analysing the effect of environmental reporting on environmental performance. The impact of environmental disclosure on different performance indicators is examined initially followed by analysing the impact of various performance indicators on environmental performance. The environmental performance indicators employed in this objective include environmental policy, separate environmental department, environmental management system, ISO 14001 certification, environmental statements, environmental audit, recognition of social costs, employee training, awards obtained for environmental performance and voluntary steps taken for environment protection. It helps to identify the key performance indicator that helps to increase environmental performance.

This objective helps to examine how the disclosure of environmental information influences a company's actual environment practices and outcomes. This helps to analyse whether transparent reporting leads to improved resource management, pollution reduction, compliance with environmental regulations and overall sustainability. Again, this helps to determine whether environmental reporting merely acts as a communication tool or beyond that whether it helps to drive positive environmental behaviour and performance within organisation. To achieve the first part of this objective, two main variables were identified: environmental disclosure, which comprised nine variables, and corporate environmental performance, which consisted of six variables.

The second part of the objective examines whether the financial performance strengthens or weakens the relationship between environmental reporting and environmental performance. The financially strong firms convert environmental performance to disclosure since they have more resources to disclose detailed environmental reports and adopt sustainability frameworks. The firms that are financially sound tend to disclose more to signal their superior performance. The objective also examines the mediating role played by environmental policy,

environmental department, environmental management system and employee training. The findings suggest that the firms should treat environmental reporting as a management tool rather than compliance. The establishment of separate environmental departments, formulation of environmental policy, environmental management system and continuous employee training converts environmental reporting into performance.

The analysis employed several statistical tools, including descriptive statistics, independent sample t-test, regression analysis, and structural equation modelling. These statistical tools helped to examine the relationships between environmental disclosure and corporate environmental performance, and to identify the factors that influenced these relationships. The results of the analysis provided insights into the effect of environmental disclosure on corporate environmental performance, and contributed to the achievement of the study's objectives.

PART I

6.3 Effect of Environmental Reporting on Corporate Environmental Performance

SECTION A

6.3.1 Measurement Scale Validation

The measurement scale validation is a crucial step in ensuring the reliability and validity of the data collected. In this study, two main variables were used: environmental disclosure, which comprised nine variables, and corporate environmental performance, which consisted of six variables.

The measurement scale validation was conducted using several statistical tools, including exploratory factor analysis, confirmatory factor analysis, convergent validity, discriminant validity, reliability using Cronbach's alpha, normality using one-sample K-S Test, and Skewness and Kurtosis. These statistical tools helped to assess the validity and reliability of the measurement scales used in the study. The

results of the measurement scale validation are presented in this chapter, providing evidence of the validity and reliability of the data collected.

6.3.1.1 Exploratory Factor Analysis

Table provided below presents the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. These tests were conducted to assess the suitability of the data for factor analysis, which was used to examine the effect of environmental disclosure on corporate environmental performance.

Table 6.1

KMO and Bartlett's Test- Effect of Environmental Disclosure on Corporate Environmental Performance

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.956
Approx. Chi-Square	29863.591
Bartlett's Test of Sphericity	df
	105
	Sig.
	.000

Source: Primary Data

The results of the KMO measure of sampling adequacy revealed a value of 0.956, which exceeded the recommended threshold of 0.5. This indicated that the data was suitable for factor analysis. Furthermore, the results of Bartlett's test of sphericity revealed a statistically significant result (Approx. Chi-Square = 29863.591, df = 105, Sig. = 0.000), indicating that the correlation matrix was not an identity matrix and that factor analysis was appropriate. These findings suggested that the data collected for the study was suitable for factor analysis, which provided a reliable and valid method for examining the effect of environmental disclosure on corporate environmental performance.

Table 6.2*Communalities- Effect of Environmental Disclosure on Corporate Environmental Performance*

	Initial	Extraction
Audit of environmental management system improves environmental performance, makes an estimate of environmental cost and more disclosure	1.000	.959
Verification of environmental reports checks its accuracy, credibility, validity and useful in decision making	1.000	.944
Ensure compliance of environmental laws	1.000	.941
Respond to pressures from regulatory authorities	1.000	.963
Reduce wastage of energy, cost and time	1.000	.979
Environmental risk should be assessed in environmental audit	1.000	.965
Very expensive and time consuming	1.000	.966
Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set	1.000	.979
Identify problems and improve corporate image	1.000	.974
Superior performers have proactive energy and want to convey their performance to general public	1.000	.955
Poor performers face more political pressure, disclose all information to reduce negative impacts	1.000	.927
Investors will be attracted due to disclosure	1.000	.971
Environmental liabilities are less for good performers	1.000	.924
Meeting environmental performance is the key aspect of CSR	1.000	.933
Guarantees that stakeholders are aware of the environmental responsibilities	1.000	.974

Extraction Method: Principal Component Analysis.

Source: Primary Data

The results of the communalities analysis revealed that all the variables had high communalities, ranging from 0.924 to 0.979. This indicated that a large proportion of the variance in each variable was explained by the underlying factors, suggesting that the variables shared a common underlying construct. The high communalities also suggested that the variables were well-suited for factor analysis. These findings suggested that the variables used to measure the effect of environmental disclosure on corporate environmental performance were valid and reliable. The high communalities indicated that the variables were measuring the

same underlying construct, which provided support for the use of factor analysis to examine the relationships between the variables.

Table 6.3

Total Variance Explained- Effect of Environmental Disclosure on Corporate Environmental Performance

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	10.422	69.477	69.477	10.422	69.477	69.477	8.539	56.923	56.923
2	3.933	26.222	95.699	3.933	26.222	95.699	5.816	38.775	95.699
3	.101	.675	96.374						
4	.097	.647	97.021						
5	.083	.555	97.576						
6	.071	.474	98.050						
7	.056	.375	98.424						
8	.050	.335	98.760						
9	.041	.275	99.035						
10	.032	.213	99.248						
11	.030	.201	99.449						
12	.027	.180	99.629						
13	.022	.147	99.776						
14	.019	.124	99.901						
15	.015	.099	100.000						

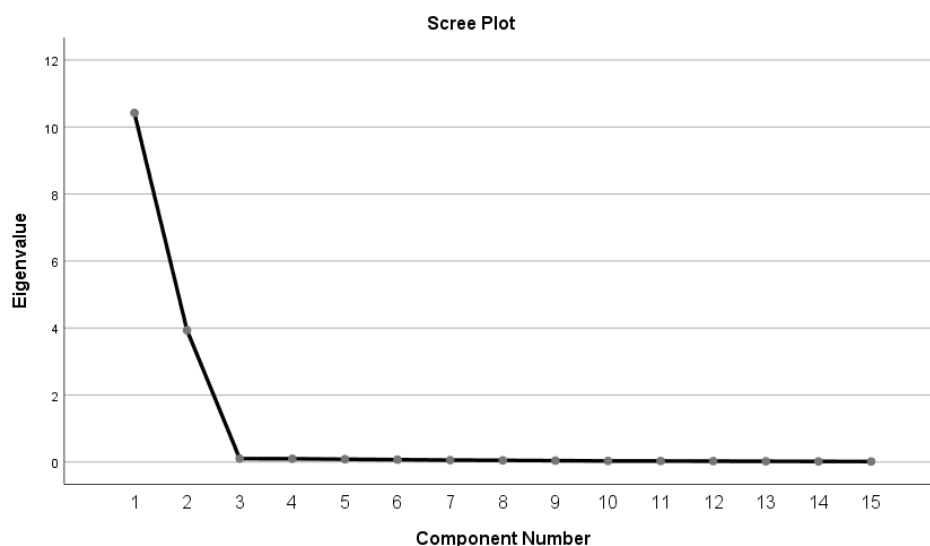
Extraction Method: Principal Component Analysis.

Source: Primary Data

The results of the PCA revealed that the first component explained 69.477% of the variance in the data, while the second component explained an additional 26.222% of the variance. The cumulative percentage of variance explained by the first two components was 95.699%. The remaining components explained relatively small proportions of the variance. The results suggested that the data could be adequately represented by two underlying factors.

Figure 6.1

Effect of Environmental Disclosure on Corporate Environmental Performance



These findings suggested that the PCA was successful in reducing the dimensionality of the data and identifying the underlying factors that explained the relationships between the variables. The results provided evidence for the construct validity of the measurement model, which was used to examine the effect of environmental disclosure on corporate environmental performance.

Table 6.4

Component Matrix- Effect of Environmental Disclosure on Corporate Environmental Performance

	Component	
	1	2
Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set	.927	-.347
Reduce wastage of energy, cost and time	.925	-.350
Identify problems and improve corporate image	.924	-.347
Audit of environmental management system improves environmental performance, makes an estimate of environmental cost and more disclosure	.921	-.333
Very expensive and time consuming	.919	-.348
Respond to pressures from regulatory authorities	.917	-.350
Environmental risk should be assessed in environmental audit	.916	-.354

	Component	
	1	2
Verification of environmental reports checks its accuracy, credibility, validity and useful in decision making	.915	-.326
Ensure compliance of environmental laws	.910	-.336
Investors will be attracted due to disclosure	.702	.692
Poor performers face more political pressure, disclose all information to reduce negative impacts	.686	.675
Guarantees that stakeholders are aware of the environmental responsibilities	.690	.706
Meeting environmental performance is the key aspect of CSR	.667	.698
Superior performers have proactive energy and want to convey their performance to general public	.689	.693
Environmental liabilities are less for good performers	.674	.685

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Source: Primary Data

The results of the PCA revealed that the variables loaded onto two distinct components. Component 1 consisted of variables related to environmental audit, environmental management, and environmental performance, such as "Audit of environmental management system improves environmental performance" and "Reduce wastage of energy, cost and time". Component 2 consisted of variables related to environmental disclosure, stakeholder awareness, and corporate social responsibility, such as "Investors will be attracted due to disclosure" and "Guarantees that stakeholders are aware of the environmental responsibilities".

These findings suggested that the variables used to measure the effect of environmental disclosure on corporate environmental performance could be grouped into two distinct categories. The first category consisted of variables related to environmental management and performance, while the second category consisted of variables related to environmental disclosure and stakeholder awareness. The results provided evidence for the construct validity of the measurement model and suggested that environmental disclosure and environmental management are two distinct but related constructs.

Table 6.5

Rotated Component Matrix- Effect of Environmental Disclosure on Corporate Environmental Performance

	Component	
	Environmental Disclosure	Corporate Environmental Performance
Reduce wastage of energy, cost and time	.968	.203
Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set	.968	.207
Identify problems and improve corporate image	.965	.205
Environmental risk should be assessed in environmental audit	.963	.196
Very expensive and time consuming	.962	.202
Respond to pressures from regulatory authorities	.961	.199
Audit of environmental management system improves environmental performance, makes an estimate of environmental cost and more disclosure	.955	.216
Ensure compliance of environmental laws	.948	.208
Verification of environmental reports checks its accuracy, credibility, validity and useful in decision making	.947	.218
Guarantees that stakeholders are aware of the environmental responsibilities	.201	.966
Investors will be attracted due to disclosure	.218	.961
Superior performers have proactive energy and want to convey their performance to general public	.207	.955
Meeting environmental performance is the key aspect of CSR	.186	.948
Environmental liabilities are less for good performers	.199	.941
Poor performers face more political pressure, disclose all information to reduce negative impacts	.215	.939

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Source: Primary Data

The results of the rotated component matrix revealed that the variables loaded onto two distinct components. Component 1, labeled as Environmental Disclosure, consisted of variables such as "Guarantees that stakeholders are aware of the environmental responsibilities", "Investors will be attracted due to disclosure", and "Poor performers face more political pressure, disclose all information to reduce negative impacts". Component 2, labeled as Corporate Environmental Performance, consisted of variables such as "Reduce wastage of energy, cost and time", "Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set", and "Audit of environmental management system improves environmental performance, makes an estimate of environmental cost and more disclosure".

These findings suggested that the variables used to measure the effect of environmental disclosure on corporate environmental performance could be grouped into two distinct categories, namely environmental disclosure and corporate environmental performance. The results provided evidence for the construct validity of the measurement model and suggested that environmental disclosure and corporate environmental performance are two distinct but related constructs. The findings also highlighted the importance of environmental disclosure in influencing corporate environmental performance.

6.3.1.2 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was conducted to examine the factorial validity of the measurement model used to assess the effect of environmental disclosure on corporate environmental performance. The CFA was performed using the maximum likelihood estimation method, and the model fit was evaluated using various indices, including the chi-square statistic, root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis index (TLI). The CFA results provided evidence for the construct validity of the measurement model, which was used to examine the relationships between environmental disclosure and corporate environmental performance.

Figure 6.2

CFA- Effect of Environmental Disclosure on Corporate Environmental Performance

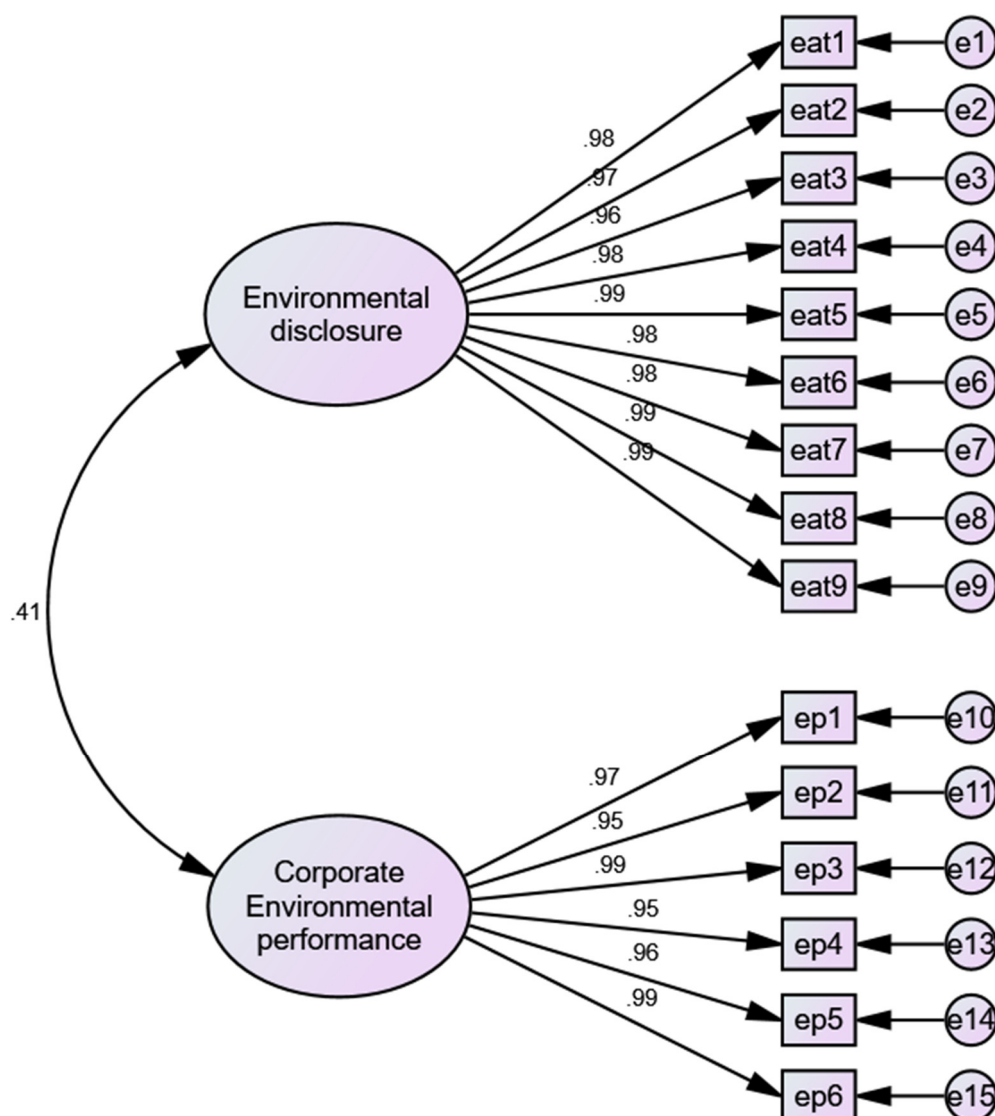


Table provided below presents the results of the factor analysis, which was conducted to examine the effect of environmental disclosure on corporate environmental performance. The table displays the number of items, Cronbach's alpha values, and overall Cronbach's alpha values for the two factors, namely environmental disclosure and corporate environmental performance.

Table 6.6

Summary of Scale Validation-Effect of Environmental Disclosure on Corporate Environmental Performance

Sl.no	Criteria	Result
1	Exploratory Factor Analyses	Explored 2 Factors
2	Confirmatory factor analysis	Confirmed
3	Reliability	Satisfied
4	Convergent validity	Satisfied
5	Discriminant validity	Satisfied
6	Normality	Satisfied

Source: Compiled by the researcher

The results of the scale validation revealed that all the criteria for validity and reliability were met. The exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) results confirmed the factorial validity of the measurement scales. The reliability analysis revealed that the measurement scales had high internal consistency, as indicated by Cronbach's alpha values. The convergent validity and discriminant validity results also provided evidence for the validity of the measurement scales. These findings provided evidence for the validity and reliability of the measurement scales used to assess the effect of environmental disclosure on corporate environmental performance. The results suggested that the measurement scales were suitable for use in the study and provided a reliable and valid measure of the constructs.

SECTION B

6.3.2 Data Analysis

This section presents the results of the assessments of the first part of objective four of the study, which aimed to examine the effect of environmental disclosure on corporate environmental performance. The analysis was conducted using two main variables, namely environmental disclosure and corporate environmental performance.

6.3.2.1 Environmental Disclosure

Table provided below presents the results of the descriptive statistics analysis of the respondents' perceptions of environmental disclosure. The analysis employed several statistical tools, including descriptive statistics, independent sample t-test, regression

analysis, and structural equation modelling. These statistical tools helped to examine the relationships between environmental disclosure and corporate environmental performance, and to identify the factors that influenced these relationships. The results of the analysis provided insights into the effect of environmental disclosure on corporate environmental performance, and contributed to the achievement of the study's objectives and practices. The table displays the frequency distribution of the responses to each item, including the number of respondents who strongly disagreed (SD), disagreed (D), were neutral (N), agreed (A), and strongly agreed (SA) with each statement.

Table 6.7

Environmental Disclosure- Employees and External Auditors

Respondents Perceptions	SD	D	N	A	SA	Total	Mean Score
	(1)	(2)	(3)	(4)	(5)		
Audit of environmental management system improves environmental performance, makes an estimate of environmental cost and more disclosure	16	28	88	355	313	800	4.15
	16	56	264	1420	1565	3321	
Verification of environmental reports checks its accuracy, credibility, validity and useful in decision making	20	29	84	353	314	800	4.14
	20	58	252	1412	1570	3312	
Ensure compliance of environmental laws	23	30	83	348	316	800	4.13
	23	60	249	1392	1580	3304	
Respond to pressures from regulatory authorities	311	350	88	30	21	800	1.88
	311	700	264	120	105	1500	
Reduce wastage of energy, cost and time	23	31	87	347	312	800	4.12
	23	62	261	1388	1560	3294	
Environmental risk should be assessed in environmental audit	314	350	82	31	23	800	1.87
	314	700	246	124	115	1499	
Very expensive and time consuming	316	347	85	31	21	800	1.86
	316	694	255	124	105	1494	
Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set	309	348	87	33	23	800	1.89
	309	696	261	132	115	1513	
Identify problems and improve corporate image	25	31	85	345	314	800	4.11
	25	62	255	1380	1570	3292	

Source: Primary Data

The results of the descriptive statistics analysis revealed that the respondents generally had positive perceptions of environmental disclosure practices. The majority of the respondents agreed or strongly agreed with the statements related to environmental disclosure, such as "Audit of environmental management system improves environmental performance, makes an estimate of environmental cost and more disclosure" (mean score = 4.15) , "Verification of environmental reports checks its accuracy, credibility, validity and useful in decision making" (mean score = 4.14), "Ensure compliance of environmental laws " (mean score =4.13), "Reduce wastage of energy, cost and time" (mean score =4.12) and " Identify problems and improve corporate image" (mean score=4.11). The results also showed that the respondents generally disagreed with the statements related to the limitations of environmental disclosure, such as "Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set" (mean score =1.89)," "Respond to pressures from regulatory authorities" (mean score =1.88), "Environmental risk should be assessed in environmental audit" (mean score=1.87) and "Very expensive and time consuming" (mean score =1.86).

These findings suggested that the respondents generally supported the practice of environmental disclosure and believed that it had a positive impact on corporate environmental performance. The results also highlighted the importance of environmental disclosure in promoting transparency and accountability in corporate environmental practices. However, the findings also suggested that the respondents were aware of the limitations and challenges associated with environmental disclosure, such as the costs and time required to implement and maintain environmental disclosure practices.

6.3.2.2 Environmental Disclosure between Employees and External Auditors

Table provided below presents the results of the independent samples t-test, which was conducted to examine the differences in the perceptions of environmental disclosure between employees and external auditors. The table displays the mean,

standard deviation, t-value, and p-value for each group. The study fixed the following hypothesis.

Hypothesis: -

H1: There is significant difference in the perceptions of environmental disclosure between employees and external auditors.

Table 6.8

Environmental Disclosure between Employees and External Auditors

Category of Respondents		Mean	Std. Deviation	T Value	P Value
Environmental Disclosure	Employees	3.9000	.96931	-6.883	.000
	External auditors	4.3403	.83489	-6.883	.000

Source: Primary Data

The results of the independent samples t-test revealed that there was a significant difference in the perceptions of environmental disclosure between employees and external auditors. The mean score for external auditors ($M = 4.3403$) was significantly higher than that of employees ($M = 3.9000$), indicating that external auditors had more positive perceptions of environmental disclosure than employees. The t-value was -6.883, and the p-value was 0.000, indicating that the difference was statistically significant.

These findings suggested that employees and external auditors had different perceptions of environmental disclosure. External auditors, who are responsible for preparing and auditing financial statements, may have a better understanding of the importance of environmental disclosure in promoting transparency and accountability. Employees, on the other hand, may not have the same level of expertise and knowledge about environmental disclosure. The findings highlighted the need for organizations to provide training and education to employees on the importance of environmental disclosure and its role in promoting sustainable business practices.

6.3.2.3 Corporate Environmental Performance

Table provided below presents the results of the descriptive statistics analysis of the respondents' perceptions of corporate environmental performance. The table displays the frequency distribution of the responses to each item, including the number of respondents who strongly disagreed (SD), disagreed (D), were neutral (N), agreed (A), and strongly agreed (SA) with each statement.

Table 6.9

Corporate Environmental Performance-Employees and External Auditors

	SD	D	N	A	SA	Total	Mean Score
	(1)	(2)	(3)	(4)	(5)		
Superior performers have proactive energy and want to convey their performance to general public	12 12	18 36	175 525	292 1168	303 1515	800 3256	4.07
Poor performers face more political pressure, disclose all information to reduce negative impacts	12 12	21 42	180 540	286 1144	301 1505	800 3243	4.05
Investors will be attracted due to disclosure	10 10	15 30	179 537	297 1188	299 1495	800 3260	4.08
Environmental liabilities are less for good performers	14 14	18 36	183 549	290 1160	295 1475	800 3234	4.04
Meeting environmental performance is the key aspect of CSR	300 300	288 576	176 528	23 92	13 65	800 1561	1.95
Guarantees that stakeholders are aware of the environmental responsibilities	303 303	291 582	176 528	17 68	13 65	800 1546	1.93

Source: Primary Data

The results of the descriptive statistics analysis revealed that the respondents generally had positive perceptions of corporate environmental performance. The majority of the respondents agreed or strongly agreed with the statements related to corporate environmental performance, such as "Investors will be attracted due to disclosure" (mean score =4.08), "Superior performers have proactive energy and

want to convey their performance to general public" (mean score = 4.07), " Poor performers face more political pressure, disclose all information to reduce negative impacts " (mean score = 4.05) and "Environmental liabilities are less for good performers" (mean score =4.04).The results also showed that the respondents generally disagreed with the statements related to the limitations of corporate environmental performance, such as "Meeting environmental performance is the key aspect of CSR" (mean score = 1.95) and " Guarantees that stakeholders are aware of the environmental responsibilities" (mean score =1.93).

These findings suggested that the respondents generally believed that corporate environmental performance was an important aspect of business operations. The results also highlighted the importance of corporate environmental performance in promoting sustainable business practices and reducing environmental liabilities. Additionally, the findings suggested that respondents believed that superior performers in terms of environmental performance were more proactive in disclosing their environmental performance to the general public. Overall, the results provided evidence for the importance of corporate environmental performance in promoting sustainability and reducing environmental risks.

6.3.2.4 Corporate Environmental Performance between Employees and External Auditors

Table provided below presents the results of the independent samples t-test, which was conducted to examine the differences in the perceptions of corporate environmental performance between employees and external auditors. The table displays the mean, standard deviation, t-value, and p-value for each group. The study fixed the following alternate hypothesis.

Hypothesis: -

H1: There is significant difference in the perceptions of corporate environmental performance between employees and external auditors.

Table 6.10*Corporate Environmental Performance between Employees and External Auditors*

	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Corporate Environmental Performance	Employees	3.8817	.76945	-5.644	.000
	External auditors	4.0100	.96515	-5.644	.000

Source: Primary Data

The results of the independent samples t-test revealed that there was a significant difference in the perceptions of corporate environmental performance between employees and external auditors. The mean score for external auditors ($M = 4.0100$) was significantly higher than that of employees ($M = 3.8817$), indicating that external auditors had more positive perceptions of corporate environmental performance than employees. The t-value was -5.644, and the p-value was 0.000, indicating that the difference was statistically significant.

These findings suggested that employees and external auditors had different perceptions of corporate environmental performance. External auditors, who are responsible for preparing and auditing financial statements, may have a better understanding of the importance of corporate environmental performance in promoting sustainability and reducing environmental risks. Employees, on the other hand, may not have the same level of expertise and knowledge about corporate environmental performance. The findings highlighted the need for organizations to provide training and education to employees on the importance of corporate environmental performance and its role in promoting sustainable business practices.

6.3.2.5 Environmental Reporting and Environmental Performance (Employees)

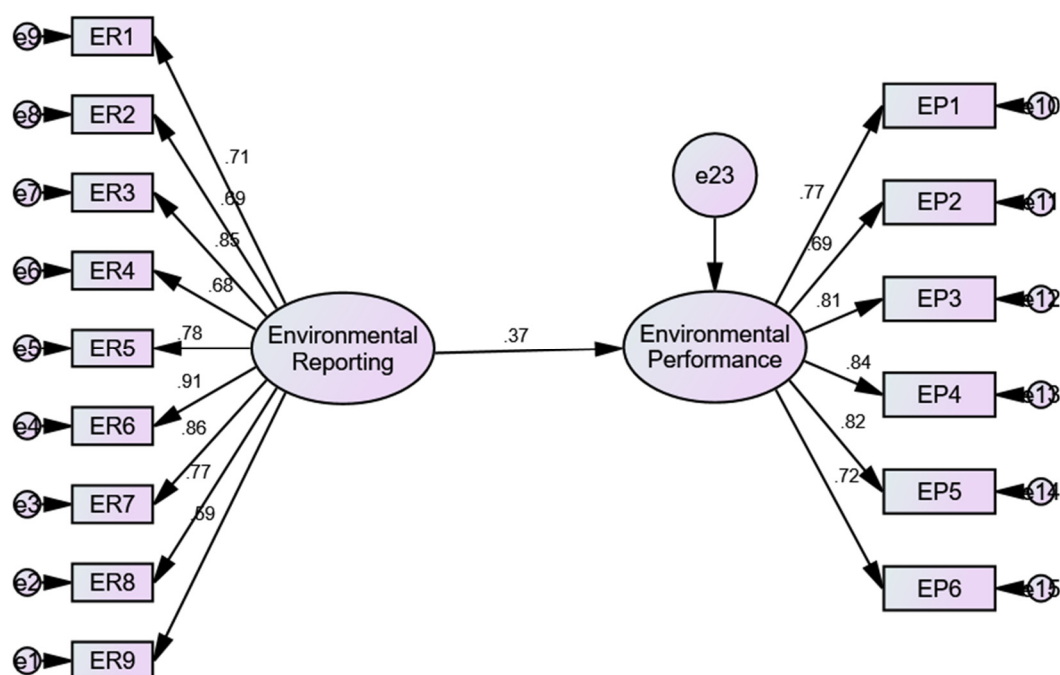
The relationship between environmental reporting and environmental performance was examined through hypothesis testing, and the results are presented in figure below. The study fixed the following alternate hypothesis.

Hypothesis: -

H1: Environmental Reporting has significant effect on Environmental Performance

Figure 6.3

Environmental Reporting and Environmental Performance (Employees)



The model fit indices for the relationship between environmental reporting and environmental performance, specifically focusing on the role of employees, are presented in table below. These indices provide an assessment of how well the proposed measurement model fits the observed data.

Table 6.11

Model Fit Indices- Environmental Reporting and Environmental Performance (Employees)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.92	.93	.91	.94	.045
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically,

the CFI, GFI, TLI, and NFI values of 0.92, 0.93, 0.91, and 0.94, respectively, exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value of 0.045 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

Table 6.12

Testing of Hypothesis- Environmental Reporting and Environmental Performance (Employees)

Sl.no	Alternate Hypothesis	Beta Value	Sig.	Decision
1	Environmental Reporting has significant effect on Environmental Performance	.37	<.05	Accepted

Source: Primary Data

The findings indicated that the alternate hypothesis, which stated that environmental reporting has significant effect on environmental performance, was accepted. The beta value of 0.37 suggested a positive relationship between environmental reporting and environmental performance, indicating that environmental reporting is associated with improved environmental performance. Moreover, the relationship was statistically significant, as evidenced by the p-value of less than 0.05, indicating that the observed relationship was unlikely to be due to chance. This finding suggested that companies that prioritize environmental reporting tend to achieve better environmental performance.

The results implied that environmental reporting is a crucial aspect of environmental management, and top and middle level employees of those companies who are engaged in environmental reporting are more likely to achieve improved environmental performance. The positive relationship between environmental reporting and environmental performance highlights the importance of transparency and accountability in environmental management.

6.3.2.6 Environmental Reporting and Environmental Performance (External Auditors)

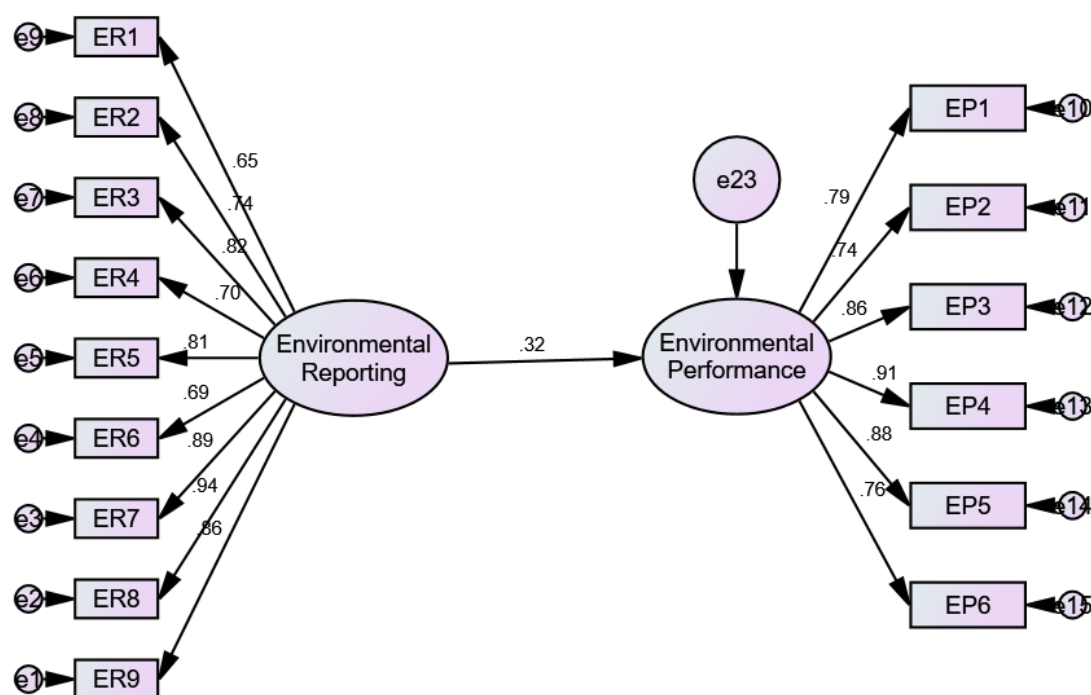
The relationship between environmental reporting and environmental performance was examined through hypothesis testing, specifically focusing on the perspective of external auditors, and the results are presented in figure below. The study fixed the following alternate hypothesis.

Hypothesis: -

Environmental Reporting has significant effect on Environmental Performance

Figure 6.4

Environmental Reporting and Environmental Performance (External Auditors)



The model fit indices for the relationship between environmental reporting and environmental performance, specifically focusing on the perspective of external auditors, are presented in figure below.

Table 6.13

Model Fit Indices- Environmental Reporting and Environmental Performance (External Auditors)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.93	.92	.94	.94	.041
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.93, 0.92, 0.94, and 0.94, respectively, exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value of 0.041 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

Table 6.14

Testing of Hypothesis- Environmental Reporting and Environmental Performance (External Auditors)

Sl.no	Alternate Hypothesis	Beta Value	Sig.	Decision
1	Environmental Reporting has significant effect on Environmental Performance	.32	<.05	Accepted

Source: Primary Data

The findings indicated that the alternate hypothesis, which stated that environmental reporting has significant effect on environmental performance, was accepted. The beta value of 0.32 suggested a positive relationship between environmental reporting and environmental performance, indicating that environmental reporting is associated with improved environmental performance. Moreover, the relationship was statistically significant, as evidenced by the p-value of less than 0.05, indicating that the observed relationship was unlikely to be due to chance. This finding suggested that external auditors perceive environmental reporting as an important factor in driving environmental performance.

The results implied that environmental reporting plays a crucial role in promoting environmental sustainability, and external auditors recognize its significance in enhancing environmental performance. The positive relationship between environmental reporting and environmental performance highlights the importance of transparency and accountability in environmental management. The findings of this study have implications for external auditors and organizations, suggesting that environmental reporting is a key strategy for achieving environmental sustainability. By prioritizing environmental reporting, organizations can promote a culture of environmental responsibility, and external auditors can play a vital role in ensuring the accuracy and reliability of environmental reports.

6.3.2.7 Performance Indicators

Table provided below presents the results of the descriptive statistics analysis of the respondents' perceptions of various performance indicators for corporate environmental performance. The table displays the frequency distribution of the responses to each item, including the number of respondents who rated each item as unimportant (UI), somewhat important (SI), moderately important (MI), important (I), and very important (VI).

Table 6.15

Performance Indicators

	UI	SI	MI	I	VI
Environmental policy	5	49	63	356	327
Separate Environmental department	5	47	62	356	330
Environmental management system	5	47	62	352	334
ISO 14001 certificate	6	48	66	351	329
Environmental statements (statutory required or voluntary)	5	49	63	354	329
Audit of Environmental statements	7	47	63	351	332
Recognition of social costs and its valuation in decision making	6	52	67	342	333
Training to employees	5	51	63	351	330
Internal reward system	5	52	65	348	330
Awards obtained for environmental performance	7	52	62	347	332
Voluntary steps taken for environment protection	8	49	62	349	332

Source: Primary Data

The results of the descriptive statistics analysis revealed that the respondents generally rated the performance indicators as important or very important for corporate environmental performance. The majority of the respondents rated items such as “Environmental management system “(VI=334),” Recognition of social costs and its valuation in decision making” (VI= 333),” Audit of Environmental statements, Awards obtained for environmental performance and Voluntary steps taken for environment protection” (VI=332) as very important environmental performance indicators. At the same time very high majority of respondents rated “Environmental policy and Separate Environmental department “(I=356) and “Environmental statements (statutory required or voluntary)” (I=354) as important performance indicators. Only a very negligible respondents rated” ISO 14001 certificate” (UI=6) and “Training to employees (UI =5),” Separate Environmental department “(UI=5) and Internal reward system” (UI=5) as unimportant performance indicators.

These findings suggested that the respondents generally believed that various performance indicators were important or very important for corporate environmental performance. The results highlighted the importance of having an environmental management system, Audit of Environmental statements and Environment protection measures to promote corporate environmental performance. The findings also suggested that the respondents believed that Environmental policy and Separate Environmental department and Environmental statements (statutory required or voluntary) were important for promoting corporate environmental performance. Overall, the results provided evidence for the importance of various performance indicators in promoting corporate environmental performance.

6.3.2.8 Performance Indicators between Employees and External Auditors

Table provided below presents the results of the comparative analysis of the perceptions of performance indicators for corporate environmental performance between employees and external auditors. The table displays the frequency distribution

of the responses to each item, including the number of respondents who rated each item as unimportant (UI), somewhat important (SI), moderately important (MI), important (I), and very important (VI).

Table 6.16

Performance Indicators between Employees and External Auditors

		UI	SI	MI	I	VI
Category of Respondents	Environmental policy	0	32	48	200	120
	Separate Environmental department	0	32	48	200	120
	Environmental management system	0	32	48	202	118
	ISO 14001 certificate	1	34	53	196	116
	Environmental statements (statutory required or voluntary)	0	35	50	198	117
	Audit of Environmental statements	2	33	48	197	120
	Recognition of social costs and its valuation in decision making	1	36	52	193	118
	Training to employees	1	37	50	197	115
	Internal reward system	0	37	51	195	117
	Awards obtained for environmental performance	2	38	47	196	117
	Voluntary steps taken for environment protection	3	32	49	198	118
	Environmental policy	5	17	15	156	207
	Separate Environmental department	5	15	14	156	210
	Environmental management system	5	15	14	150	216
External Auditors	ISO 14001 certificate	5	14	13	155	213
	Environmental statements (statutory required or voluntary)	5	14	13	156	212
	Audit of Environmental statements	5	14	15	154	212
	Recognition of social costs and its valuation in decision making	5	16	15	149	215
	Training to employees	4	14	13	154	215
	Internal reward system	5	15	14	153	213
	Awards obtained for environmental performance	5	14	15	151	215
	Voluntary steps taken for environment protection	5	17	13	151	214

Source: Primary Data

The results of the comparative analysis revealed that there were significant differences in the perceptions of performance indicators for corporate environmental performance between employees and external auditors. External auditors generally rated the performance indicators as more important than employees. For example, 207 external auditors (51.75 percent) rated "Environmental policy" as very important, compared to 120 employees (30 percent). Similarly, 216 external auditors (54 percent) rated "Environmental management system" as very important, compared to 118 employees (29.5 percent). The number of external auditors who rated separate Environmental department very important were 210 (52.5 percent) as against 120 employees (30 percent) who rated separate Environmental department very important. Only 116 employees (29 percent) rated ISO 14001 certificate as very important as against 213 external auditors (53.25 percent). The percentage of employees who rated Environmental statements (statutory required or voluntary) and Audit of Environmental statements as very important were 29.25 percent and 30 percent respectively as against 53 percent of external auditors. Recognition of social costs and its valuation in decision making , providing training to employees and awards obtained for environmental performance were considered as very important by 53.75 percent of external auditors as compared to 29.5 percent , 28.75 percent and 29.25 percent of employees respectively who rated these indicators as very important .The internal reward system were considered as very important by 53.25 percent of external auditors and only 29.25 percent of employees considered it as very important. Voluntary steps taken for environment protection were considered as very important by 53.5 percent of external auditors and 29.5 percent of employees.

These findings suggested that employees and external auditors had different perceptions of the importance of performance indicators for corporate environmental performance. External auditors, who are responsible for preparing and auditing financial statements, may have a better understanding of the importance of environmental performance indicators in promoting sustainability

and reducing environmental risks. The findings highlighted the need for organizations to provide training and education to employees on the importance of environmental performance indicators and their role in promoting sustainable business practices.

6.3.2.9 Effect of Environmental Disclosure on Environmental Performance Indicators

The effect of environmental disclosure on corporate environmental performance indicators was assessed using Structural Equation Modelling (SEM) technique. SEM is a statistical methodology that combines the features of factor analysis and multiple regression to examine the relationships between multiple variables. It is a powerful tool for testing complex hypotheses and examining the relationships between latent variables. In this study, SEM was used to examine the causal relationships between environmental disclosure and corporate environmental performance, while controlling for other relevant factors. The SEM analysis provided a comprehensive understanding of the relationships between the variables and helped to identify the factors that influence corporate environmental performance. The study fixed the following alternate hypotheses.

Hypothesis: -

- H1:** There is significant relationship between Environmental Policy (e1) and Environmental Disclosure.
- H2:** There is significant relationship between a Separate Environmental Department (e2) and Environmental Disclosure.
- H3:** There is significant relationship between Environmental Management System (e3) and Environmental Disclosure.
- H4:** There is significant relationship between ISO 14001 Certification (e4) and Environmental Disclosure.
- H5:** There is significant relationship between Environmental Statements (e5) and Environmental Disclosure.

- H6:** There is significant relationship between Audits of Environmental Statements (e6) and Environmental Disclosure.
- H7:** There is significant relationship between Recognition of Social Costs and its Valuation in Decision Making (e7) and Environmental Disclosure.
- H8:** There is significant relationship between Training to Employees (e8) and Environmental Disclosure.
- H9:** There is significant relationship between Internal Reward System (e9) and Environmental Disclosure.
- H10:** There is significant relationship between Awards Obtained for Environmental Performance (e10) and Environmental Disclosure.
- H11:** There is significant relationship between Voluntary Steps Taken for Environment Protection (e11) and Environmental Disclosure.

Table 6.17

Model Fit Indices- Effect of Environmental Disclosure on Environmental Performance Indicators- Structural Equation Modelling

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.92	.94	.94	.93	.038
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results of the model fit indices revealed that the measurement model fit the data well. The values of CFI, GFI, TLI, and NFI were all above 0.9, indicating a good fit. The RMSEA value was 0.038, which was less than 0.05, indicating a good fit. These results suggested that the measurement model was a good representation of the data.

Figure 6.5

Effect of Environmental Disclosure on Corporate Environmental Performance Indicators

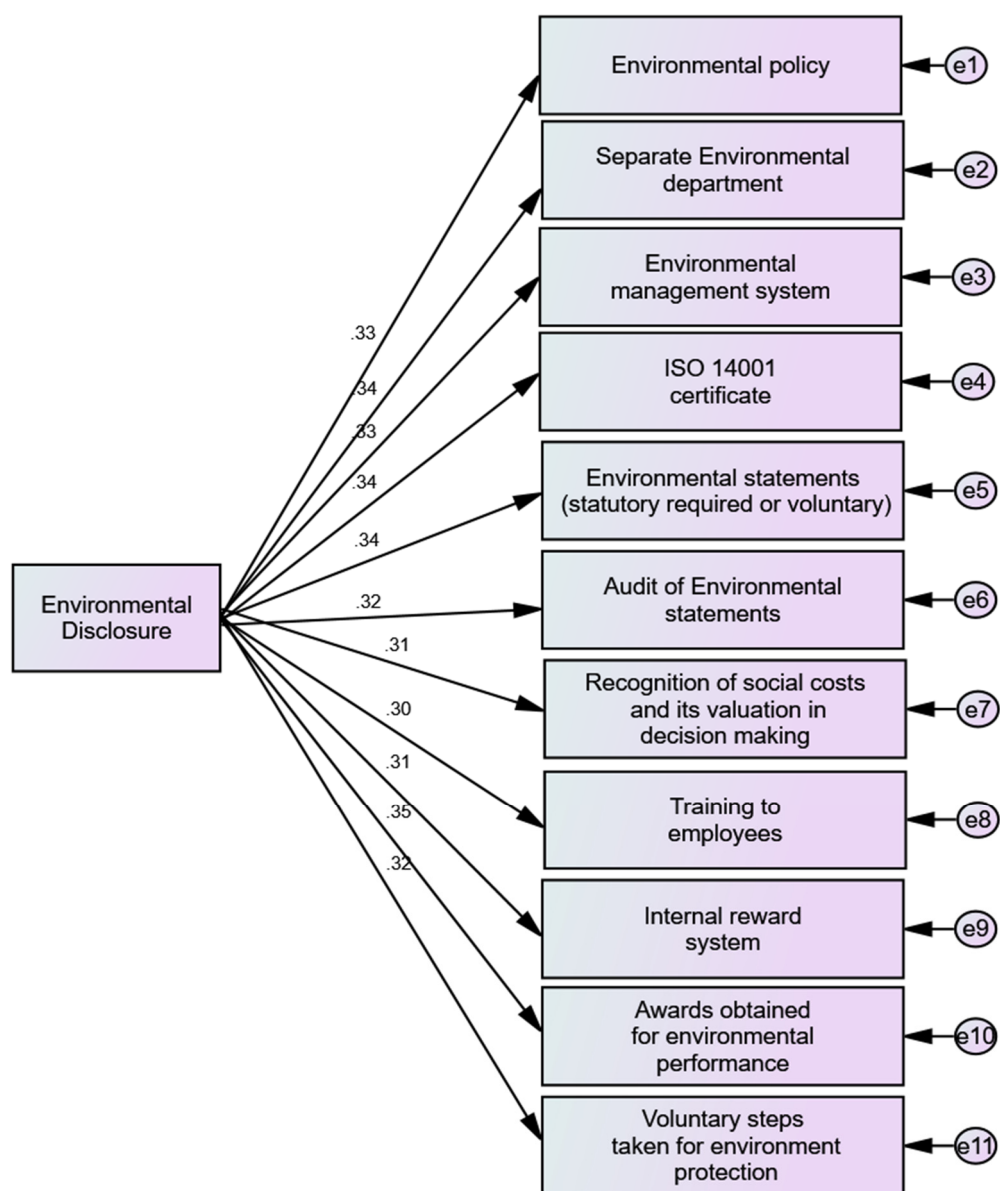


Table 6.18

Testing of Hypotheses- Effect of Environmental Disclosure on Corporate Environmental Performance

Sl. no	Hypothesis	Beta Coefficient	P Value	Decision
1	There is significant relationship between Environmental Policy (e1) and Environmental Disclosure.	.33	<.05	Accepted
2	There is significant relationship between a Separate Environmental Department (e2) and Environmental Disclosure.	.34	<.05	Accepted
3	There is significant relationship between Environmental Management System (e3) and Environmental Disclosure.	.33	<.05	Accepted
4	There is significant relationship between ISO 14001 Certification (e4) and Environmental Disclosure.	.34	<.05	Accepted
5	There is significant relationship between Environmental Statements (e5) and Environmental Disclosure.	.34	<.05	Accepted
6	There is significant relationship between Audits of Environmental Statements (e6) and Environmental Disclosure.	.32	<.05	Accepted
7	There is significant relationship between Recognition of Social Costs and its Valuation in Decision Making (e7) and Environmental Disclosure.	.31	<.05	Accepted
8	There is significant relationship between Training to Employees (e8) and Environmental Disclosure.	.30	<.05	Accepted
9	There is significant relationship between Internal Reward System (e9) and Environmental Disclosure.	.31	<.05	Accepted
10	There is significant relationship between Awards Obtained for Environmental Performance (e10) and Environmental Disclosure.	.35	<.05	Accepted
11	There is significant relationship between Voluntary Steps Taken for Environment Protection (e11) and Environmental Disclosure.	.32	<.05	Accepted

Source: Primary Data

The results of the hypothesis testing revealed that all 11 hypotheses were accepted, indicating that there were significant relationships between environmental

disclosure and various environmental performance indicators. The beta coefficients ranged from 0.30 to 0.35, indicating moderate to strong relationships. The p-values were all less than 0.05, indicating that the relationships were statistically significant.

These findings suggested that environmental disclosure had a significant impact on various environmental performance indicators. The results highlighted the importance of environmental disclosure in promoting transparency and accountability in corporate environmental practices. The findings also suggested that companies that disclose more environmental information tend to have better environmental performance.

6.3.2.10 Performance Indicators on Environmental Performance

Linear regression analysis was employed to assess the performance indicators on environmental performance. This statistical technique is used to examine the relationships between a dependent variable and one or more independent variables. In this study, linear regression analysis was used to examine the relationships between environmental performance (dependent variable) and various performance indicators (independent variables). The analysis provided insights into the factors that influence environmental performance and helped to identify the most important performance indicators.

Alternate Hypotheses: -

- H1:** Environmental policy has significant impact on environmental performance.
- H2:** A separate environmental department has significant impact on environmental performance.
- H3:** An environmental management system has significant impact on environmental performance.
- H4:** ISO 14001 certification has significant impact on environmental performance.
- H5:** Environmental statements have significant impact on environmental performance.
- H6:** Audits of environmental statements have significant impact on environmental performance.

H7: Recognition of social costs and its valuation in decision making has significant impact on environmental performance.

H8: Training to employees has significant impact on environmental performance.

H9: An internal reward system has significant impact on environmental performance.

H10: Awards obtained for environmental performance have significant impact on environmental performance.

H11: Voluntary steps taken for environment protection have significant impact on environmental performance.

Table provided below presents the results of the multiple linear regression analysis, which examined the relationships between various performance indicators and environmental performance. The table displays the model summary statistics, including the R value, R square value, adjusted R square value, and standard error of the estimate.

Table 6.19

Model Summary- Performance Indicators on Environmental Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.179 ^a	.032	.019	.88121

a. Predictors: (Constant), Voluntary steps taken for environment protection, Training to employees, Internal reward system, Audit of Environmental statements, Awards obtained for environmental performance, Recognition of social costs and its valuation in decision making, ISO 14001 certificate, Environmental policy, Environmental statements (statutory required or voluntary), Separate Environmental department, Environmental management system

Source: Primary Data

The results of the multiple linear regression analysis revealed that the model was significant, with an R value of 0.179 and an R square value of 0.032. The adjusted R square value was 0.019, indicating that the model explained about 1.9% of the variance in environmental performance. The standard error of the estimate was 0.88121, indicating that the model was reasonably accurate in predicting environmental performance.

These findings suggested that the performance indicators had a significant impact on environmental performance. Although the model explained a relatively

small proportion of the variance in environmental performance, the results highlighted the importance of considering multiple performance indicators when assessing environmental performance. The findings have implications for organizations seeking to improve their environmental performance and for policymakers and regulators seeking to promote environmental sustainability.

Table 6.20

ANOVA- Performance Indicators on Environmental Performance

	Model	Sum of Squares	df	Mean Square	F	Sig.
	Regression	20.273	11	1.843	2.373	.007 ^b
1	Residual	611.900	788	.777		
	Total	632.173	799			

a. Dependent Variable: Corporate Environmental Performance

b. Predictors: (Constant), Voluntary steps taken for environment protection, Training to employees, Internal reward system, Audit of Environmental statements, Awards obtained for environmental performance, Recognition of social costs and its valuation in decision making, ISO 14001 certificate, Environmental policy, Environmental statements (statutory required or voluntary), Separate Environmental department, Environmental management system

Source: Primary Data

The results of the ANOVA test revealed that the regression model was significant, with an F-statistic of 2.373 and a p-value of 0.007. This indicated that the performance indicators had a significant impact on environmental performance. The results also showed that the regression model explained a significant proportion of the variance in environmental performance, with a sum of squares of 20.273 and a mean square of 1.843.

These findings suggested that the performance indicators were significant predictors of environmental performance. The results highlighted the importance of considering multiple performance indicators when assessing environmental performance. The findings have implications for organizations seeking to improve their environmental performance and for policymakers and regulators seeking to promote environmental sustainability. The results also suggest that organizations that prioritize environmental performance indicators are likely to have better environmental performance outcomes.

Table 6.21*Coefficients- Performance Indicators on Environmental Performance*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.389	.158		21.474	.000
Environmental policy	.011	.140	.011	.078	.938
Separate Environmental department	.014	.195	.014	.074	.941
Environmental management system	-.016	.245	-.016	-.067	.947
ISO 14001 certificate	.030	.130	.030	.233	.816
Environmental statements (statutory required or voluntary)	-.047	.161	-.046	-.293	.770
Audit of Environmental statements	.038	.115	.038	.333	.739
Recognition of social costs and its valuation in decision making	.102	.116	.102	.878	.380
Training to employees	.211	.105	.207	2.013	.044
Internal reward system	.107	.112	.107	.963	.336
Awards obtained for environmental performance	-.133	.114	-.134	-1.168	.243
Voluntary steps taken for environment protection	-.158	.113	-.158	-1.396	.163

a. Dependent Variable: Corporate Environmental Performance

Source: Primary Data

The results of the multiple linear regression analysis revealed that only one performance indicator, "Training to employees", had a significant impact on environmental performance, with a p-value of 0.044. The standardized coefficient (Beta) for this variable was 0.207, indicating a positive relationship between training to employees and environmental performance. The other performance indicators did not have a significant impact on environmental performance.

These findings suggested that training to employees was a critical factor in promoting environmental performance. The results highlighted the importance of investing in employee training programs to improve environmental performance. The findings also suggested that other performance indicators, such as environmental policy, separate environmental department, and environmental management system, may not be as effective in promoting environmental performance.

PART II

6.4 Moderating role of Financial Performance and Mediating role of Environmental Policy, Separate Environmental Department, Environmental Management System and Employee Training in linking Environmental Reporting with Environmental Performance

SECTION A

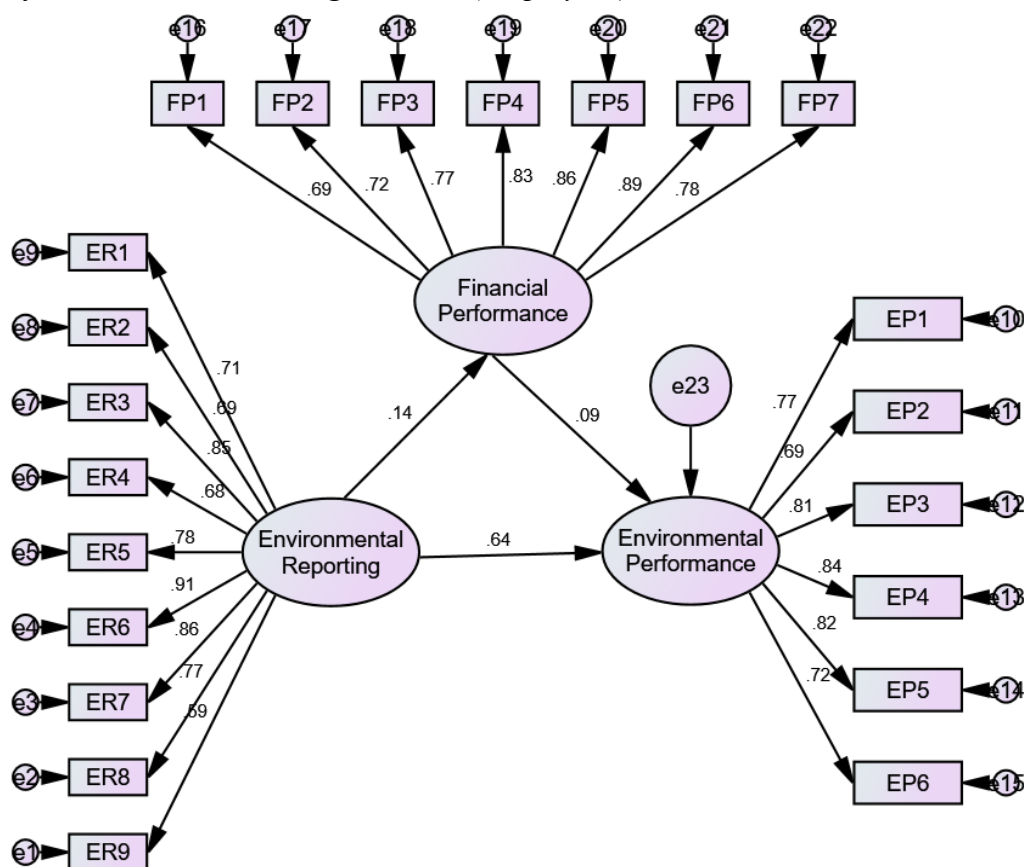
6.4.1 Employees (Top and Middle Level)

6.4.1.1 Financial Performance as Moderating Variables (Employees)

The moderating effect of financial performance on the relationship between environmental reporting and environmental performance, specifically focusing on the role of employees, was examined through hypothesis testing, and the results are presented in figure below.

Figure 6.6

Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (Employees)



The model fit indices for the relationship between environmental reporting and environmental performance, with financial performance as a moderating variable, specifically focusing on the role of employees, are presented in Table below.

Table 6.22

Model Fit Indices- Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (Employees)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.91	.92	.93	.91	.048
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.91, 0.92, 0.93, and 0.91, respectively, met or exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value of 0.048 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

The table presented below presents the results of the hypothesis testing for the moderating effect of financial performance on the relationship between environmental reporting and environmental performance among employees. The table shows the beta value, significance level, total effect, direct effect, and indirect effect for the moderating variable. The results indicated that the moderating effect of financial performance on the relationship between environmental reporting and environmental performance was significant, with a beta value of 0.64 and a significance level of less than 0.05.

Table 6.13

Testing of hypothesis- Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (Employees)

Sl. no	Alternate Hypothesis	Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
1	There is significant moderating effect of financial performance on the relationship between environmental reporting and environmental performance among employees.	.64	.37	.27	<.05

Source: Primary Data

The findings suggested that financial performance played a significant moderating role in the relationship between environmental reporting and environmental performance among employees. The total effect of environmental reporting on environmental performance was significant, and the indirect effect through financial performance was also significant. This implied that financial performance was an important factor that influenced the relationship between environmental reporting and environmental performance. The results highlighted the importance of considering the financial performance of organizations when evaluating the impact of environmental reporting on environmental performance.

The results implied that organizations with strong financial performance may be more likely to invest in environmental reporting and performance initiatives, which could lead to improved environmental outcomes. The findings also suggested that employees may prioritize environmental reporting and performance differently depending on the financial performance of their organizations.

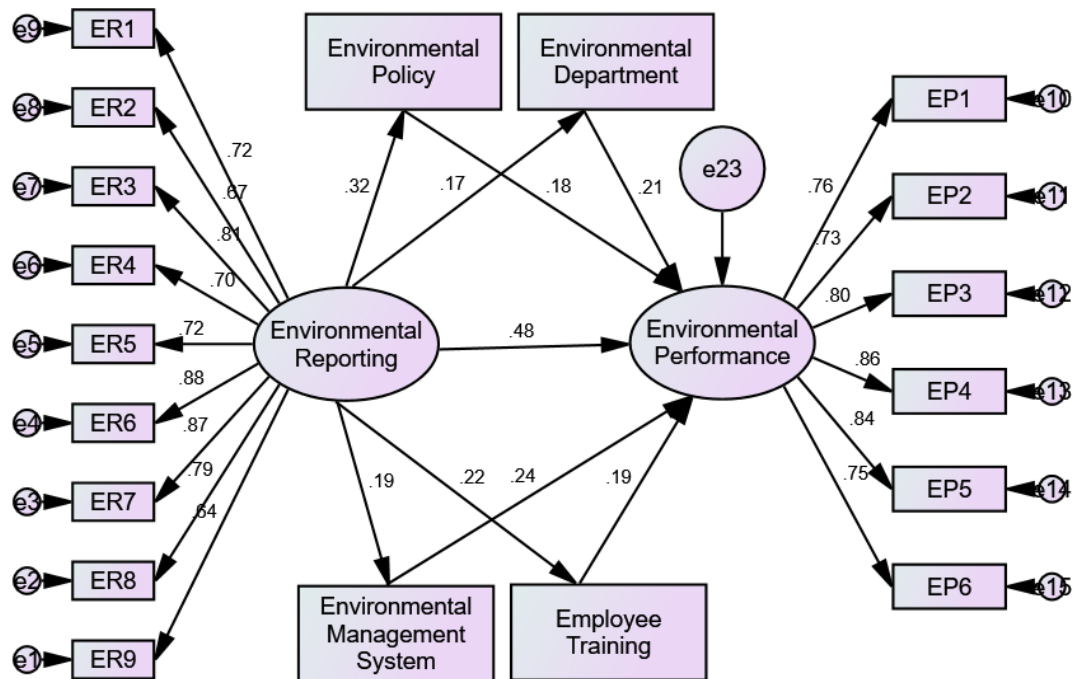
6.4.1.2 Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (Employees)

The mediation effects of environmental policy, environmental department, environmental management system, and employee training on the relationship between environmental reporting and environmental performance, specifically

focusing on the role of employees, were examined through hypothesis testing, and the results are presented in figure below.

Figure 6.7

Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (Employees)



The model fit indices for the relationship between environmental reporting and environmental performance, with environmental policy, environmental department, environmental management system, and employee training as mediating variables, specifically focusing on the role of employees, are presented in table below.

Table 6.24

Model Fit Indices- Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (Employees)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.92	.92	.94	.93	.044
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.92, 0.92, 0.94, and 0.93, respectively, exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value of 0.044 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

The table presented below presents the results of the hypothesis testing for the mediating effect of environmental policy, environmental department, environmental management system, and employee training on the relationship between environmental reporting and environmental performance among employees. The table shows the beta value, significance level, total effect, direct effect, and indirect effect for the mediating variables. The results indicated that the mediation effect of environmental policy, environmental department, environmental management system, and employee training on the relationship between environmental reporting and environmental performance was significant, with a beta value of 0.64 and a significance level of less than 0.05.

Table 6.25

Testing of hypothesis- Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (Employees)

Sl.no	Alternate Hypothesis	Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
1	There is significant mediation effect of environmental policy, environmental department, environmental management system, and employee training on the relationship between environmental reporting and environmental performance among employees.	.64	.48	.16	<.05

Source: Primary Data

The findings suggested that the presence of environmental policy, environmental department, environmental management system, and employee training played a

significant mediating role in the relationship between environmental reporting and environmental performance among employees. The total effect of environmental reporting on environmental performance was significant, and the indirect effect through the mediating variables was also significant. This implied that these organizational factors were important in influencing the relationship between environmental reporting and environmental performance. The results highlighted the importance of implementing effective environmental policies, establishing environmental departments, adopting environmental management systems, and providing employee training to support environmental reporting and performance.

The results implied that firms that prioritize environmental sustainability and implement effective environmental management practices are more likely to achieve better environmental performance through environmental reporting. The findings also suggested that the mediating variables contributed to the indirect effect on environmental performance, indicating that these factors play a crucial role in shaping the relationship between environmental reporting and environmental performance.

6.4.1.3 Antecedents of Environmental Reporting (Employees)

The antecedents of environmental reporting were examined through hypothesis testing, specifically focusing on the role of employees, and the results are presented in Figure below. The study fixed the following alternate hypotheses.

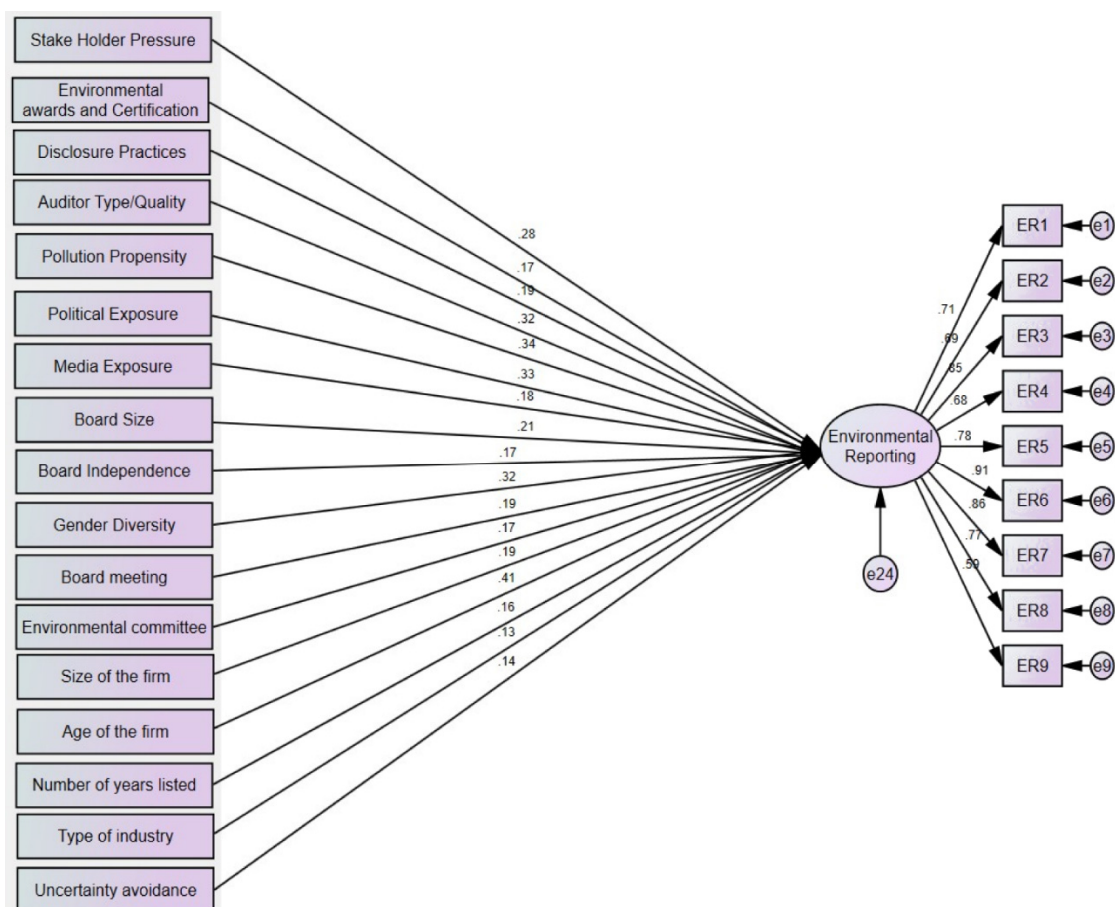
Hypothesis: -

- 1) Stakeholder Pressure has significant effect on Environmental Reporting.
- 2) Environmental awards and Certification have significant effect on Environmental Reporting.
- 3) Disclosure Practices have significant effect on Environmental Reporting.
- 4) Auditor Type/Quality has significant effect on Environmental Reporting.
- 5) Pollution Propensity has significant effect on Environmental Reporting.
- 6) Political Exposure has significant effect on Environmental Reporting.
- 7) Media Exposure has significant effect on Environmental Reporting.

- 8) Board Size has significant effect on Environmental Reporting.
- 9) Board Independence has significant effect on Environmental Reporting.
- 10) Gender Diversity has significant effect on Environmental Reporting.
- 11) Board meeting has significant effect on Environmental Reporting.
- 12) Environmental committee has significant effect on Environmental Reporting.
- 13) Size of the firm has significant effect on Environmental Reporting.
- 14) Age of the firm has significant effect on Environmental Reporting.
- 15) Number of years listed has significant effect on Environmental Reporting.
- 16) Type of industry has significant effect on Environmental Reporting.
- 17) Uncertainty avoidance has significant effect on Environmental Reporting.

Figure 6.8

Antecedents of Environmental Reporting (Employees)



The model fit indices for the antecedents of environmental reporting, specifically focusing on the role of employees, are presented in table below.

Table 6.26

Model Fit Indices- Antecedents of Environmental Reporting (Employees)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.92	.95	.92	.94	.042
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.92, 0.95, 0.92, and 0.94, respectively, exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value of 0.042 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

Table 6.27

Testing of Hypothesis- Antecedents of Environmental Reporting (Employees)

Sl.no	Alternate Hypothesis	Beta Value	Sig.	Decision
1	Stakeholder Pressure has significant effect on Environmental Reporting.	.28	<.05	Accepted
2	Environmental awards and Certification have significant effect on Environmental Reporting.	.17	<.05	Accepted
3	Disclosure Practices have significant effect on Environmental Reporting.	.19	<.05	Accepted
4	Auditor Type/Quality has significant effect on Environmental Reporting.	.32	<.05	Accepted
5	Pollution Propensity has significant effect on Environmental Reporting.	.34	<.05	Accepted
6	Political Exposure has significant effect on Environmental Reporting.	.33	<.05	Accepted
7	Media Exposure has significant effect on Environmental Reporting.	.18	<.05	Accepted
8	Board Size has significant effect on Environmental Reporting.	.21	<.05	Accepted

Sl.no	Alternate Hypothesis	Beta Value	Sig.	Decision
9	Board Independence has significant effect on Environmental Reporting.	.17	<.05	Accepted
10	Gender Diversity has significant effect on Environmental Reporting.	.32	<.05	Accepted
11	Board meeting has significant effect on Environmental Reporting.	.19	<.05	Accepted
12	Environmental committee has significant effect on Environmental Reporting.	.17	<.05	Accepted
13	Size of the firm has significant effect on Environmental Reporting.	.19	<.05	Accepted
14	Age of the firm has significant effect on Environmental Reporting.	.41	<.05	Accepted
15	Number of years listed has significant effect on Environmental Reporting.	.16	<.05	Accepted
16	Type of industry has significant effect on Environmental Reporting.	.13	<.05	Accepted
17	Uncertainty avoidance has significant effect on Environmental Reporting.	.14	<.05	Accepted

Source: Primary Data

The findings indicated that all the alternate hypotheses were accepted, suggesting that the variables examined had a significant impact on environmental reporting. Specifically, stakeholder pressure ($\beta = 0.28$), environmental awards and certification ($\beta = 0.17$), disclosure practices ($\beta = 0.19$), auditor Type/Quality ($\beta = 0.32$), pollution propensity ($\beta = 0.34$), political exposure ($\beta = 0.33$), media exposure ($\beta = 0.18$), board size ($\beta = 0.21$), board independence ($\beta = 0.17$), gender diversity ($\beta = 0.32$), board meeting ($\beta = 0.19$), environmental committee ($\beta = 0.17$), size of the firm ($\beta = 0.19$), age of the firm ($\beta = 0.41$), number of years listed ($\beta = 0.16$), type of industry ($\beta = 0.13$) and uncertainty avoidance ($\beta = 0.14$) all had positive and significant relationships with environmental reporting. These findings suggested that these factors play an important role in shaping environmental reporting practices among employees.

The results indicated that all seventeen alternate hypotheses were accepted, suggesting that stakeholder pressure, environmental awards and certification, disclosure practices, auditor type/quality, pollution propensity, political exposure, media exposure, board size, board independence, gender diversity, board meeting, environmental committee, size of the firm, age of the firm, number of years listed,

type of industry, and uncertainty avoidance significantly impacted environmental reporting. The beta coefficients revealed that age of the firm had the most substantial impact on environmental reporting ($\beta = 0.41$), followed by pollution propensity ($\beta = 0.34$), political exposure ($\beta = 0.33$), auditor type/quality and gender diversity ($\beta = 0.32$), and stakeholder pressure ($\beta = 0.28$).

The results implied that employees and corporate governance structures can influence environmental reporting practices. The findings highlighted the importance of board characteristics, such as independence and diversity, as well as firm-specific factors, such as size and industry type, in promoting environmental reporting. The results also suggested that media exposure and uncertainty avoidance can drive environmental reporting. Overall, the study provided insights into the factors that influence environmental reporting and has implications for employees, policymakers, and stakeholders seeking to promote environmental sustainability.

6.4.1.4 Antecedents of Environmental Reporting (Employees) with Moderating Variables

The antecedents of environmental reporting, with moderating variables, were examined through hypothesis testing, specifically focusing on the role of employees, and the results are presented in figure below. The study fixed the following alternate hypotheses.

Hypotheses: -

- H1:** Benefits, financial performance, and challenges significantly moderate the relationship between stakeholder pressure and Environmental Reporting among employees.
- H2:** Benefits, financial performance, and challenges significantly moderate the relationship between environmental awards and certification and Environmental Reporting among employees.
- H3:** Benefits, financial performance, and challenges significantly moderate the relationship between disclosure practices and Environmental Reporting among employees.

- H4:** Benefits, financial performance, and challenges significantly moderate the relationship between auditor type/ quality and Environmental Reporting among employees.
- H5:** Benefits, financial performance, and challenges significantly moderate the relationship between pollution propensity and Environmental Reporting among employees.
- H6:** Benefits, financial performance, and challenges significantly moderate the relationship between political exposure and Environmental Reporting among employees.
- H7:** Benefits, financial performance, and challenges significantly moderate the relationship between media exposure and Environmental Reporting among employees.
- H8:** Benefits, financial performance, and challenges significantly moderate the relationship between board size and Environmental Reporting among employees.
- H9:** Benefits, financial performance, and challenges significantly moderate the relationship between board independence and Environmental Reporting among employees.
- H10:** Benefits, financial performance, and challenges significantly moderate the relationship between gender diversity and Environmental Reporting among employees.
- H11:** Benefits, financial performance, and challenges significantly moderate the relationship between board meeting and Environmental Reporting among employees.
- H12:** Benefits, financial performance, and challenges significantly moderate the relationship between environmental committee and Environmental Reporting among employees.
- H13:** Benefits, financial performance, and challenges significantly moderate the relationship between size of the firm and Environmental Reporting among employees.

H14: Benefits, financial performance, and challenges significantly moderate the relationship between age of the firm and Environmental Reporting among employees.

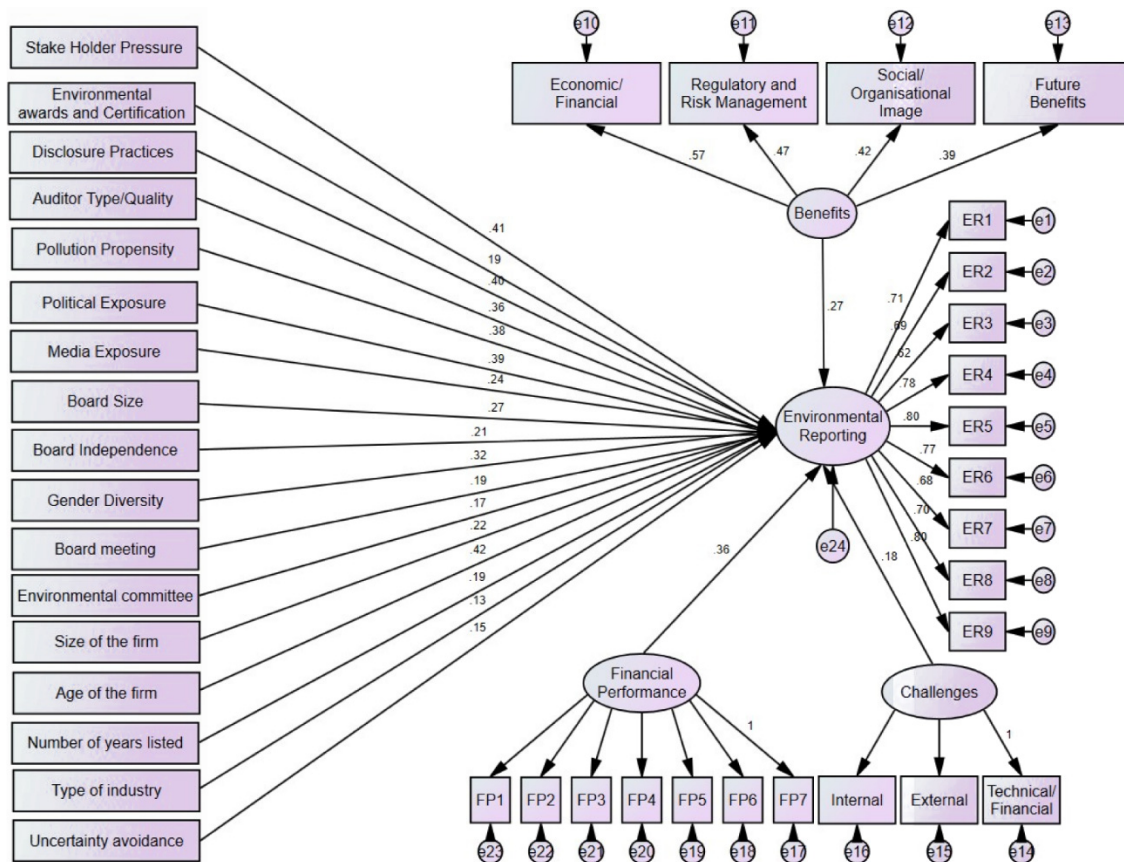
H15: Benefits, financial performance, and challenges significantly moderate the relationship between number of years listed and Environmental Reporting among employees.

H16: Benefits, financial performance, and challenges significantly moderate the relationship between type of industry and Environmental Reporting among employees.

H17: Benefits, financial performance, and challenges significantly moderate the relationship between uncertainty avoidance and Environmental Reporting among employees.

Figure 6.9

Antecedents of Environmental Reporting with Moderating Variables (Employees)



The model fit indices for the antecedents of environmental reporting, with moderating variables, specifically focusing on the role of employees, are presented in table below.

Table 6.28

Model Fit Indices- Antecedents of Environmental Reporting with Benefits, Financial Performance and Challenges as Moderating Variables (Employees)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.91	.92	.91	.92	.039
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.91, 0.92, 0.91, and 0.92, respectively, exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value of 0.039 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

The table presented below presents the results of the hypothesis testing for the moderating effect of benefits, financial performance, and challenges on the relationship between various antecedents and environmental reporting among employees. The table shows the beta value, significance level, total effect, direct effect, and indirect effect for each moderating variable. The results indicated that the moderating effect of benefits, financial performance, and challenges was significant for all the relationships, with significance levels of less than 0.05.

Table 6.29

Testing of Hypothesis- Antecedents of Environmental Reporting with Benefits, Financial Performance and Challenges as Moderating Variables (Employees)

Sl. no	Null Hypothesis	Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
1	Benefits, financial performance, and challenges significantly moderate the relationship between stakeholder pressure and Environmental Reporting among employees.	.41	.28	.13	<.05
2	Benefits, financial performance, and challenges significantly moderate the relationship between environmental awards and certification and Environmental Reporting among employees.	.19	.17	.02	<.05
3	Benefits, financial performance, and challenges significantly moderate the relationship between disclosure practices and Environmental Reporting among employees.	.40	.19	.21	<.05
4	Benefits, financial performance, and challenges significantly moderate the relationship between auditor type/ quality and Environmental Reporting among employees.	.36	.32	.04	<.05
5	Benefits, financial performance, and challenges significantly moderate the relationship between pollution propensity and Environmental Reporting among employees.	.38	.34	.04	<.05
6	Benefits, financial performance, and challenges significantly moderate the relationship between political exposure and Environmental Reporting among employees.	.39	.33	.06	<.05
7	Benefits, financial performance, and challenges significantly moderate the relationship between media exposure and Environmental Reporting among employees.	.24	.18	.06	<.05
8	Benefits, financial performance, and challenges significantly moderate the relationship between board size and Environmental Reporting among employees.	.27	.21	.06	<.05
9	Benefits, financial performance, and challenges significantly moderate the relationship between board independence and Environmental Reporting among employees.	.21	.17	.04	<.05
10	Benefits, financial performance, and challenges significantly moderate the relationship between gender diversity and Environmental Reporting among employees.	.32	.32	.00	<.05

		Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
11	Benefits, financial performance, and challenges significantly moderate the relationship between board meeting and Environmental Reporting among employees.	.19	.19	.00	<.05
12	Benefits, financial performance, and challenges significantly moderate the relationship between environmental committee and Environmental Reporting among employees.	.17	.17	.00	<.05
13	Benefits, financial performance, and challenges significantly moderate the relationship between size of the firm and Environmental Reporting among employees.	.22	.19	.03	<.05
14	Benefits, financial performance, and challenges significantly moderate the relationship between age of the firm and Environmental Reporting among employees.	.42	.41	.01	<.05
15	Benefits, financial performance, and challenges significantly moderate the relationship between number of years listed and Environmental Reporting among employees.	.19	.16	.03	<.05
16	Benefits, financial performance, and challenges significantly moderate the relationship between type of industry and Environmental Reporting among employees.	.13	.13	.00	<.05
17	Benefits, financial performance, and challenges significantly moderate the relationship between uncertainty avoidance and Environmental Reporting among employees.	.15	.14	.01	<.05

Source: Primary Data

The findings suggested that benefits, financial performance, and challenges played a significant moderating role in the relationship between various antecedents, such as media exposure, board size, board independence, and environmental reporting among employees. The results implied that the presence of benefits, financial performance, and challenges influenced the relationship between these antecedents and environmental reporting. The beta values and indirect effects suggested that the moderating effect was significant, but the strength of the moderating effect varied across different relationships. The findings highlighted the

importance of considering the moderating effect of benefits, financial performance, and challenges when evaluating the relationship between antecedents and environmental reporting.

The results indicated that all seventeen alternate hypotheses were accepted, suggesting that benefits, financial performance, and challenges significantly moderated the relationships between various antecedents and environmental reporting among employees. The findings revealed that the moderating effects of benefits, financial performance, and challenges were significant, with varying degrees of indirect effects on the relationships between antecedents and environmental reporting. For instance, the indirect effect of benefits, financial performance, and challenges on the relationship between stakeholder pressure and environmental reporting was 0.13.

The results implied that if employees in the company prioritize environmental sustainability and consider the benefits, financial performance, and challenges associated with environmental reporting, they are more likely to engage in environmental reporting practices. The findings also suggested that the moderating effect of benefits, financial performance, and challenges was significant, but the strength of the moderating effect varied across different relationships.

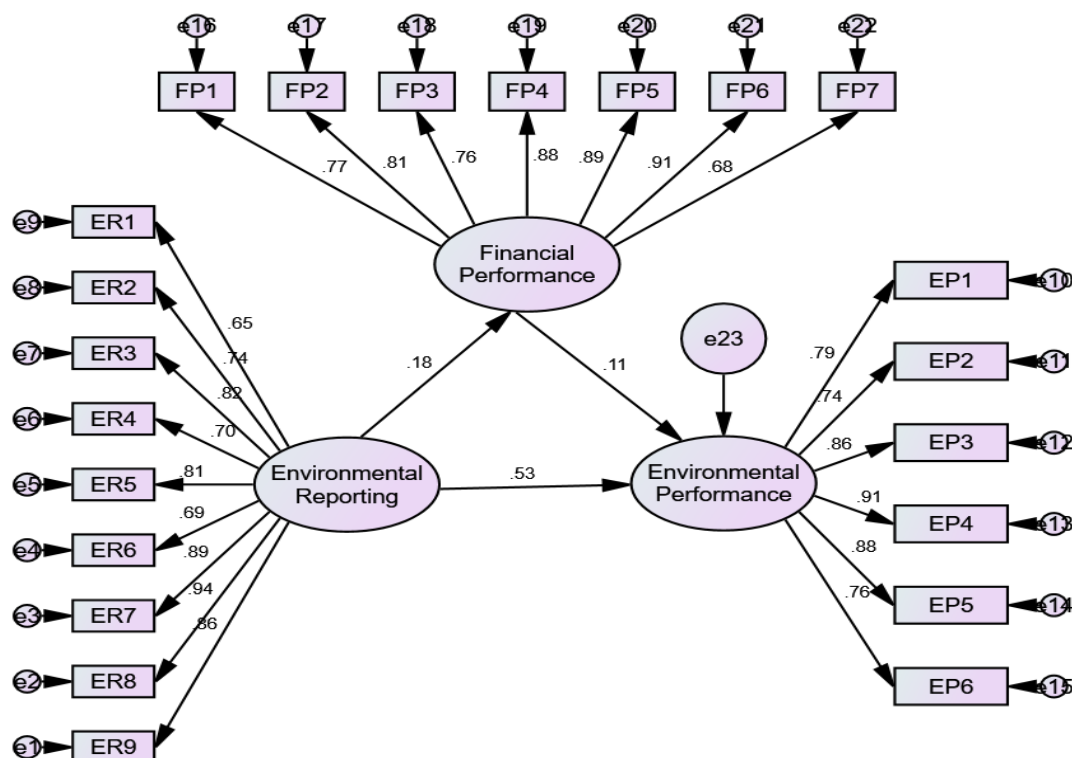
6.4.3 External Auditors

6.4.2.1 Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variables (External Auditors)

The moderating effect of financial performance on the relationship between environmental reporting and environmental performance was examined through hypothesis testing, specifically focusing on the perspective of external auditors, and the results are presented in figure below.

Figure 6.10

Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variables (External Auditors)



The model fit indices for the relationship between environmental reporting and environmental performance, with financial performance as a moderating variable, specifically focusing on the perspective of external auditors, are presented in table below.

Table 6.30

Model Fit Indices- Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (External Auditors)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.95	.93	.92	.94	.042
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.95, 0.93, 0.92, and 0.94, respectively, exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value

of 0.042 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

The table presented below presents the results of the hypothesis testing for the moderating effect of financial performance on the relationship between environmental reporting and environmental performance among external auditors. The table shows the beta value, significance level, total effect, direct effect, and indirect effect for the moderating variable. The results indicated that the moderating effect of financial performance on the relationship between environmental reporting and environmental performance was significant, with a beta value of 0.53 and a significance level of less than 0.05.

Table 6.31

Testing of hypothesis- Environmental Reporting and Environmental Performance with Financial Performance as Moderating Variable (External Auditors)

Sl. no	Alternate Hypothesis	Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
1	There is significant moderating effect of financial performance on the relationship between environmental reporting and environmental performance among external auditors.	.53	.32	.21	<.05

Source: Primary Data

The findings suggested that financial performance played a significant moderating role in the relationship between environmental reporting and environmental performance among external auditors. The total effect of environmental reporting on environmental performance was significant, and the indirect effect through financial performance was also significant. This implied that financial performance was an important factor that influenced the relationship between environmental reporting and environmental performance. The results highlighted the importance of considering the financial performance of organizations when evaluating the impact of environmental reporting on environmental performance from the perspective of external auditors.

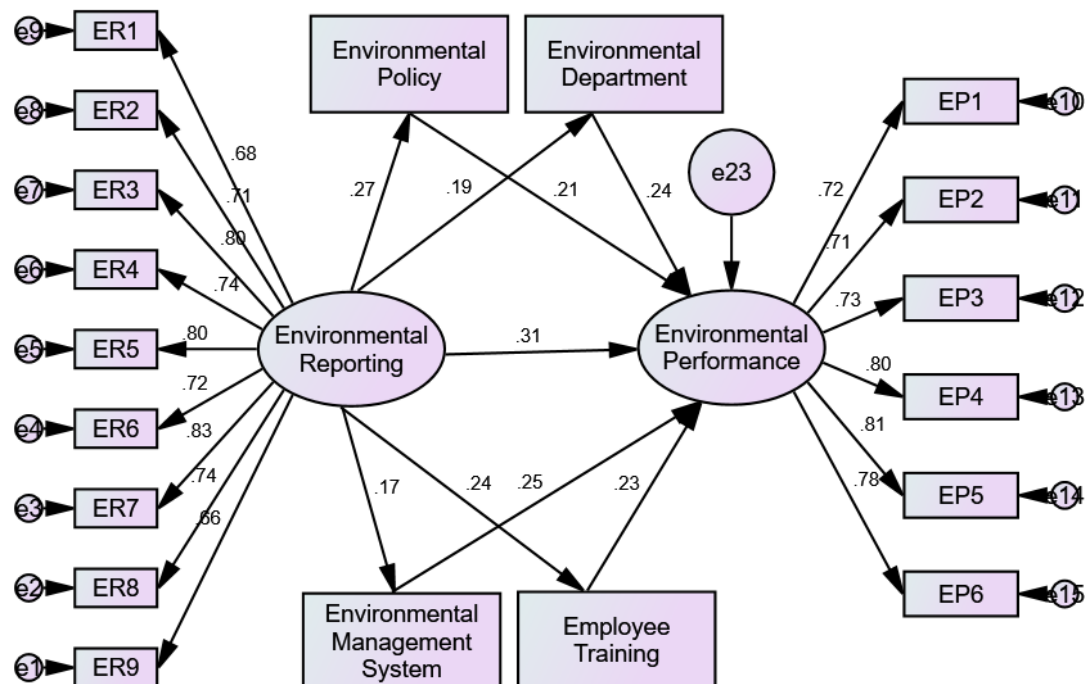
The results implied that external auditors perceived financial performance as a crucial factor in determining the effectiveness of environmental reporting in improving environmental performance. The findings also suggested that external auditors may consider the financial implications of environmental reporting when evaluating its impact on environmental performance.

6.4.2.2 Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (External Auditors)

The mediating effects of environmental policy, environmental department, environmental management system, and employee training on the relationship between environmental reporting and environmental performance were examined through hypothesis testing, specifically focusing on the role of external auditors, and the results are presented in figure below.

Figure 6.11

Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (External Auditors)



The model fit indices for the relationship between environmental reporting and environmental performance, with environmental policy, environmental department, environmental management system, and employee training as mediating variables, specifically focusing on the perspective of external auditors, are presented in table below.

Table 6.32

Model Fit Indices- Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (External Auditors)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.92	.93	.94	.93	.046
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.92, 0.93, 0.94, and 0.93, respectively, exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value of 0.046 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

The table presented below presents the results of the hypothesis testing for the mediation effect of environmental policy, environmental department, environmental management system, and employee training on the relationship between environmental reporting and environmental performance among external auditors. The table shows the beta value, significance level, total effect, direct effect, and indirect effect for the mediation variables. The results indicated that the mediation effect of environmental policy, environmental department, environmental management system, and employee training on the relationship between environmental reporting and environmental performance was significant, with a significance level of less than 0.05.

Table 6.33

Testing of hypothesis- Environmental Reporting and Environmental Performance with Environmental Policy, Environmental Department, Environmental Management System and Employee Training as Mediating Variables (External Auditors)

Sl.no	Alternate Hypothesis	Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
1	Environmental policy, environmental department, environmental management system, and employee training significantly mediate the relationship between environmental reporting and environmental performance among external auditors.	.31	.32	-.01	<.05

Source: Primary Data

The findings suggested that the presence of environmental policy, environmental department, environmental management system, and employee training had a significant mediation effect on the relationship between environmental reporting and environmental performance among external auditors. However, the beta value of 0.31 and the indirect effect of -0.01 suggested that the mediation effect was not as strong as expected. The results implied that these organizational factors played a role in shaping the relationship between environmental reporting and environmental performance, but the relationship was complex and influenced by multiple factors. The findings highlighted the importance of considering the organizational context in which environmental reporting and performance take place.

The results implied that external auditors that prioritize environmental sustainability and implement effective environmental management practices may experience improved environmental performance through environmental reporting. However, the negative indirect effect suggested that there may be some complexities in the relationship between the mediating variables and environmental performance.

6.4.2.3 Antecedents of Environmental Reporting (External Auditors)

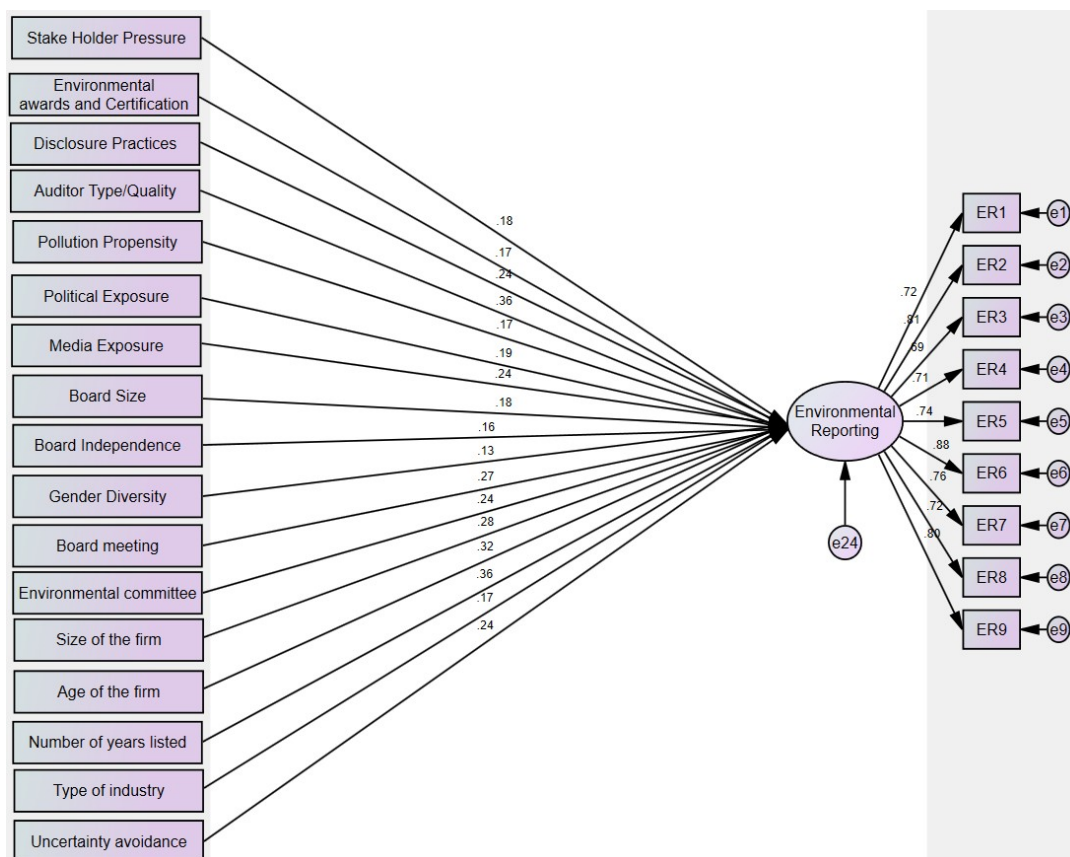
The antecedents of environmental reporting were examined through hypothesis testing, specifically focusing on the perspective of external auditors, and the results are presented in figure below. The study fixed the following alternate hypotheses.

Hypotheses: -

- H1:** Stakeholder Pressure has significant effect on Environmental Reporting.
- H2:** Environmental awards and Certification have significant effect on Environmental Reporting.
- H3:** Disclosure Practices have significant effect on Environmental Reporting.
- H4:** Auditor Type/Quality has significant effect on Environmental Reporting.
- H5:** Pollution Propensity has significant effect on Environmental Reporting.
- H6:** Political Exposure has significant effect on Environmental Reporting.
- H7:** Media Exposure has significant effect on Environmental Reporting.
- H8:** Board Size has significant effect on Environmental Reporting.
- H9:** Board Independence has significant effect on Environmental Reporting.
- H10:** Gender Diversity has significant effect on Environmental Reporting.
- H11:** Board meeting has significant effect on Environmental Reporting.
- H12:** Environmental committee has significant effect on Environmental Reporting.
- H13:** Size of the firm has significant effect on Environmental Reporting.
- H14:** Age of the firm has significant effect on Environmental Reporting.
- H15:** Number of years listed has significant effect on Environmental Reporting.
- H16:** Type of industry has significant effect on Environmental Reporting.
- H17:** Uncertainty avoidance has significant effect on Environmental Reporting.

Figure 6.12

Antecedents of Environmental Reporting (External Auditors)



The model fit indices for the antecedents of environmental reporting, with moderating variables, specifically focusing on the perspective of external auditors, are presented in table below.

Table 6.34

Model Fit Indices- Antecedents of Environmental Reporting (External Auditors)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.95	.92	.93	.94	.041
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.95, 0.92, 0.93, and 0.94, respectively, exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the

RMSEA value of 0.041 was below the recommended threshold of 0.05, indicating a close fit. The results suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference in table below.

Table 6.35

Testing of Hypothesis- Antecedents of Environmental Reporting (External Auditors)

Sl.no	Alternate Hypothesis	Beta Value	Sig.	Decision
1	Stakeholder Pressure has significant effect on Environmental Reporting.	.18	<.05	Accepted
2	Environmental awards and Certification have significant effect on Environmental Reporting.	.17	<.05	Accepted
3	Disclosure Practices have significant effect on Environmental Reporting.	.24	<.05	Accepted
4	Auditor Type/Quality has significant effect on Environmental Reporting.	.36	<.05	Accepted
5	Pollution Propensity has significant effect on Environmental Reporting.	.17	<.05	Accepted
6	Political Exposure has significant effect on Environmental Reporting.	.19	<.05	Accepted
7	Media Exposure has significant effect on Environmental Reporting.	.24	<.05	Accepted
8	Board Size has significant effect on Environmental Reporting.	.18	<.05	Accepted
9	Board Independence has significant effect on Environmental Reporting.	.16	<.05	Accepted
10	Gender Diversity has significant effect on Environmental Reporting.	.13	<.05	Accepted
11	Board meeting has significant effect on Environmental Reporting.	.27	<.05	Accepted
12	Environmental committee has significant effect on Environmental Reporting.	.24	<.05	Accepted
13	Size of the firm has significant effect on Environmental Reporting.	.28	<.05	Accepted
14	Age of the firm has significant effect on Environmental Reporting.	.32	<.05	Accepted
15	Number of years listed has significant effect on Environmental Reporting.	.36	<.05	Accepted
16	Type of industry has significant effect on Environmental Reporting.	.17	<.05	Accepted
17	Uncertainty avoidance has significant effect on Environmental Reporting.	.24	<.05	Accepted

Source: Primary Data

The findings indicated that all the alternate hypotheses were accepted, suggesting that the variables examined had a significant impact on environmental reporting. Specifically, stakeholder pressure ($\beta = 0.18$), environmental awards and certification ($\beta = 0.17$), disclosure practices ($\beta = 0.24$), auditor type/quality ($\beta = 0.36$), pollution propensity ($\beta = 0.17$), political exposure ($\beta = 0.19$), media exposure ($\beta = 0.24$), board size ($\beta = 0.18$), board independence ($\beta = 0.16$), gender diversity ($\beta = 0.13$), board meeting ($\beta = 0.27$), environmental committee ($\beta = 0.24$), size of the firm ($\beta = 0.28$), age of the firm ($\beta = 0.32$), number of years listed ($\beta = 0.36$), type of industry ($\beta = 0.17$) and uncertainty avoidance ($\beta = 0.24$) all had positive and significant relationships with environmental reporting. These findings suggested that these factors play an important role in shaping environmental reporting practices from the perspective of external auditors.

The results indicated that all seventeen alternate hypotheses were accepted, suggesting that stakeholder pressure, environmental awards and certification, disclosure practices, auditor type/quality, pollution propensity, political exposure, media exposure, board size, board independence, gender diversity, board meeting, environmental committee, size of the firm, age of the firm, number of years listed, type of industry, and uncertainty avoidance significantly impacted environmental reporting. The beta coefficients revealed that Auditor Type/Quality and number of years listed had the most substantial impact on environmental reporting ($\beta = 0.36$), followed by age of the firm ($\beta = 0.32$), size of the firm ($\beta = 0.28$), and board meeting ($\beta = 0.27$).

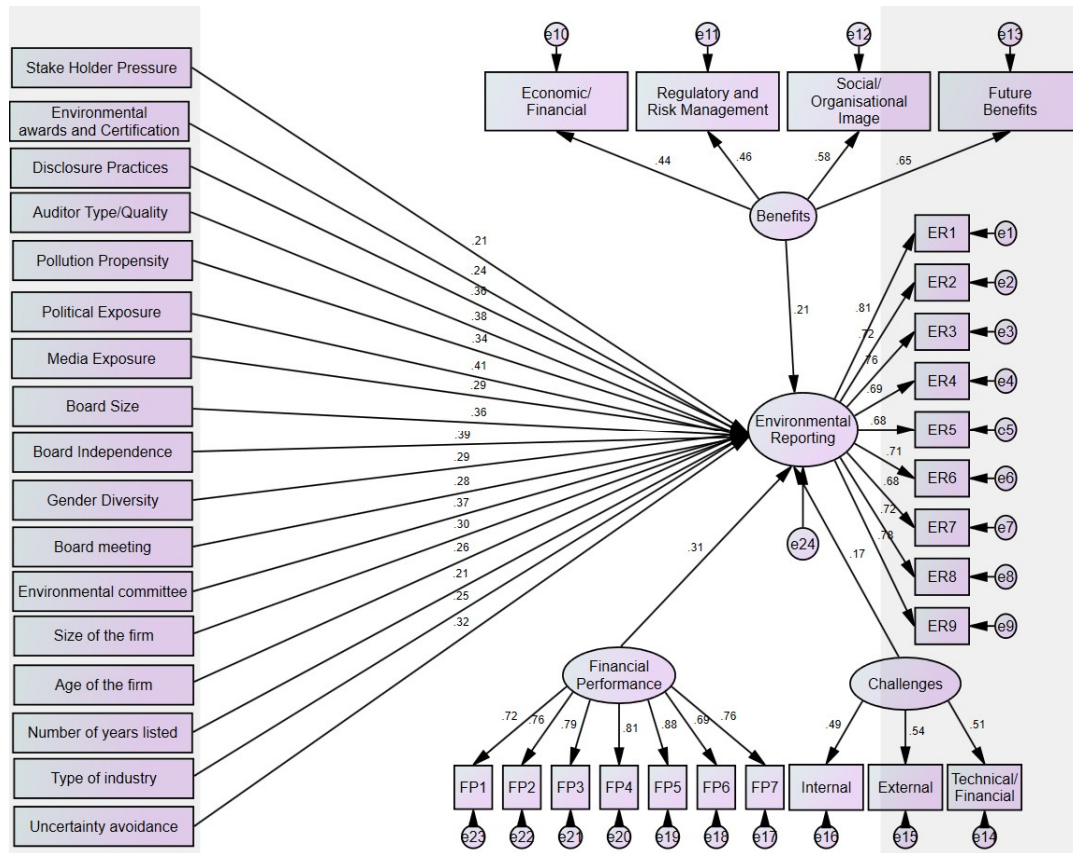
6.4.2.4 Antecedents of Environmental Reporting (External Auditors) with Moderating Variables

The antecedents of environmental reporting, with moderating variables, were examined through hypothesis testing, specifically focusing on the perspective of external auditors, and the results are presented in table below. The study fixed the following alternate hypotheses explanation given below.

Hypotheses: -

- H1:** Benefits, financial performance, and challenges significantly moderate the relationship between stakeholder pressure and Environmental Reporting among external auditors.
- H2:** Benefits, financial performance, and challenges significantly moderate the relationship between environmental awards and certification and Environmental Reporting among external auditors.
- H3:** Benefits, financial performance, and challenges significantly moderate the relationship between disclosure practices and Environmental Reporting among external auditors.
- H4:** Benefits, financial performance, and challenges significantly moderate the relationship between auditor type/ quality and Environmental Reporting among external auditors.
- H5:** Benefits, financial performance, and challenges significantly moderate the relationship between pollution propensity and Environmental Reporting among external auditors.
- H6:** Benefits, financial performance, and challenges significantly moderate the relationship between political exposure and Environmental Reporting among external auditors.
- H7:** Benefits, financial performance, and challenges significantly moderate the relationship between media exposure and Environmental Reporting among external auditors.
- H8:** Benefits, financial performance, and challenges significantly moderate the relationship between board size and Environmental Reporting among external auditors.
- H9:** Benefits, financial performance, and challenges significantly moderate the relationship between board independence and Environmental Reporting among external auditors.

- H10:** Benefits, financial performance, and challenges significantly moderate the relationship between gender diversity and Environmental Reporting among external auditors.
- H11:** Benefits, financial performance, and challenges significantly moderate the relationship between board meeting and Environmental Reporting among external auditors.
- H12:** Benefits, financial performance, and challenges significantly moderate the relationship between environmental committee and Environmental Reporting among external auditors.
- H13:** Benefits, financial performance, and challenges significantly moderate the relationship between size of the firm and Environmental Reporting among external auditors.
- H14:** Benefits, financial performance, and challenges significantly moderate the relationship between age of the firm and Environmental Reporting among external auditors.
- H15:** Benefits, financial performance, and challenges significantly moderate the relationship between number of years listed and Environmental Reporting among external auditors.
- H16:** Benefits, financial performance, and challenges significantly moderate the relationship between type of industry and Environmental Reporting among external auditors.
- H17:** Benefits, financial performance, and challenges significantly moderate the relationship between uncertainty avoidance and Environmental Reporting among external auditors.

Figure 6.13*Antecedents of Environmental Reporting with Moderating Variables (External Auditors)*

The model fit indices for the antecedents of environmental reporting, with moderating variables, specifically focusing on the perspective of external auditors, are presented in table below.

Table 6.36*Model Fit Indices- Antecedents of Environmental Reporting (External Auditors)*

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.92	.94	.92	.94	.048
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data, as evidenced by the obtained values of the various fit indices. Specifically, the CFI, GFI, TLI, and NFI values of 0.92, 0.94, 0.92, and 0.94, respectively,

exceeded the recommended threshold of 0.9, suggesting a good fit. Furthermore, the RMSEA value of 0.048 was below the recommended threshold of 0.05, indicating a close fit. These findings suggested that the measurement model was able to accurately capture the underlying patterns in the data, providing a reliable basis for inference.

The table presented below presents the results of the hypothesis testing for the moderating effect of benefits, financial performance, and challenges on the relationship between various antecedents and environmental reporting among external auditors. The table shows the beta value, significance level, total effect, direct effect, and indirect effect for each moderating variable. The results indicated that the moderating effect of benefits, financial performance, and challenges was significant for all the relationships, with significance levels of less than 0.05.

Table 6.37

Testing of Hypothesis- Antecedents of Environmental Reporting with Benefits, Financial Performance and Challenges as Moderating Variables (External Auditors)

Sl. no	Alternate Hypothesis	Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
1	Benefits, financial performance, and challenges significantly moderate the relationship between stakeholder pressure and Environmental Reporting among external auditors.	.21	.18	.03	<.05
2	Benefits, financial performance, and challenges significantly moderate the relationship between environmental awards and certification and Environmental Reporting among external auditors.	.24	.17	.07	<.05
3	Benefits, financial performance, and challenges significantly moderate the relationship between disclosure practices and Environmental Reporting among external auditors.	.36	.19	.17	<.05
4	Benefits, financial performance, and challenges significantly moderate the relationship between auditor type/ quality and Environmental Reporting among external auditors.	.38	.32	.06	<.05

		Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
5	Benefits, financial performance, and challenges significantly moderate the relationship between pollution propensity and Environmental Reporting among external auditors.	.34	.34	.00	<.05
6	Benefits, financial performance, and challenges significantly moderate the relationship between political exposure and Environmental Reporting among external auditors.	.41	.33	.08	<.05
7	Benefits, financial performance, and challenges significantly moderate the relationship between media exposure and Environmental Reporting among external auditors.	.29	.18	.11	<.05
8	Benefits, financial performance, and challenges significantly moderate the relationship between board size and Environmental Reporting among external auditors.	.36	.21	.15	<.05
9	Benefits, financial performance, and challenges significantly moderate the relationship between board independence and Environmental Reporting among external auditors.	.39	.17	.22	<.05
10	Benefits, financial performance, and challenges significantly moderate the relationship between gender diversity and Environmental Reporting among external auditors.	.29	.32	-.03	<.05
11	Benefits, financial performance, and challenges significantly moderate the relationship between board meeting and Environmental Reporting among external auditors.	.28	.19	.09	<.05
12	Benefits, financial performance, and challenges significantly moderate the relationship between environmental committee and Environmental Reporting among external auditors.	.37	.17	.20	<.05
13	Benefits, financial performance, and challenges significantly moderate the relationship between size of the firm and Environmental Reporting among external auditors.	.30	.19	.11	<.05

		Beta Value			Sig.
		Total Effect	Direct Effect	Indirect Effect	
14	Benefits, financial performance, and challenges significantly moderate the relationship between age of the firm and Environmental Reporting among external auditors.	.26	.41	.15	<.05
15	Benefits, financial performance, and challenges significantly moderate the relationship between number of years listed and Environmental Reporting among external auditors.	.21	.16	.05	<.05
16	Benefits, financial performance, and challenges significantly moderate the relationship between type of industry and Environmental Reporting among external auditors.	.25	.13	.12	<.05
17	Benefits, financial performance, and challenges significantly moderate the relationship between uncertainty avoidance and Environmental Reporting among external auditors.	.32	.14	.18	<.05

Source: Primary Data

The findings suggested that benefits, financial performance, and challenges played a significant moderating role in the relationship between various antecedents, such as media exposure, board size, board independence, and environmental reporting among external auditors. The results implied that external auditors' perceptions of benefits, financial performance, and challenges influenced their engagement in environmental reporting practices. The beta values and indirect effects suggested that the moderating effect was significant, and the strength of the moderating effect varied across different relationships. The findings highlighted the importance of considering the moderating effect of benefits, financial performance, and challenges when evaluating the relationship between antecedents and environmental reporting among external auditors.

The results implied that external auditors who prioritize environmental sustainability and consider the benefits, financial performance, and challenges associated with environmental reporting are more likely to engage in environmental

reporting practices. The findings also suggested that the moderating effect of benefits, financial performance, and challenges was significant, and the strength of the moderating effect varied across different relationships.

6.5 Summary

The results indicated that benefits, financial performance, and challenges significantly moderated the relationships between various antecedents and environmental reporting. The findings suggested that the relationships between antecedents and environmental reporting are complex and influenced by multiple factors. The moderating effects of benefits, financial performance, and challenges highlighted the importance of considering the potential benefits and challenges associated with environmental reporting. The results also showed that the direct effects of various antecedents on environmental reporting remained significant, even after accounting for the moderating effects of benefits, financial performance, and challenges. This suggests that antecedents such as stakeholder pressure, environmental awards and certification, and disclosure practices have a direct impact on environmental reporting. The findings highlighted the importance of considering various organizational and external factors when evaluating the drivers of environmental reporting. The significant impact of age of the firm suggested that older firms are more likely to engage in environmental reporting. The results also showed that a range of factors, including board characteristics, firm characteristics, and external pressures, all had significant impacts on environmental reporting, indicating that environmental reporting is influenced by a complex array of factors. Both the employees and external auditors perceive corporate governance and firm-specific factors as important drivers of environmental reporting.

Chapter 7

CONSTRAINTS AND BENEFITS ASSOCIATED WITH ENVIRONMENTAL REPORTING

7.1	Introduction	394
7.2	Analysis of Variables and Testing of Hypothesis.....	394
7.3	Constraints related to Environmental Reporting in Automobile Industry.....	396
7.4	Benefits related to Environmental Reporting in Automobile Industry.....	422
7.5	Summary.....	445

Chapter 7

CONSTRAINTS AND BENEFITS ASSOCIATED WITH ENVIRONMENTAL REPORTING

7.1 Introduction

This chapter deals with analysis of the final objective of the study to examine the constraints and benefits associated with Environmental Reporting in automobile industry. The chapter begins with a brief profile of the objective and it covers both the constraints and benefits of environmental reporting in automobile industry. The first part of the chapter explains the constraints of environmental reporting which is divided into two sections. The first section explains the assessment of environmental reporting challenges using the validated measurement scales and the second section deals with the detailed analysis of the various constraints associated with environmental reporting. The second part of the chapter explains the benefits of environmental reporting which is divided into two sections. The first section explains the assessment of environmental reporting benefits using the validated measurement scales and the second section deals with the detailed analysis of the various benefits associated with environmental reporting.

7.2 Analysis of Variables and Testing of Hypothesis

The objective of analysing the constraints and benefits of environmental reporting is meant to identify the key challenges and limitations that hinder the effectiveness, transparency and reliability of the manner in which organisations disclose their environmental impacts and the prospects enjoyed by the company by applying environmental disclosure. It helps to identify the key problems related to environmental reporting and thereby to find out solutions to overcome these problems with the main objective of improving reporting practices to support accountability, informed decision making and sustainable development. The objective also helps to identify the present and future benefits that can be availed by automobile manufacturing company as a result of disclosing environmental information.

The constraints are categorized under three heads -internal constraints, external constraints and technical and financial constraints. Internal constraints are barriers within the organization that restricts the accuracy and transparency of environmental reporting derived from internal policies of the company, attitude of management, resources and systems within the organization. External constraints are the barriers outside the organization in the form of environmental, regulatory, market and societal factors that limit the quality and frequency of environmental reporting. Technical constraints are limitations in knowledge, management of data and technological capabilities that hinder a company's ability to report environmental information. The monetary constraints that limit the ability of the company to invest in environmental disclosure are financial constraints.

The benefits are categorized under four heads -economic and financial benefits, regulation and risk management benefits, social and organizational image benefits and future benefits. The economic and financial benefits are positive and monetary improvements in performance enjoyed by a company by disclosing environmental information leading to higher profits, cost savings and improved market reputation. The advantages enjoyed by organization as a result of complying with environmental laws and identifying environmental risks are regulation and risk management benefits. The positive social recognition, and enhanced reputation enjoyed by the company as a result of environmental disclosure included under social and organizational image benefits and the prospects enjoyed by the firms in future as a result of adoption of environmental reporting comes under future benefits category.

Descriptive statistics, independent sample t-test, and Structural Equation Modeling (SEM) were applied to investigate the relationships and significance of these variables in the context of environmental reporting in the automobile industry. The findings presented in this section contributed to a comprehensive understanding of the challenges faced and prospects enjoyed by automobile manufacturing companies by adopting environmental reporting, providing valuable insights for policymakers, practitioners, and stakeholders. The results informed strategies to

mitigate these challenges and improve the benefits, thereby enhancing transparency and accountability in environmental reporting practices.

PART I

7.3 Constraints related to Environmental Reporting in Automobile Industry

SECTION A

7.3.1 Measurement Scale Validation

The measurement scale validation process involved Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), assessment of Convergent Validity and Discriminant Validity, evaluation of Reliability using Cronbach's Alpha, and examination of Normality using One-Sample K-S Test and Skewness and Kurtosis. By subjecting the measurement scales to these rigorous validation procedures, the study ensured that the empirical results accurately reflected the underlying constructs, thereby contributing to a robust understanding of the problems of environmental reporting in the automobile industry.

7.3.1.1 Exploratory Factor Analysis

Table provided below presents the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity, conducted to assess the suitability of the data for factor analysis in examining the problems of environmental reporting.

Table 7.1

KMO and Bartlett's Test- Problems of Environmental Reporting

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.983
	Approx. Chi-Square	39200.730
Bartlett's Test of Sphericity	df	91
	Sig.	.000

Source: Primary Data

The results revealed a high KMO measure of 0.983, indicating excellent sampling adequacy. Bartlett's test of sphericity yielded a significant result ($\chi^2 = 39200.730$, $df = 91$, $p < 0.001$), rejecting the null hypothesis of no correlations among variables. These findings confirmed the data's suitability for factor analysis. These results justified proceeding with factor analysis to identify underlying factors contributing to environmental reporting problems. The satisfactory KMO measure and significant Bartlett's test demonstrated that the data was adequate and suitable for exploratory factor analysis, providing a robust foundation for subsequent analyses.

Table 7.2*Communalities- Problems of Environmental Reporting*

	Initial	Extraction
Organisations lack the expertise to produce and disclose such information	1.000	.992
Management feels that such information is not important for stakeholders	1.000	.989
Lack of consciousness about Environmental Disclosure	1.000	.983
Difficult to measure environmental costs and benefits	1.000	.980
Cost of obtaining external advice/assurance and setting up environmental management systems high	1.000	.991
No legal requirement/obligation to report	1.000	.995
Lack of clear-cut government policy	1.000	.984
Lack of coordination with different stakeholders	1.000	.995
Improper enforcement of planning and environmental legislation and inactive enterprise participation	1.000	.986
Cost of disclosure (producing, printing & distributing) the report is high	1.000	.984
Capital investment in pollution control equipment is high	1.000	.980
There is no standard method of estimating social value of environmental goods and services and industry data is not available	1.000	.990
Cannot compare two firms when methods used by both firms different	1.000	.992
Avoid providing sensitive and confidential information to competitors	1.000	.972
Extraction Method: Principal Component Analysis.		

Source: Primary Data

The results revealed high communalities for all variables, ranging from 0.972 to 0.995. These high values indicated that the extracted factors adequately captured the underlying structure of the problems of environmental reporting. The communalities suggested that the variables were strongly related to the extracted factors, providing a strong foundation for subsequent analyses.

Table 7.3

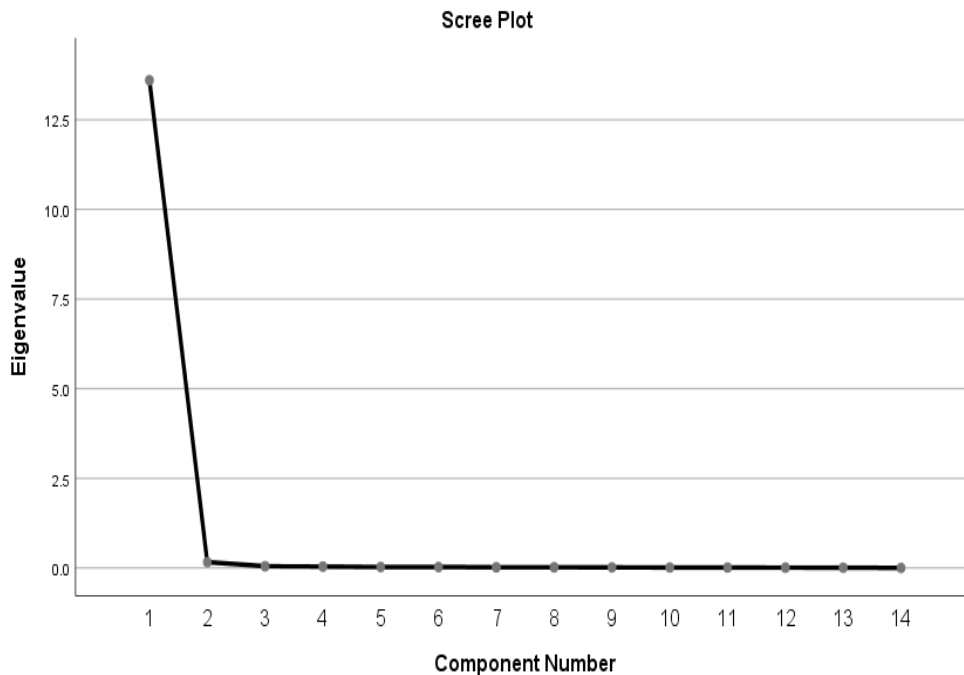
Total Variance Explained- Problems of Environmental Reporting

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	13.600	97.146	97.146	13.600	97.146	97.146	7.047	50.339	50.339
2	.164	1.172	98.317	.164	1.172	98.317	6.409	45.782	96.121
3	.049	.348	98.666	.049	.348	98.666	.356	2.545	98.666
4	.038	.274	98.940						
5	.027	.195	99.135						
6	.027	.191	99.326						
7	.020	.140	99.466						
8	.019	.132	99.598						
9	.015	.110	99.708						
10	.012	.085	99.793						
11	.011	.079	99.872						
12	.008	.060	99.932						
13	.007	.048	99.980						
14	.003	.020	100.000						

Extraction Method: Principal Component Analysis.

Source: Primary Data

The results revealed that the first component explained 97.146% of the total variance, while the second component explained an additional 1.172%. The remaining components explained negligible proportions of the variance. The high proportion of variance explained by the first component suggested that it captured the primary underlying factor contributing to the problems of environmental reporting.

Figure 7.1*Problems of Environmental Reporting*

These findings supported the use of PCA in identifying the underlying factors contributing to the problems of environmental reporting. The results demonstrated that a single dominant factor underpinned the data, which was further supported by the rotation sums of squared loadings.

Table 7.4*Component Matrix- Problems of Environmental Reporting*

	Component		
	1	2	3
No legal requirement/obligation to report	.995	-.066	-.008
Lack of coordination with different stakeholders	.995	-.067	-.008
There is no standard method of estimating social value of environmental goods and services and industry data is not available	.990	-.083	.053
Improper enforcement of planning and environmental legislation and inactive enterprise participation	.990	-.072	-.011
Lack of clear-cut government policy	.989	-.073	-.011
Management feels that such information is not important for stakeholders	.988	.117	.001
Cost of obtaining external advice/assurance and setting up environmental management systems high	.986	.137	.003

	Component		
	1	2	3
Cost of disclosure (producing, printing & distributing) the report is high	.986	-.094	-.052
Organisations lack the expertise to produce and disclose such information	.984	.151	.005
Avoid providing sensitive and confidential information to competitors	.982	-.084	-.026
Capital investment in pollution control equipment is high	.980	-.073	-.122
Lack of consciousness about Environmental Disclosure	.979	.159	.006
Difficult to measure environmental costs and benefits	.977	.157	.005
Cannot compare two firms when methods used by both firms different	.977	-.105	.165

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Source: Primary Data

The results revealed that Component 1 accounted for the majority of the variance, with high factor loadings for variables such as "No legal requirement/obligation to report" (.995), "Lack of coordination with different stakeholders" (.995), and "Improper enforcement of planning and environmental legislation and inactive enterprise participation" (.990). Component 2 and Component 3 explained relatively smaller proportions of the variance. The factor loadings suggested that the variables were strongly related to the extracted components.

Table 7.5

Rotated Component Matrix- Problems of Environmental Reporting

	Component		
	Internal Constraints	External Constraints	Technical and Financial Constraints
Cost of disclosure (producing, printing & distributing) the report is high	.778	.607	.102
Capital investment in pollution control equipment is high	.770	.622	.031
Avoid providing sensitive and confidential information to competitors	.764	.609	.127
Improper enforcement of planning and environmental legislation and inactive enterprise participation	.760	.623	.143
Lack of clear-cut government policy	.760	.622	.142

	Component		
	Internal Constraints	External Constraints	Technical and Financial Constraints
No legal requirement/obligation to report	.759	.631	.146
Lack of coordination with different stakeholders	.759	.630	.146
There is no standard method of estimating social value of environmental goods and services and industry data is not available	.757	.612	.207
Cannot compare two firms when methods used by both firms different	.747	.579	.316
Lack of consciousness about Environmental Disclosure	.591	.783	.144
Organisations lack the expertise to produce and disclose such information	.601	.781	.144
Difficult to measure environmental costs and benefits	.592	.780	.144
Cost of obtaining external advice/assurance and setting up environmental management systems high	.612	.772	.144
Management feels that such information is not important for stakeholders	.627	.759	.143

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Source: Primary Data

The results revealed that the variables loaded onto three distinct components. The internal constraints component comprised variables related to organizational and expertise-related issues, such as "Lack of consciousness about Environmental Disclosure" (.783), "Organisations lack the expertise to produce and disclose such information" (.781), and "Difficult to measure environmental costs and benefits" (.780). The external constraints component consisted of variables related to regulatory and policy-related issues, including "No legal requirement/obligation to report" (.759), "Lack of clear-cut government policy" (.760), and "Improper enforcement of planning and environmental legislation and inactive enterprise participation" (.760). The technical and financial constraints component comprised variables related to cost and competitiveness-related issues.

7.3.1.2 Confirmatory Factor Analysis

This section presented the results of the Confirmatory Factor Analysis (CFA) using SPSS AMOS 25.0, which aimed to validate the measurement model of the problems of environmental reporting. The CFA was conducted to assess the goodness of fit of the proposed model, comprising internal constraints, external constraints, and technical and financial constraints, to the observed data. The analysis provided insight into the validity and reliability of the measurement model, enabling the evaluation of the relationships between the latent constructs and their corresponding indicators.

Figure 7.2

CFA- Problems of Environmental Reporting

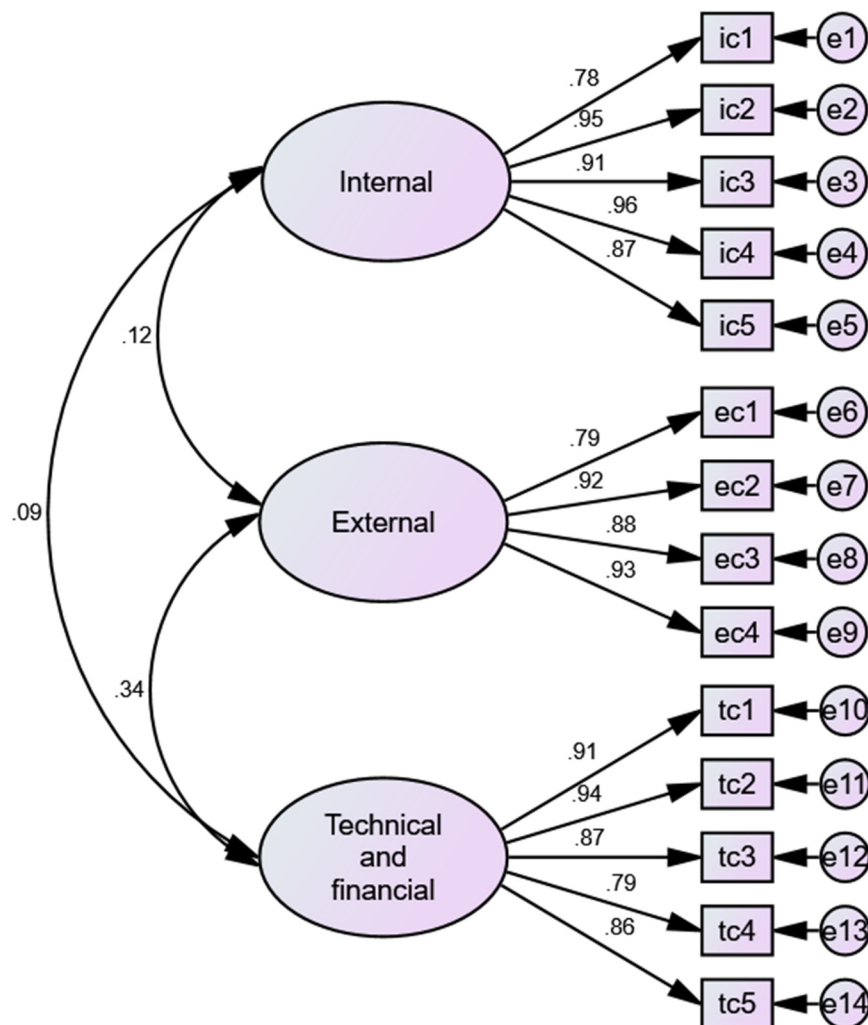


Table provided below presents the model fit indices for the measurement model of the problems of environmental reporting. The table displays the results of the Confirmatory Factor Analysis (CFA), including the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA).

Table 7.6

Model Fit Indices- Problems of Environmental Reporting

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.97	.96	.94	.95	.037
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results revealed that the measurement model exhibited a good fit to the observed data. The CFI (.97), GFI (.96), TLI (.94), and NFI (.95) values exceeded the recommended thresholds of 0.9, indicating a good fit. Furthermore, the RMSEA value (.037) was below the recommended threshold of 0.05, suggesting a good fit. These results provided evidence for the validity of the measurement model. These findings supported the validity of the measurement model, comprising internal constraints, external constraints, and technical and financial constraints. The good fit indices demonstrated that the proposed model adequately captured the underlying structure of the problems of environmental reporting.

Table 7.7

Summary of Scale Validation-Problems of Environmental Reporting

Sl.No	Criteria	Result
1	Exploratory Factor Analyses	Explored 3 Factors
2	Confirmatory factor analysis	Confirmed
3	Reliability	Satisfied
4	Convergent validity	Satisfied
5	Discriminant validity	Satisfied
6	Normality	Satisfied

Source: Compiled by the researcher

The results revealed that the measurement scales exhibited satisfactory validity and reliability. The exploratory factor analysis (EFA) identified three underlying factors, which were subsequently confirmed through confirmatory factor analysis (CFA). The reliability test indicated that the scales were reliable, while the convergent and discriminant validity tests demonstrated that the scales were valid. Additionally, the normality test revealed that the data was normally distributed. These findings supported the use of the measurement scales in assessing the problems of environmental reporting. The satisfactory validity and reliability of the scales provided confidence in the accuracy of the results.

SECTION B

7.3.2 Data Analysis

This section presents the results of the assessment of the problems of environmental reporting in selected companies in the automobile industry, which corresponds to objective five of the study. The assessment employed a range of statistical tests, including descriptive statistics, independent sample t-test, and structural equation modeling. These tests enabled a comprehensive examination of the problems of environmental reporting in the selected companies, providing insights into the relationships between the internal, external, and technical/financial constraints. The findings of this assessment contribute to a deeper understanding of the challenges faced by companies in the automobile industry in implementing effective environmental reporting practices.

7.3.2.1 Internal Constraints

The table presents a comparative analysis of internal constraints faced by companies in disclosing environmental information, specifically focusing on the perceptions of employees and external auditors. The data spans across five categories: SD (Strongly Disagree), D (Disagree), N (Neutral), A (Agree), and SA (Strongly Agree), with five sub-categories: Organisations lack the expertise, Management feels that such information is not important, Lack of consciousness

about Environmental Disclosure, Difficult to measure environmental costs and benefits, and Cost of obtaining external advice/assurance and setting up environmental management systems high. The table provides a comprehensive overview of the internal constraints faced by companies in disclosing environmental information, highlighting areas of concern and potential avenues for improvement.

Table 7.8*Internal Constraints*

		SD	D	N	A	SA	
		Count	Count	Count	Count	Count	
Category	Employees	Organisations lack the expertise to produce and disclose such information	46	82	97	103	72
		Management feels that such information is not important for stakeholders	46	78	99	105	72
		Lack of consciousness about Environmental Disclosure	48	85	99	102	66
		Difficult to measure environmental costs and benefits	48	83	99	101	69
		Cost of obtaining external advice/assurance and setting up environmental management systems high	48	87	90	103	72
	External auditors	Organisations lack the expertise to produce and disclose such information	9	24	28	151	188
		Management feels that such information is not important for stakeholders	9	26	30	149	186
		Lack of consciousness about Environmental Disclosure	9	27	29	149	186
		Difficult to measure environmental costs and benefits	9	26	29	150	186
		Cost of obtaining external advice/assurance and setting up environmental management systems high	9	26	29	150	186

Source: Primary Data

A review of the table reveals several notable trends and patterns in internal constraints faced by companies in disclosing environmental information. Firstly, the majority of employees and external auditors agree that organisations lack the

expertise to produce and disclose environmental information, with a significant proportion of respondents indicating strong agreement. This suggests that companies may be facing significant challenges in terms of capacity building and expertise development in environmental disclosure.

Secondly, the table indicates a significant difference in perceptions between employees and external auditors and they tend to disagree more strongly with the statement that management feels that such information is not important for stakeholders, suggesting that external auditors may be more likely to recognize the importance of environmental disclosure for stakeholders.

Thirdly, the data reveals a notable emphasis on the difficulty of measuring environmental costs and benefits among employees and external auditors. A significant proportion of respondents agree that it is difficult to measure environmental costs and benefits, highlighting the need for improved methodologies and tools for environmental accounting and reporting.

Lastly, the table suggests that companies may be facing significant cost constraints in terms of obtaining external advice/assurance and setting up environmental management systems. A significant proportion of employees and external auditors agree that the cost of obtaining external advice/assurance and setting up of environmental management systems is high, highlighting the need for cost-effective solutions and support mechanisms for companies.

Table provided below presents the results of the analysis of internal constraints affecting environmental reporting in the automobile industry. The table displays the frequency distribution of respondents' opinions on five internal constraints, along with the mean and rank of each constraint.

Table 7.9*Internal Constraints-Employees and External Auditors*

	SD	D	N	A	SA	Mean	Rank Based on Mean
Organisations lack the expertise to produce and disclose such information	55	106	125	254	260	3.6975	I
Management feels that such information is not important for stakeholders	55	104	129	254	258	3.6950	II
Lack of consciousness about Environmental Disclosure	57	112	128	251	252	3.6612	V
Difficult to measure environmental costs and benefits	57	109	128	251	255	3.6725	IV
Cost of obtaining external advice/assurance and setting up environmental management systems high	57	113	119	253	258	3.6775	III

Note: SD - Strongly Disagree, D - Disagree, N - Neutral, A - Agree, SA - Strongly Agree

Source: Primary Data

The results revealed that "Organisations lack the expertise to produce and disclose such information" was ranked first (Mean = 3.6975), followed by "Management feels that such information is not important for stakeholders" (Mean = 3.6950). The remaining internal constraints, including "Cost of obtaining external advice/assurance and setting up environmental management systems high"(Mean =3.6775), "Difficult to measure environmental costs and benefits"(Mean =3.6725) and, "Lack of consciousness about Environmental Disclosure"(Mean=3.6612) were ranked third to fifth, respectively. These findings suggested that internal constraints, particularly the lack of expertise and management's perception of environmental reporting, posed significant challenges to effective environmental reporting in the automobile industry.

7.3.2.2 Internal Constraints between Employees and External Auditors

Table provided below presents the results of the comparative analysis of internal constraints affecting environmental reporting between employees and external auditors in the automobile industry. The table displays the mean, standard deviation, t-value, and p-value for the internal constraints perceived by

both categories of respondents. The study fixed the following alternate hypothesis.

Hypothesis: -

H1: There is significant difference in the perception of internal constraints affecting environmental reporting between employees and external auditors in the automobile industry.

Table 7.10

Internal Constraints between Employees and External Auditors

	Category of Respondents	Mean	Std. Deviation	T Value	P value
Internal Constraints	Employees	3.1645	1.24986	-13.062	.000
	External auditors	4.1970	.96816	-13.062	.000

Source: Primary Data

The results revealed a significant difference in the perception of internal constraints between employees and external auditors. The mean value for internal constraints was significantly lower for employees (3.1645) compared to external auditors (4.1970). The t-value (-13.062) and p-value (.000) indicated a statistically significant difference between the two groups. These findings suggested that external auditors perceived internal constraints as a more significant challenge to environmental reporting compared to employees. The results highlighted the need for companies to address the concerns of external auditors and provide them with the necessary resources and support to overcome internal constraints and promote effective environmental reporting practices in the automobile industry.

7.3.2.3 External Constraints

The table presents a comparative analysis of external constraints faced by companies in disclosing environmental information, specifically focusing on the perceptions of employees and external auditors. The data spans across five categories: SD (Strongly Disagree), D (Disagree), N (Neutral), A (Agree), and SA (Strongly Agree),

with four sub-categories: No legal requirement/obligation to report, Lack of clear-cut government policy, Lack of coordination with different stakeholders, and Improper enforcement of planning and environmental legislation and inactive enterprise participation. The table provides a comprehensive overview of the external constraints faced by companies in disclosing environmental information, highlighting areas of concern and potential avenues for improvement.

Table 7.11*External Constraints*

		SD	D	N	A	SA	
		Count	Count	Count	Count	Count	
Category	Employees	No legal requirement/obligation to report	48	80	97	103	72
		Lack of clear-cut government policy	48	81	95	104	72
		Lack of coordination with different stakeholders	49	82	99	100	70
		Improper enforcement of planning and environmental legislation and inactive enterprise participation	51	83	97	104	65
	External auditors	No legal requirement/obligation to report	9	28	28	148	187
		Lack of clear-cut government policy	9	28	28	149	186
		Lack of coordination with different stakeholders	9	29	29	151	182
		Improper enforcement of planning and environmental legislation and inactive enterprise participation	9	25	29	151	186

Source: Primary Data

The table reveals several notable trends and patterns in external constraints faced by companies in disclosing environmental information. Firstly, the majority of employees and external auditors agree that the lack of legal requirement/obligation to report is a significant external constraint, with a significant proportion of respondents indicating strong agreement. This suggests that the absence of regulatory requirements may be a major barrier to environmental disclosure.

Secondly, the table indicates a significant difference in perceptions between employees and external auditors. The external auditors tend to agree more strongly

with the statement that lack of clear-cut government policy is an external constraint, suggesting that external auditors may be more likely to recognize the importance of government policy in shaping environmental disclosure practices.

Thirdly, the data reveals a notable emphasis on the lack of coordination with different stakeholders among employees and external auditors. A significant proportion of respondents agree that lack of coordination with different stakeholders is an external constraint, highlighting the need for improved stakeholder engagement and collaboration.

Lastly, the table suggests that companies may be facing significant challenges in terms of improper enforcement of planning and environmental legislation and inactive enterprise participation. A significant proportion of employees and external auditors agree that this is an external constraint, highlighting the need for improved regulatory enforcement and enterprise participation.

Table provided below presents the results of the analysis of external constraints affecting environmental reporting in the automobile industry. The table displays the frequency distribution of respondents' opinions on four external constraints, along with the mean and rank of each constraint.

Table 7.12

External Constraints-Employees and External Auditors

	SD	D	N	A	SA	Mean	Rank Based on Mean
No legal requirement/obligation to report	57	108	125	251	259	3.6838	I
Lack of clear-cut government policy	57	109	123	253	258	3.6825	II
Lack of coordination with different stakeholders	58	111	128	251	252	3.6600	IV
Improper enforcement of planning and environmental legislation and inactive enterprise participation	60	108	126	255	251	3.6612	III

Note: SD - Strongly Disagree, D - Disagree, N - Neutral, A - Agree, SA - Strongly Agree

Source: Primary Data

The results revealed that "No legal requirement/obligation to report" was ranked first (Mean = 3.6838), followed closely by "Lack of clear-cut government policy" (Mean = 3.6825). The remaining external constraints, including "Improper enforcement of planning and environmental legislation and inactive enterprise participation" (Mean = 3.6612) and "Lack of coordination with different stakeholders" (Mean = 3.6600), were ranked third and fourth, respectively. These findings suggested that external constraints, particularly the lack of legal requirements and clear government policies, posed significant challenges to effective environmental reporting in the automobile industry. The results highlighted the need for regulatory bodies to establish clear guidelines and policies to promote environmental reporting practices in the industry.

7.3.2.4 External Constraints between Employees and External Auditors

Table provided below presents the results of the comparative analysis of external constraints affecting environmental reporting between employees and external auditors in the automobile industry. The table displays the mean, standard deviation, t-value, and p-value for the external constraints perceived by both categories of respondents. The study fixed the following alternate hypothesis.

Hypothesis: -

H1: There is significant difference in the perception of external constraints affecting environmental reporting between employees and external auditors in the automobile industry.

Table 7.13

External Constraints between Employees and External Auditors

	Category of Respondents	Mean	Std. Deviation	T Value	P Value
External Constraints	Employees	3.1569	1.25366	-13.012	.000
	External auditors	4.1869	.96683	-13.012	.000

Source: Primary Data

The results of the independent samples t-test revealed a statistically significant difference in the perception of external constraints between employees and external auditors. The mean value for external constraints was significantly higher for external auditors ($M = 4.1869$, $SD = 0.96683$) compared to employees ($M = 3.1569$, $SD = 1.25366$). The t-value (-13.012) and p-value ($.000$) indicated a statistically significant difference between the two groups. These findings suggested that external auditors perceived external constraints as a more significant challenge to environmental reporting compared to employees. The results highlighted the need for companies to address the concerns of external auditors and provide them with the necessary resources and support to overcome external constraints and promote effective environmental reporting practices in the automobile industry.

7.3.2.5 Technical and Financial Constraints

The table presents a comparative analysis of technical and financial constraints faced by companies in disclosing environmental information, specifically focusing on the perceptions of employees and external auditors. The data spans across five categories: SD (Strongly Disagree), D (Disagree), N (Neutral), A (Agree), and SA (Strongly Agree), with five sub-categories: Cost of disclosure, capital investment in pollution control equipment, no standard method of estimating social value, cannot compare two firms, and avoid providing sensitive and confidential information. The table provides a comprehensive overview of the technical and financial constraints faced by companies in disclosing environmental information, highlighting areas of concern and potential avenues for improvement.

Table 7.14*Technical and Financial Constraints*

		SD	D	N	A	SA	
		Count	Count	Count	Count	Count	
Category	Employees	Cost of disclosure (producing, printing & distributing) the report is high	51	83	95	99	72
		Capital investment in pollution control equipment is high	48	85	92	103	72
		There is no standard method of estimating social value of environmental goods and services and industry data is not available	51	82	94	101	72
		Cannot compare two firms when methods used by both firms different	49	81	94	104	72
		Avoid providing sensitive and confidential information to competitors	49	82	96	102	71
	External auditors	Cost of disclosure (producing, printing & distributing) the report is high	8	24	29	153	186
		Capital investment in pollution control equipment is high	8	26	30	151	185
		There is no standard method of estimating social value of environmental goods and services and industry data is not available	8	28	29	147	188
		Cannot compare two firms when methods used by both firms different	9	26	29	152	184
		Avoid providing sensitive and confidential information to competitors	9	27	28	152	184

Source: Primary Data

The table reveals several notable trends and patterns in technical and financial constraints faced by companies in disclosing environmental information. Firstly, the majority of employees and external auditors agree that the cost of disclosure is a significant technical and financial constraint, with a significant proportion of respondents indicating strong agreement. This suggests that companies may be facing significant financial barriers to environmental disclosure.

Secondly, the table indicates a significant difference in perceptions between employees and external auditors. The auditors tend to agree more strongly with the statement that capital investment in pollution control equipment is high, suggesting that they may be more likely to recognize the financial implications of environmental regulation.

Thirdly, the data reveals a notable emphasis on the lack of standard methods for estimating the social value of environmental goods and services among employees and external auditors. A significant proportion of respondents agree that this is a technical constraint, highlighting the need for improved methodologies and tools for environmental accounting and reporting.

Lastly, the table suggests that companies may be facing significant challenges in terms of comparing environmental performance across firms. A significant proportion of employees and external auditors agree that the lack of standard methods for comparing environmental performance is a technical constraint, highlighting the need for improved benchmarking and reporting frameworks.

Table provided below presents the results of the analysis of technical and financial constraints affecting environmental reporting in the automobile industry. The table displays the frequency distribution of respondents' opinions on five technical and financial constraints, along with the mean and rank of each constraint.

Table 7.15

Technical and Financial Constraints-Employees and External Auditors

	SD	D	N	A	SA	Mean	Rank Based on Mean
Cost of disclosure (producing, printing & distributing) the report is high	59	107	124	252	258	3.6788	III
Capital investment in pollution control equipment is high	56	111	122	254	257	3.6812	II
There is no standard method of estimating social value of environmental goods and services and industry data is not available	59	110	123	248	260	3.6750	IV
Cannot compare two firms when methods used by both firms different	58	107	123	256	256	3.6813	I
Avoid providing sensitive and confidential information to competitors	58	109	124	254	255	3.6738	V

Note: SD - Strongly Disagree, D - Disagree, N - Neutral, A - Agree, SA - Strongly Agree

Source: Primary Data

The results revealed that "Cannot compare two firms when methods used by both firms different" was ranked first (Mean = 3.6813), followed closely by "Capital investment in pollution control equipment is high" (Mean = 3.6812). The remaining technical and financial constraints, including "Cost of disclosure (producing, printing & distributing) the report is high" (Mean = 3.6788), "There is no standard method of estimating social value of environmental goods and services and industry data is not available" (Mean = 3.6750), and "Avoid providing sensitive and confidential information to competitors" (Mean = 3.6738), were ranked third to fifth, respectively.

These findings suggested that technical and financial constraints, particularly the difficulty in comparing firms due to different methods and the high capital investment in pollution control equipment, posed significant challenges to environmental reporting in the automobile industry. The results highlighted the need for companies to address these technical and financial constraints and explore strategies to mitigate these challenges and promote effective environmental reporting practices.

7.3.2.6 Technical and Financial Constraints between Employees and External Auditors

Table provided below presents the results of the comparative analysis of technical and financial constraints affecting environmental reporting between employees and external auditors in the automobile industry. This analysis aimed to identify potential differences in the perception of technical and financial constraints between these two groups of respondents. The following hypothesis was fixed.

Hypothesis: -

H1: There is significant difference in the perception of technical and financial constraints affecting environmental reporting between employees and external auditors in the automobile industry.

Table 7.16

Technical and Financial Constraints between Employees and External Auditors

	Category of Respondents	Mean	Std. Deviation	T Value	P Value
Technical and Financial Constraints	Employees	3.1590	1.27105	-13.050	.000
	External auditors	4.1970	.95670	-13.050	.000

Source: Primary Data

The results of the independent samples t-test revealed a statistically significant difference in the perception of technical and financial constraints between employees and external auditors. The mean value for technical and financial constraints was significantly higher for external auditors ($M = 4.1970$, $SD = 0.95670$) compared to employees ($M = 3.1590$, $SD = 1.27105$). The t-value (-13.050) and p-value ($.000$) indicated a statistically significant difference between the two groups.

These findings suggested that external auditors perceived technical and financial constraints as a more significant challenge to environmental reporting compared to employees. The results highlighted the need for companies to address the concerns of external auditors and provide them with the necessary resources and support to overcome technical and financial constraints and promote effective environmental reporting practices in the automobile industry.

7.3.2.7 Structural Equation Modelling (SEM)

- **Constraints of Environmental Reporting (Employees)**

This section presents the results of the structural equation modeling (SEM) analysis, which was employed to assess the problems of environmental reporting in the automobile industry by the employees. The SEM analysis examined the relationships between three independent variables, namely internal constraints, external constraints, and technical/financial constraints, and the dependent variable, problems of environmental reporting. The analysis fixed the following alternate hypotheses.

Hypothesis: -

- H1:** Internal constraints have a significant positive effect on the problems of environmental reporting in the automobile industry.
- H2:** External constraints have a significant positive effect on the problems of environmental reporting in the automobile industry.
- H3:** Technical/financial constraints have a significant positive effect on the problems of environmental reporting in the automobile industry.

Table provided below presents the results of the structural equation modeling (SEM) analysis, which was employed to examine the problems of environmental reporting in selected companies among employees. The table displays the model fit indices, including the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA), which were used to evaluate the goodness of fit of the measurement model.

Table 7.17

Model Fit Indices- Problems of Environmental Reporting - SEM

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.95	.96	.92	.94	.029
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results of the SEM analysis revealed that the measurement model provided a good fit to the data. The values of the CFI (.95), GFI (.96), TLI (.92), and NFI (.94) were all above the recommended threshold of 0.9, indicating a good fit. Additionally, the RMSEA value (.029) was below the recommended threshold of 0.05, further supporting the goodness of fit of the model. These findings suggested that the structural equation model was able to adequately capture the relationships between the variables and provide a good representation of the data on problems of environmental reporting in selected companies.

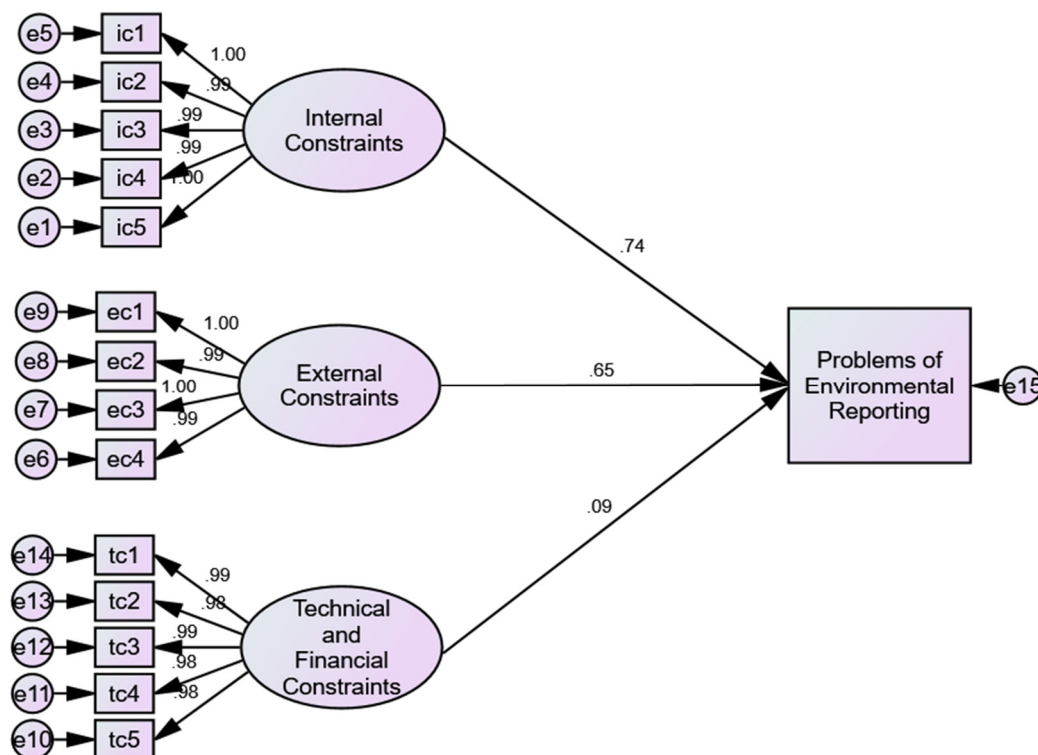
Figure 7.3*Constraints of Environmental Reporting (Employees)*

Table provided below presents the results of the hypothesis testing, which examined the relationships between internal constraints, external constraints, technical/financial constraints, and problems of environmental reporting in selected companies by employees. The table displays the beta coefficients, p-values, and decisions for each hypothesis.

Table 7.18*Testing of Hypotheses- Problems of Environmental Reporting (Employees)*

Sl.no	Hypothesis	Beta Coefficient	P Value	Decision
1	Internal constraints have a significant positive effect on the problems of environmental reporting in the automobile industry.	.74	<.05	Accepted
2	External constraints have a significant positive effect on the problems of environmental reporting in the automobile industry.	.65	<.05	Accepted
3	Technical/financial constraints have a significant positive effect on the problems of environmental reporting in the automobile industry.	.09	<.05	Accepted

Source: Primary Data

The results indicated that all three alternate hypotheses were accepted, suggesting that internal constraints, external constraints, and technical/financial constraints significantly impacted the problems of environmental reporting. The beta coefficients revealed that internal constraints had the most substantial impact on the problems of environmental reporting ($\beta = 0.74$), followed by external constraints ($\beta = 0.65$), and technical/financial constraints ($\beta = 0.09$).

These findings highlighted the importance of considering both internal and external factors when evaluating the challenges of environmental reporting. The significant impact of internal constraints suggested that employees face significant challenges in environmental reporting due to internal factors. The results also showed that external constraints and technical/financial constraints had significant impacts on the problems of environmental reporting, indicating that employees face challenges in environmental reporting due to external factors and limited resources.

- **Constraints of Environmental Reporting (External Auditors)**

The study employed Structural Equation Modeling (SEM) to examine the impact of various constraints on environmental reporting by external auditors. The SEM analysis allowed for the examination of complex relationships between latent variables, providing insights into the underlying mechanisms driving the benefits of environmental reporting.

Hypotheses

H1: There is significant impact of internal constraints on problems of environmental reporting.

H2: There is significant impact of external constraints on problems of environmental reporting.

H3: There is significant impact of technical/ financial constraints on problems of environmental reporting.

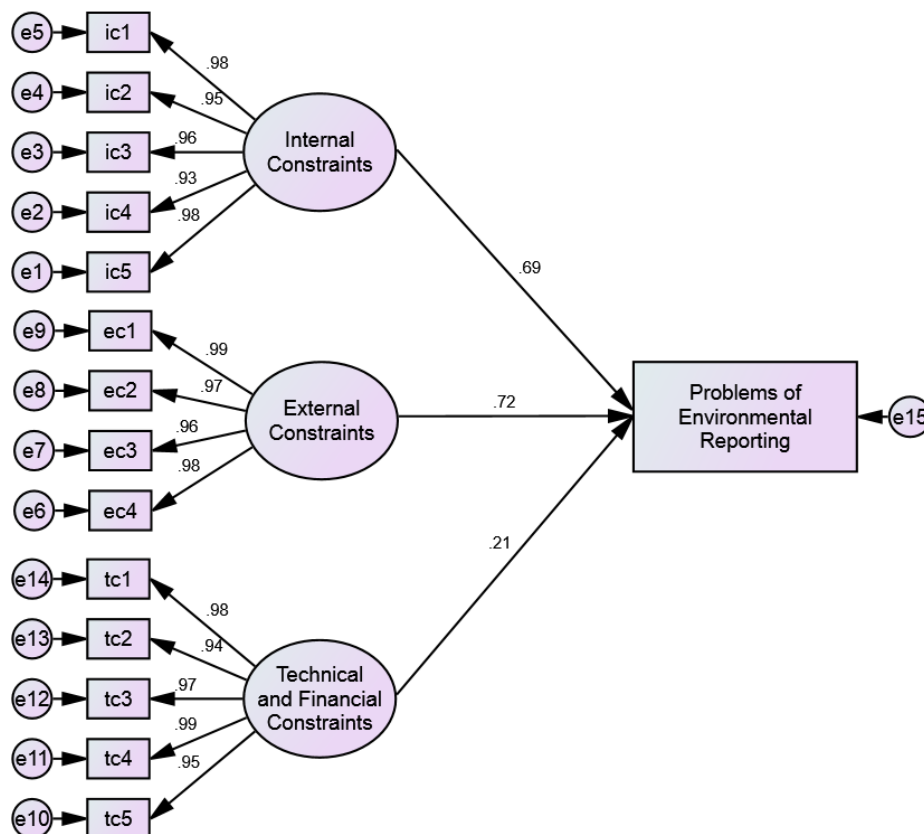
The table provided below presents the model fit indices for the structural model examining the constraints of environmental reporting among external auditors. The fit indices provide crucial insights into the goodness-of-fit of the proposed theoretical model to the empirical data.

Table 7.19*Model Fit Indices- Constraints of Environmental Reporting (External Auditors)*

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.93	.95	.93	.92	.040
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model exhibited excellent fit, as evidenced by the high values of the Comparative Fit Index (CFI = 0.93), Goodness-of-Fit Index (GFI = 0.95), Tucker-Lewis Index (TLI = 0.93), and Normed Fit Index (NFI = 0.92). These values exceeded the standard threshold of >0.9, suggesting a good fit between the observed data and the hypothesized model. The Root Mean Square Error of Approximation (RMSEA = 0.040) was below the threshold of <0.05, indicating a close fit between the model and the data. This result suggested that the model accurately represented the underlying structure of the observed data.

Figure 7.4*Constraints of Environmental Reporting (External Auditors)*

The table provided below presents the results of hypothesis testing examining the constraints of environmental reporting among external auditors. The analysis aimed to identify the significant factors influencing the problems of environmental reporting, providing insights into the challenges faced by external auditors in environmental reporting.

Table 7.20

Constraints of Environmental Reporting (External Auditors)- Testing of Hypothesis

Sl. No	Alternate Hypothesis	Beta Value	Sig.	Decision
1	There is significant impact of internal constraints on problems of environmental reporting.	.69	<.05	Accepted
2	There is significant impact of external constraints on problems of environmental reporting.	.72	<.05	Accepted
3	There is significant impact of technical/ financial constraints on problems of environmental reporting.	.21	<.05	Accepted

Source: Primary Data

The results indicated that all three alternate hypotheses were accepted, suggesting that internal constraints, external constraints, and technical/financial constraints significantly impacted the problems of environmental reporting. The beta coefficients revealed that external constraints had the most substantial impact on the problems of environmental reporting ($\beta = 0.72$), followed by internal constraints ($\beta = 0.69$), and technical/financial constraints ($\beta = 0.21$).

These findings highlighted the importance of considering both internal and external factors when evaluating the challenges of environmental reporting. The significant impact of external constraints suggested that external auditors face significant challenges in environmental reporting due to external factors. The results also showed that internal constraints and technical/financial constraints had significant impacts on the problems of environmental reporting, indicating that external auditors face challenges in environmental reporting due to internal factors and limited resources.

PART II**7.4 Benefits related to Environmental Reporting in Automobile Industry****SECTION A****7.4.1 Measurement Scale Validation**

The measurement scale validation process involved Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), assessment of Convergent Validity and Discriminant Validity, evaluation of Reliability using Cronbach's Alpha, and examination of Normality using One-Sample K-S Test and Skewness and Kurtosis. By subjecting the measurement scales to these rigorous validation procedures, the study ensured that the empirical results accurately reflected the underlying constructs, thereby contributing to a robust understanding of the benefits of environmental reporting in the automobile industry.

7.4.1.1 Exploratory Factor Analysis

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were employed to evaluate the appropriateness of the data for factor analysis, and the results are presented in table below. These statistical tests are essential in determining whether the data are suitable for factor analysis, a technique used to identify underlying patterns and structures in the data.

Table 7.21*KMO and Bartlett's Test- Benefits*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.883
Approx. Chi-Square		2902.104
Bartlett's Test of Sphericity	df	276
	Sig.	.000

Source: Primary Data

The significant result of Bartlett's test of sphericity and the high KMO value collectively suggested that the data were factorable, and factor analysis could be employed to identify underlying constructs. The results implied that the variables were interrelated, and factor analysis could help to uncover the underlying

structures and patterns in the data. The suitability of the data for factor analysis provided a solid foundation for further analysis and interpretation of the results, enabling the researcher to draw meaningful conclusions about the underlying relationships between the variables.

The communalities table presents the proportion of variance in each variable that is explained by the extracted components, and the results are presented in table below. The communalities values range from 0 to 1, with higher values indicating that a larger proportion of variance in the variable is explained by the extracted components. The extraction method used was Principal Component Analysis (PCA).

Table 7.22*Communalities- Benefits*

	Initial	Extraction
Better estimates of total cost of producing a product	1.000	.980
Long term survival of the organization	1.000	.862
Reduction of cost of capital	1.000	.855
Increase credibility of information	1.000	.748
Attract investors	1.000	.785
Helps management in decision making and improves profitability	1.000	.804
Reduction in environmental and pollution cost	1.000	.795
Eco efficiency	1.000	.926
Increased sales and employee satisfaction	1.000	.751
Respond to pressures from regulatory authorities	1.000	.944
Compliance with environmental laws	1.000	.868
Risk management possible	1.000	.831
Guarantee accuracy of environmental reports	1.000	.854
Improved CSR	1.000	.858
Improve quality and productivity of staff	1.000	.834
Enhanced environmental image	1.000	.864
Improved corporate reputation	1.000	.890
New application for non-hazardous waste	1.000	.840
Integration with financial reporting	1.000	.859
Wider adoption of global standard	1.000	.885
Make disclosure mandatory	1.000	.879
Focus of carbon disclosure	1.000	.780
Stakeholder centric reporting	1.000	.848
International recognition	1.000	.741
Extraction Method: Principal Component Analysis.		

Source: Primary Data

The results indicated that the extracted components explained a significant proportion of variance in each variable. For example, the variables "Better estimates of total cost of producing a product" and "Respond to pressures from regulatory authorities" had high communality values of 0.980 and 0.944, respectively. These findings suggested that the extracted components captured a large proportion of the variance in these variables. Similarly, variables such as "Eco efficiency" and "Improved corporate reputation" had communality values of 0.926 and 0.890, respectively, indicating that the extracted components explained a significant proportion of the variance in these variables.

The high communality values for most variables suggested that the extracted components were effective in capturing the underlying patterns and structures in the data. The results implied that the extracted components were able to explain a significant proportion of the variance in the variables, providing a reliable and meaningful representation of the data.

The total variance explained table presents the proportion of variance in the data that is explained by each component, and the results are presented in table below. The table shows the initial eigenvalues, extraction sums of squared loadings, and rotation sums of squared loadings for each component. The extraction method used was Principal Component Analysis (PCA).

Table 7.23

Total Variance Explained- Benefits

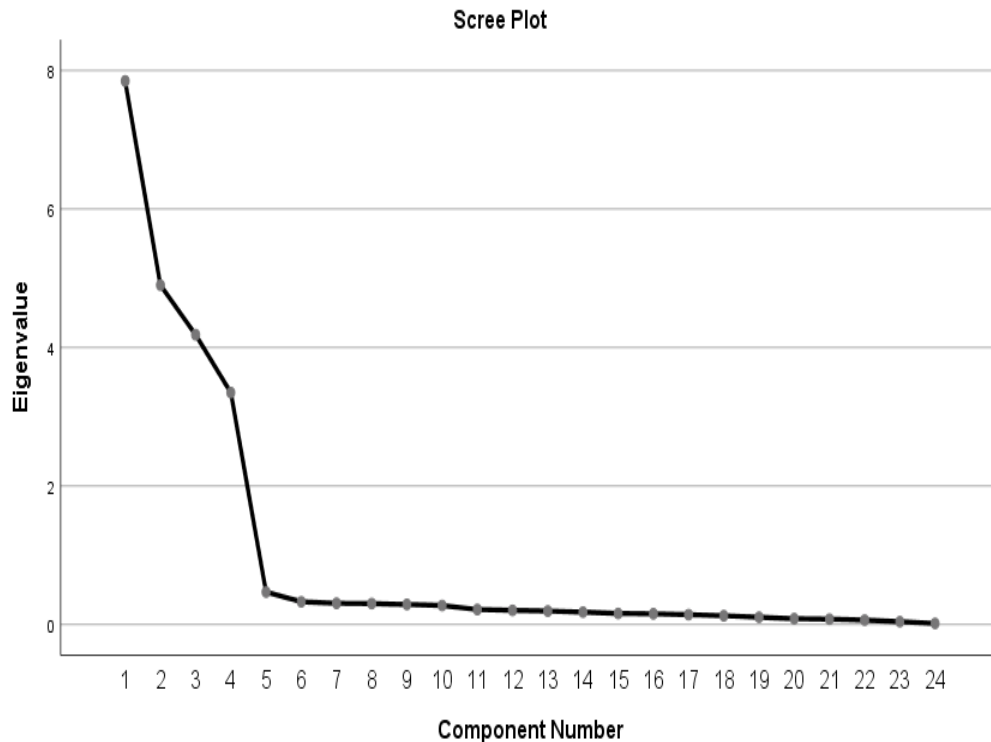
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.849	32.703	32.703	7.849	32.703	32.703	7.452	31.051	31.051
2	4.900	20.417	53.120	4.900	20.417	53.120	4.996	20.815	51.865
3	4.184	17.432	70.553	4.184	17.432	70.553	4.368	18.199	70.064
4	3.348	13.951	84.504	3.348	13.951	84.504	3.465	14.440	84.504
5	.468	1.951	86.454						
6	.327	1.364	87.819						

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 %
7	.305	1.273	89.092						
8	.301	1.254	90.346						
9	.289	1.204	91.549						
10	.274	1.142	92.692						
11	.216	.899	93.590						
12	.204	.848	94.439						
13	.194	.806	95.245						
14	.178	.741	95.986						
15	.158	.659	96.646						
16	.154	.641	97.287						
17	.142	.590	97.877						
18	.126	.525	98.401						
19	.104	.435	98.836						
20	.084	.348	99.184						
21	.076	.317	99.502						
22	.064	.265	99.766						
23	.040	.168	99.935						
24	.016	.065	100.000						

Extraction Method: Principal Component Analysis.

Source: Primary Data

The results indicated that the first four components had eigenvalues greater than 1 and explained a significant proportion of the variance in the data. The first component explained 32.703% of the variance, while the second, third, and fourth components explained 20.417%, 17.432%, and 13.951% of the variance, respectively. The cumulative percentage of variance explained by the first four components was 84.504%. These findings suggested that the first four components captured a significant proportion of the underlying patterns and structures in the data.

Figure 7.5*Benefits*

The results implied that the first four components were meaningful and worthy of interpretation. The eigenvalues and variance explained by each component suggested that the data could be reduced to a smaller set of components that captured the majority of the variance in the data. The findings highlighted the importance of considering the proportion of variance explained by each component when determining the number of components to retain.

The component matrix table presents the factor loadings for each variable on the extracted components, and the results are presented in table below. The factor loadings represent the correlation between each variable and the underlying component. The extraction method used was Principal Component Analysis (PCA), and four components were extracted.

Table 7.24*Component Matrix- Benefits*

	Component			
	1	2	3	4
Better estimates of total cost of producing a product	.956	-.134	.209	-.069
Eco efficiency	.929	-.128	.214	-.039
Reduction of cost of capital	.897	-.146	.156	-.073
Long term survival of the organization	.894	-.118	.221	-.007
Attract investors	.864	-.098	.164	-.047
Helps management in decision making and improves profitability	.856	-.110	.231	-.071
Increased sales and employee satisfaction	.850	-.093	.079	-.115
Reduction in environmental and pollution cost	.848	-.097	.209	-.146
Increase credibility of information	.802	-.313	.072	-.024
Integration with financial reporting	.244	.884	-.132	-.027
Stakeholder centric reporting	.176	.883	-.183	-.065
Wider adoption of global standard	.275	.877	-.156	-.128
Make disclosure mandatory	.356	.857	-.127	-.046
Focus of carbon disclosure	.249	.819	-.167	-.144
International recognition	.212	.805	-.152	-.158
Respond to pressures from regulatory authorities	-.318	.208	.856	-.258
Risk management possible	-.199	.210	.846	-.177
Improved CSR	-.338	.165	.833	-.151
Guarantee accuracy of environmental reports	-.333	.152	.820	-.217
Compliance with environmental laws	-.318	.218	.808	-.258
New application for non-hazardous waste	.088	.160	.194	.877
Improved corporate reputation	.104	.194	.275	.875
Enhanced environmental image	.105	.185	.284	.859
Improve quality and productivity of staff	.087	.170	.283	.847

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Source: Primary Data

The results indicated that the variables loaded onto the components in a meaningful way. For example, variables such as "Better estimates of total cost of producing a product", "Eco efficiency", and "Reduction of cost of capital" loaded highly onto Component 1, suggesting that this component represented a construct related to cost management and environmental efficiency. Similarly, variables such as "Integration with financial reporting", "Stakeholder centric reporting", and "Wider adoption of global standard" loaded highly onto Component 2, suggesting that this component represented a construct related to reporting and standardization. The factor loadings provided insight into the underlying structures in the data and helped to identify the constructs that were being measured.

The results implied that the extracted components represented distinct constructs that were related to different aspects of benefits. The factor loadings suggested that the variables were grouped into meaningful categories, and the components represented underlying themes that were relevant to the research question.

The rotated component matrix table presents the factor loadings for each variable on the extracted components after rotation, and the results are presented in table below. The rotation method used was Varimax with Kaiser Normalization, which is an orthogonal rotation method that aims to simplify the factor structure by maximizing the variance of the squared loadings. The results indicated that the variables loaded onto four distinct components, which were labeled as Economic and Financial Benefits, Future Benefits, Regulatory Risk Management Benefits, and Social, Organizational, and Image Benefits.

Table 7.25*Rotated Component Matrix- Benefits*

	Component			
	Economic and Financial Benefits	Future Benefits	Regulatory Risk Management Benefits	Social, organizational and Image Benefits
Better estimates of total cost of producing a product	.987	.055	-.048	.034
Eco efficiency	.958	.051	-.043	.063
Long term survival of the organization	.922	.047	-.035	.094
Reduction of cost of capital	.920	.041	-.083	.011
Helps management in decision making and improves profitability	.895	.052	.002	.035
Reduction in environmental and pollution cost	.887	.077	.006	-.041
Attract investors	.879	.074	-.066	.043
Increased sales and employee satisfaction	.851	.101	-.121	-.044
Increase credibility of information	.835	-.130	-.182	.002
Wider adoption of global standard	.070	.938	-.003	-.001
Make disclosure mandatory	.148	.921	-.022	.087
Integration with financial reporting	.035	.921	.000	.100
Stakeholder centric reporting	-.038	.919	-.020	.046
Focus of carbon disclosure	.055	.881	-.015	-.030
International recognition	.028	.859	.009	-.044
Respond to pressures from regulatory authorities	-.090	.004	.967	-.016
Compliance with environmental laws	-.104	.023	.925	-.027
Guarantee accuracy of environmental reports	-.107	-.051	.917	.004
Improved CSR	-.118	-.050	.915	.072
Risk management possible	.011	.025	.909	.067
Improved corporate reputation	.038	.045	.036	.941
Enhanced environmental image	.045	.036	.047	.926
New application for non-hazardous waste	.009	.023	-.041	.915
Improve quality and productivity of staff	.032	.020	.051	.911

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

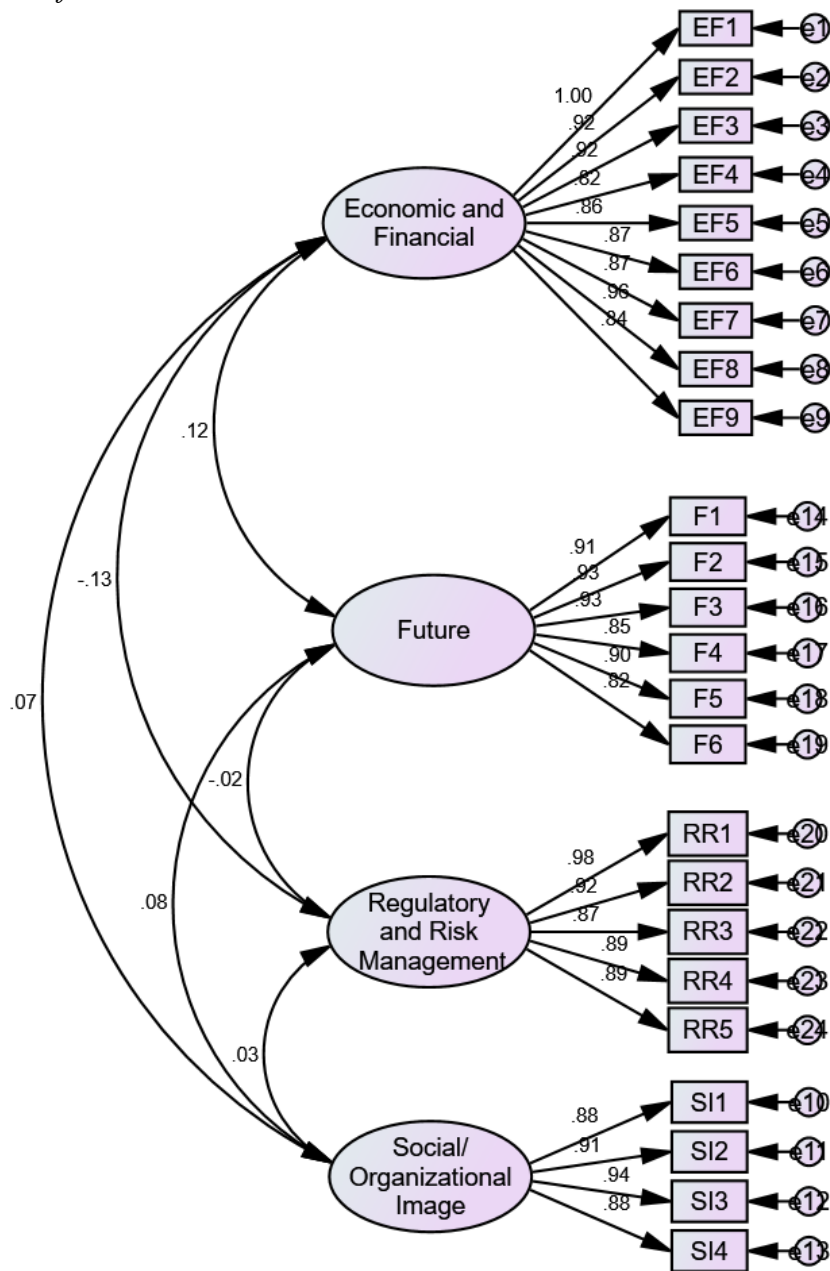
Source: Primary Data

The results showed that the variables loaded highly onto the respective components, indicating a clear and meaningful factor structure. For example, variables such as "Better estimates of total cost of producing a product" and "Eco efficiency" loaded highly onto the Economic and Financial Benefits component, while variables such as "Wider adoption of global standard" and "Make disclosure mandatory" loaded highly onto the Future Benefits component. Similarly, variables such as "Respond to pressures from regulatory authorities" and "Compliance with environmental laws" loaded highly onto the Regulatory Risk Management Benefits component, while variables such as "Improved corporate reputation" and "Enhanced environmental image" loaded highly onto the Social, Organizational, and Image Benefits component. These findings suggested that the extracted components represented distinct constructs that were related to different aspects of benefits.

The rotated component matrix provided a clear and interpretable factor structure, which facilitated the identification of the underlying constructs. The results implied that the benefits of environmental reporting could be categorized into four distinct components, each representing a different aspect of benefits. The findings highlighted the importance of considering the factor structure when interpreting the results of PCA.

7.4.1.2 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is a statistical technique used to verify the factor structure of a set of observed variables. Unlike exploratory factor analysis (EFA), which aims to identify the underlying factors without prior knowledge of the factor structure, CFA tests a pre-specified factor model to determine whether it fits the observed data. CFA is a powerful tool for assessing the validity and reliability of measurement instruments, and is widely used in various fields, including psychology, sociology, and business.

Figure 7.6*CFA- Benefits*

The model fit indices table presents the results of the confirmatory factor analysis (CFA) for the benefits measurement model, and the results are presented in table 7.26. The table shows the values of various fit indices, including the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA). These indices are used to evaluate the fit of the measurement model to the observed data.

Table 7.26*Model Fit Indices- Confirmatory Factor Analysis- Benefits*

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.95	.93	.92	.93	.041
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

Source: Primary Data

The results indicated that the measurement model demonstrated a good fit to the data. The CFI, GFI, TLI, and NFI values were all above the recommended threshold of 0.9, with values of 0.95, 0.93, 0.92, and 0.93, respectively. These findings suggested that the measurement model accounted for a significant proportion of the variance in the observed data. Additionally, the RMSEA value was 0.041, which was below the recommended threshold of 0.05, indicating a good fit. These results provided support for the validity of the measurement model and suggested that the constructs were well-represented by the observed variables.

The summary of scale validation table presents the results of the validation process for the benefits scale, and the results are presented in table below. The table provides a comprehensive overview of the validation criteria, including exploratory factor analysis, confirmatory factor analysis, reliability, convergent validity, discriminant validity, and normality.

Table 7.27*Summary of Scale Validation-Benefits*

Sl. no	Criteria	Result
1	Exploratory Factor Analysis	Explored 4 Factors
2	Confirmatory factor analysis	Confirmed
3	Reliability	Satisfied
4	Convergent validity	Satisfied
5	Discriminant validity	Satisfied
6	Normality	Satisfied

Source: Compiled by the researcher

The results indicated that the benefits scale demonstrated satisfactory psychometric properties. The exploratory factor analysis explored four factors,

which were confirmed by the confirmatory factor analysis. The reliability analysis showed that the scale had high internal consistency and reliability. The convergent and discriminant validity analyses also showed satisfactory results, indicating that the scale measured the intended constructs accurately. However, the normality test showed that the data did not follow a normal distribution.

The satisfactory psychometric properties of the benefits scale provided support for its use in research and practice. The results implied that the scale was a reliable and valid measure of the benefits construct. The findings highlighted the importance of validating measurement instruments to ensure their accuracy and reliability.

SECTION D

7.4.2 Data Analysis

This section presents the results of the assessment of the benefits of environmental reporting in selected companies in the automobile industry, which corresponds to objective five of the study. The assessment employed a range of statistical tests, including descriptive statistics, independent sample t-test, and structural equation modeling. These tests enabled a comprehensive examination of the prospects of environmental reporting in the selected companies, providing insights into the relationships between the economic and financial benefits, regulatory and risk management benefits, social and organizational image benefits and future benefits. The findings of this assessment contribute to a deeper understanding of the prospects enjoyed by companies in the automobile industry in implementing effective environmental reporting practices.

7.4.2.1 Economic and Financial Benefits

The comparative analysis table presents the results of the independent sample t-test comparing the perceptions of employees and external auditors on economic and financial benefits, and the results are presented in table below. The table shows the mean, standard deviation, t-value, and p-value for each benefit item. The t-test is used to determine whether there are significant differences in the perceptions of the two groups.

Table 7.28

Comparative Analysis of Employees' and External Auditors' Perceptions on Economic and Financial Benefits- Independent Sample T Test

	Category	Mean	Std. Deviation	T Value	P Value
Better estimates of total cost of producing a product	Employees	3.7000	1.11117	1.848	.068
	External auditors	3.2800	1.16128		
Long term survival of the organization	Employees	3.6600	1.13587	2.155	.034
	External auditors	3.1600	1.18425		
Reduction of cost of capital	Employees	3.5600	1.16339	1.283	.202
	External auditors	3.2600	1.17473		
Increase credibility of information	Employees	3.7200	1.12558	2.405	.018
	External auditors	3.1600	1.20136		
Attract investors	Employees	3.6800	1.15069	1.779	.078
	External auditors	3.2600	1.20898		
Helps management in decision making and improves profitability	Employees	3.7400	1.08440	2.662	.009
	External auditors	3.1200	1.23949		
Reduction in environmental and pollution cost	Employees	3.6400	1.17387	1.044	.299
	External auditors	3.4000	1.12486		
Eco efficiency	Employees	3.7600	1.07968	2.141	.035
	External auditors	3.2800	1.16128		
Increased sales and employee satisfaction	Employees	3.7000	1.11117	1.222	.225
	External auditors	3.4200	1.17959		

Source: Primary Data

The results indicated that there were significant differences in the perceptions of employees and external auditors on some of the benefit items. Specifically, the p-values for "Long term survival of the organization", "Increase credibility of information", "Helps management in decision making and improves profitability", and "Eco efficiency" were less than 0.05, indicating significant differences between the two groups. For example, the mean score for "Helps management in decision making and improves profitability" was 3.7400 for employees and 3.1200 for external auditors, with a p-value of 0.009. This suggested that employees perceived this benefit to be more important than external auditors.

The findings highlighted the importance of considering the perspectives of different stakeholders when evaluating the benefits of environmental reporting. The significant differences in perceptions between employees and external auditors may be due to their different roles, responsibilities, and priorities. The results implied that employees may place more emphasis on the strategic and operational benefits of environmental reporting, while external auditors may have a more nuanced view of its benefits.

7.4.2.2 Regulatory and Risk Management Benefits

The comparative analysis table presents the results of the independent sample t-test comparing the perceptions of employees and external auditors on regulatory and risk management benefits, and the results are presented in table below. The table shows the mean, standard deviation, t-value, and p-value for each benefit item. The t-test is used to determine whether there are significant differences in the perceptions of the two groups.

Table 7.29

Comparative Analysis of Employees' and External Auditors' Perceptions on Regulatory and Risk Management Benefits- Independent Sample T Test

	Category	Mean	Std. Deviation	T Value	P value
Respond to pressures from regulatory authorities	Employees	3.6000	.98974	-1.139	.257
	External auditors	3.8200	.94091		
Compliance with environmental laws	Employees	3.6000	1.04978	-1.010	.315
	External auditors	3.8000	.92582		
Risk management possible	Employees	3.5200	1.03490	-1.659	.100
	External auditors	3.8400	.88893		
Guarantee accuracy of environmental reports	Employees	3.5600	1.07210	-1.316	.191
	External auditors	3.8200	.89648		
Improved CSR	Employees	3.6800	.99877	-.623	.535
	External auditors	3.8000	.92582		

Source: Primary Data

The results indicated that there were no significant differences in the perceptions of employees and external auditors on regulatory and risk management benefits. The p-values for all the benefit items were greater than 0.05, indicating that the differences between the two groups were not statistically significant. For example, the mean score for

"Respond to pressures from regulatory authorities" was 3.6000 for employees and 3.8200 for external auditors, with a p-value of 0.257. This suggested that both groups had similar perceptions of the importance of regulatory and risk management benefits.

The findings implied that employees and external auditors shared similar views on the importance of regulatory and risk management benefits. This may be due to their shared understanding of the regulatory environment and the importance of risk management in ensuring compliance with environmental laws and regulations. The results highlighted the importance of collaboration and communication between different stakeholder groups in ensuring effective environmental reporting and risk management.

7.4.2.3 Social/ organizational Image Benefits

The comparative analysis table presents the results of the independent sample t-test comparing the perceptions of employees and external auditors on social/organizational image benefits, and the results are presented in table below. The table shows the mean, standard deviation, t-value, and p-value for each benefit item. The t-test is used to determine whether there are significant differences in the perceptions of the two groups.

Table 7.30

Comparative Analysis of Employees' and External Auditors' Perceptions on Social/ Organizational Image Benefits- Independent Sample T Test

	Category	Mean	Std. Deviation	T Value	P value
Improve quality and productivity of staff	Employees	3.4000	1.08797	-.178	.859
	External auditors	3.4400	1.16339		
Enhanced environmental image	Employees	3.4200	1.05153	.179	.858
	External auditors	3.3800	1.17612		
Improved corporate reputation	Employees	3.4800	1.07362	.618	.538
	External auditors	3.3400	1.18855		
New application for non-hazardous waste	Employees	3.2600	1.02639	.001	.991
	External auditors	3.2600	1.24228		

Source: Primary Data

The results indicated that there were no significant differences in the perceptions of employees and external auditors on social/organizational image benefits. The p-

values for all the benefit items were greater than 0.05, indicating that the differences between the two groups were not statistically significant. For example, the mean score for "Improve quality and productivity of staff" was 3.4000 for employees and 3.4400 for external auditors, with a p-value of 0.859. This suggested that both groups had similar perceptions of the importance of social/organizational image benefits.

The findings implied that employees and external auditors shared similar views on the importance of social/organizational image benefits. This may be due to their shared understanding of the importance of organizational image and reputation in achieving business objectives. The results highlighted the importance of considering the perspectives of different stakeholder groups when evaluating the benefits of environmental reporting.

7.4.2.4 Future Benefits

The comparative analysis table presents the results of the independent sample t-test comparing the perceptions of employees and external auditors on future benefits, and the results are presented in table below. The table shows the mean, standard deviation, t-value, and p-value for each benefit item. The t-test is used to determine whether there are significant differences in the perceptions of the two groups.

Table 7.31

Comparative Analysis of Employees' and External Auditors' Perceptions on Future Benefits- Independent Sample T Test

	Category	Mean	Std. Deviation	T Value	P value
Integration with financial reporting	Employees	4.0400	1.02936	1.483	.141
	External auditors	3.7200	1.12558		
Wider adoption of global standard	Employees	4.0600	.95640	1.887	.062
	External auditors	3.6600	1.15370		
Make disclosure mandatory	Employees	4.0600	.95640	1.269	.207
	External auditors	3.8000	1.08797		
Focus of carbon disclosure	Employees	4.0200	1.02000	.843	.401
	External auditors	3.8400	1.11319		
Stakeholder centric reporting	Employees	4.0800	.98644	2.084	.040
	External auditors	3.6400	1.12050		
International recognition	Employees	4.1200	.96129	1.770	.080
	External auditors	3.7400	1.17473		

Source: Primary Data

The results indicated that there was a significant difference in the perceptions of employees and external auditors on one of the future benefit items, namely "Stakeholder centric reporting". The p-value for this item was 0.040, which is less than the significance level of 0.05. The mean score for this item was 4.0800 for employees and 3.6400 for external auditors, suggesting that employees perceived stakeholder centric reporting to be more important than external auditors. For the other benefit items, the p-values were greater than 0.05, indicating that the differences between the two groups were not statistically significant.

The findings implied that employees and external auditors generally shared similar views on the importance of future benefits, except for stakeholder centric reporting. The significant difference in perceptions on this item may be due to the different priorities and focus areas of the two groups. Employees may place more emphasis on stakeholder centric reporting as a way to engage with stakeholders and improve transparency, while external auditors may have a more nuanced view of its importance.

7.4.2.5 Structural Equation Modelling (SEM)

- **Benefits of Environmental Reporting (Employees)**

The table presents the results of hypothesis testing examining the benefits of environmental reporting from the perspective of employees. The analysis aimed to identify the significant factors influencing the benefits of environmental reporting, providing insights into the advantages of environmental reporting practices as perceived by employees.

Hypotheses

- H1:** There is significant impact of economic and financial benefits on benefits of environmental reporting.
- H2:** There is significant impact of future benefits on benefits of environmental reporting

H3: There is significant impact of regulatory and risk management benefits on benefits of environmental reporting

H4: There is significant impact of Social/ organisational image benefits on benefits of environmental reporting

The table presents the model fit indices for the structural model examining the benefits of environmental reporting. The fit indices provide crucial insights into the goodness-of-fit of the proposed theoretical model to the empirical data.

Table 7.32

Model Fit Indices- Benefits of Environmental Reporting

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.93	.95	.93	.92	.040
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

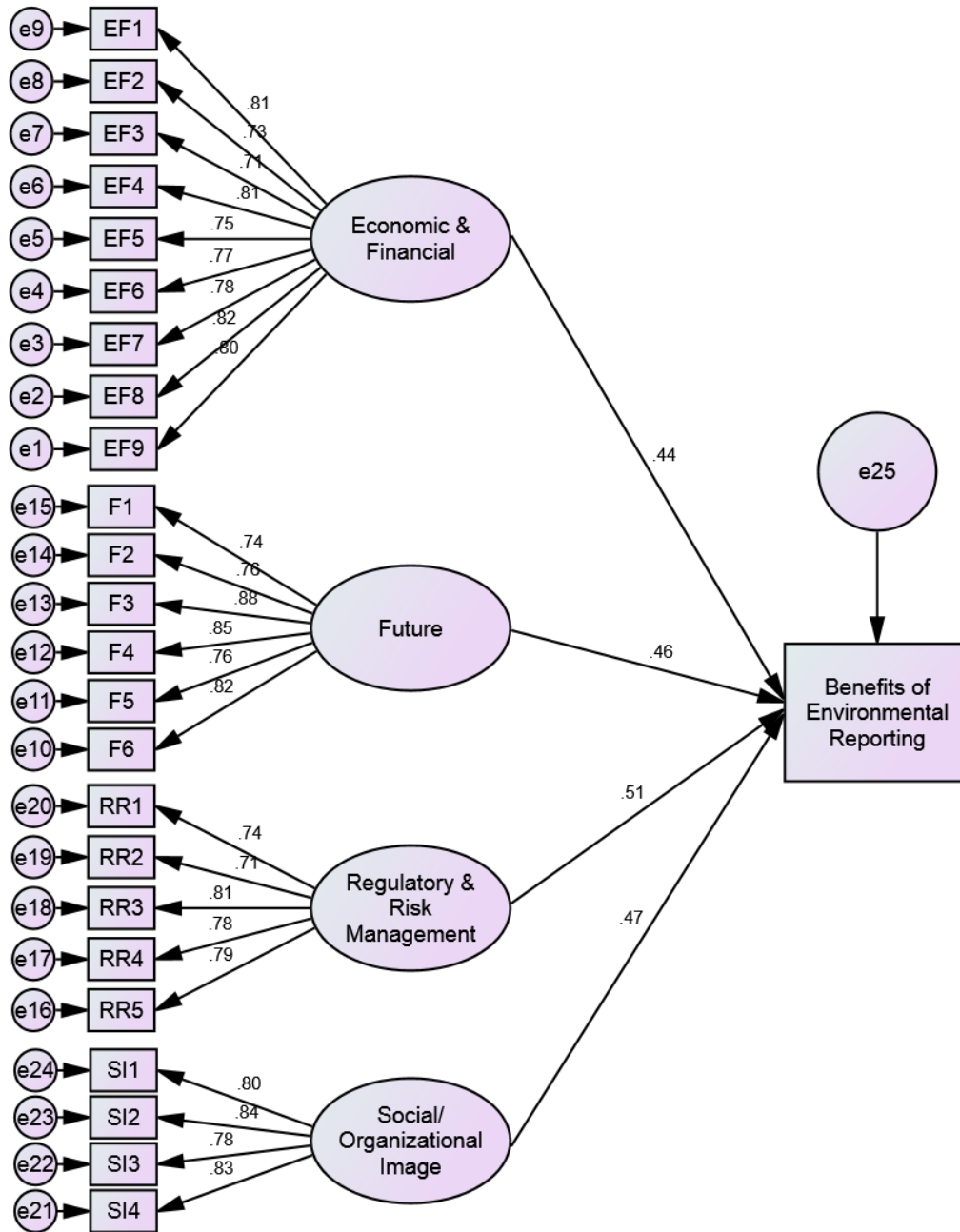
Source: Primary Data

The results indicated that the measurement model exhibited excellent fit, as evidenced by the high values of the Comparative Fit Index (CFI = 0.93), Goodness-of-Fit Index (GFI = 0.95), Tucker-Lewis Index (TLI = 0.93), and Normed Fit Index (NFI = 0.92). These values exceeded the standard threshold of >0.9, suggesting a good fit between the observed data and the hypothesized model.

The Root Mean Square Error of Approximation (RMSEA = 0.040) was below the threshold of <0.05, indicating a close fit between the model and the data. This result suggested that the model accurately represented the underlying structure of the observed data.

Figure 7.7

Benefits of Environmental Reporting (Employees)



The table provided below presents the results of hypothesis testing examining the benefits of environmental reporting. The analysis aimed to identify the significant factors influencing the benefits of environmental reporting, providing insights into the advantages of environmental reporting practices.

Table 7.33*Benefits of Environmental Reporting (Employees)- Testing of Hypothesis*

Sl. No	Alternate Hypothesis	Beta Value	Sig.	Decision
H1	There is significant impact of economic and financial benefits on benefits of environmental reporting.	.44	<.05	Accepted
H2	There is significant impact of future benefits on benefits of environmental reporting	.46	<.05	Accepted
H3	There is significant impact of regulatory and risk management benefits on benefits of environmental reporting	.51	<.05	Accepted
H4	There is significant impact of Social/ organisational image benefits on benefits of environmental reporting	.47	<.05	Accepted

Source: Primary Data

The results indicated that all four alternate hypotheses were accepted, suggesting that economic and financial benefits, future benefits, regulatory and risk management benefits, and social/organizational image benefits significantly impacted the benefits of environmental reporting as perceived by employees. The beta coefficients revealed that regulatory and risk management benefits had the most substantial impact on the benefits of environmental reporting ($\beta = 0.51$), followed by social/organizational image benefits ($\beta = 0.47$), future benefits ($\beta = 0.46$), and economic and financial benefits ($\beta = 0.44$).

These findings highlighted the importance of considering multiple benefits when evaluating the advantages of environmental reporting from the perspective of employees. The significant impact of regulatory and risk management benefits suggested that employees perceive environmental reporting as a means to manage risks and comply with regulations. The results also showed that economic and financial benefits, future benefits, and social/organizational image benefits all had significant impacts on the benefits of environmental reporting, indicating that employees value the various benefits associated with environmental reporting.

• **Benefits of Environmental Reporting (External Auditors)**

The study employed Structural Equation Modeling (SEM) to examine the benefits of environmental reporting. The SEM analysis allowed for the examination of complex relationships between latent variables, providing insights into the underlying mechanisms driving the benefits of environmental reporting.

Hypotheses

H1: There is significant impact of economic and financial benefits on benefits of environmental reporting.

H2: There is significant impact of future benefits on benefits of environmental reporting

H3: There is significant impact of regulatory and risk management benefits on benefits of environmental reporting

H4: There is significant impact of Social/ organisational image benefits on benefits of environmental reporting.

The table presents the model fit indices for the structural model examining the benefits of environmental reporting. The fit indices provide crucial insights into the goodness-of-fit of the proposed theoretical model to the empirical data.

Table 7.34

Model Fit Indices- Benefits of Environmental Reporting (External Auditors)

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.93	.95	.93	.92	.040
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

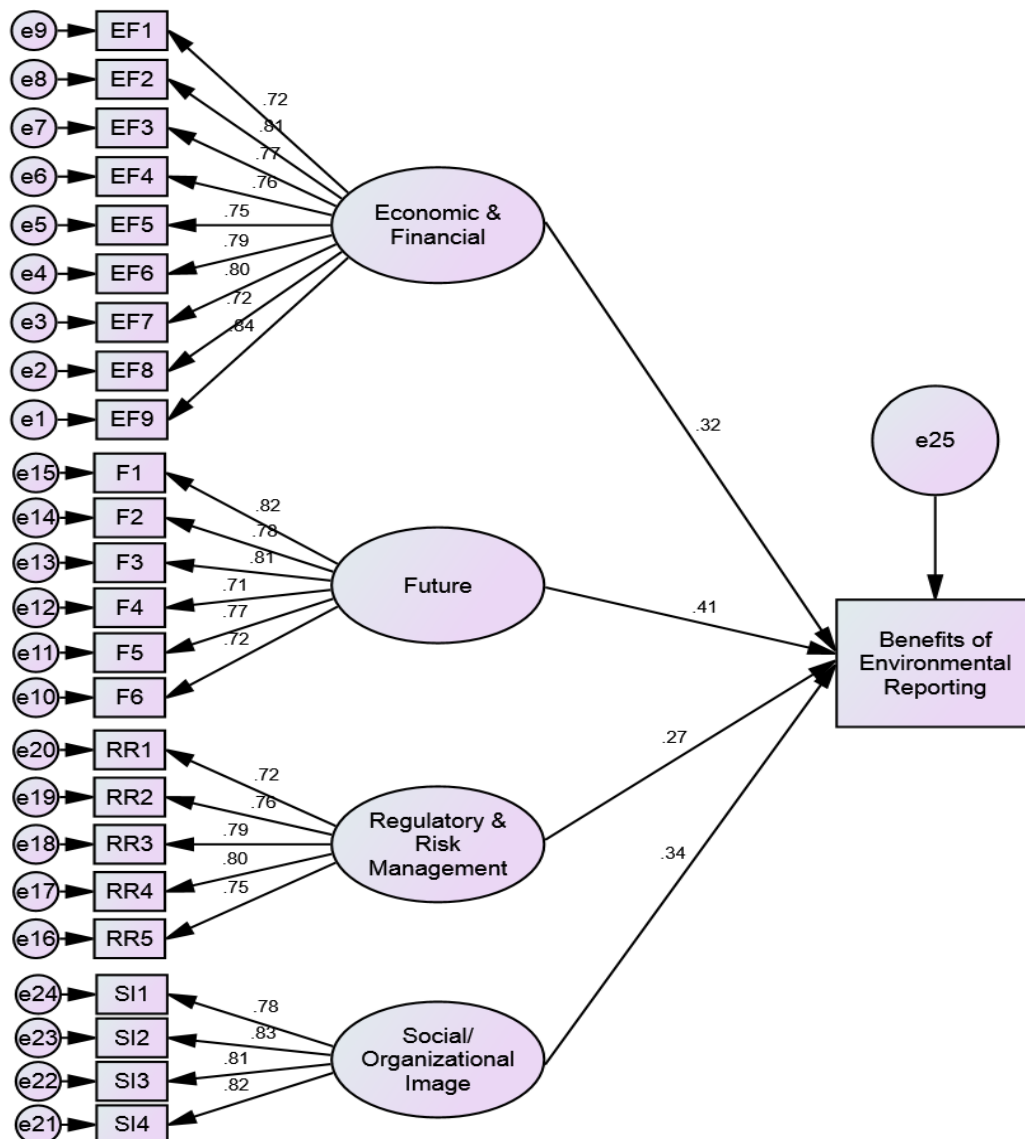
Source: Primary Data

The results indicated that the measurement model exhibited excellent fit, as evidenced by the high values of the Comparative Fit Index (CFI = 0.93), Goodness-of-Fit Index (GFI = 0.95), Tucker-Lewis Index (TLI = 0.93), and Normed Fit Index (NFI = 0.92). These values exceeded the standard threshold of >0.9, suggesting a good fit between the observed data and the hypothesized model.

The Root Mean Square Error of Approximation (RMSEA = 0.040) was below the threshold of <0.05, indicating a close fit between the model and the data. This result suggested that the model accurately represented the underlying structure of the observed data, providing a solid foundation for interpreting the results and drawing meaningful conclusions.

Figure 7.8

Benefits of Environmental Reporting (External Auditors)



The table provided below presents the results of hypothesis testing examining the benefits of environmental reporting from the perspective of external auditors.

The analysis aimed to identify the significant factors influencing the benefits of environmental reporting, providing insights into the advantages of environmental reporting practices as perceived by external auditors.

Table 7.35*Benefits of Environmental Reporting (External Auditors)- Testing of Hypothesis*

Sl. No	Alternate Hypothesis	Beta Value	Sig.	Decision
H1	There is significant impact of economic and financial benefits on benefits of environmental reporting.	.32	<.05	Accepted
H2	There is significant impact of future benefits on benefits of environmental reporting	.41	<.05	Accepted
H3	There is significant impact of regulatory and risk management benefits on benefits of environmental reporting	.27	<.05	Accepted
H4	There is significant impact of Social/ organisational image benefits on benefits of environmental reporting	.34	<.05	Accepted

Source: Primary Data

The results indicated that all four alternate hypotheses were accepted, suggesting that economic and financial benefits, future benefits, regulatory and risk management benefits, and social/organizational image benefits significantly impacted the benefits of environmental reporting as perceived by external auditors. The beta coefficients revealed that future benefits had the most substantial impact on the benefits of environmental reporting ($\beta = 0.41$), followed by social/organizational image benefits ($\beta = 0.34$), economic and financial benefits ($\beta = 0.32$), and regulatory and risk management benefits ($\beta = 0.27$).

These findings highlighted the importance of considering long-term benefits when evaluating the advantages of environmental reporting. The significant impact of future benefits suggested that external auditors perceive environmental reporting as a means to achieve long-term sustainability and financial benefits. The results also showed that economic and financial benefits, regulatory and risk management benefits, and social/organizational image benefits all had significant impacts on the benefits of environmental reporting, indicating that external auditors value the various benefits associated with environmental reporting.

7.5 Summary

This objective analyses the constraints and benefits associated with Environmental reporting. The internal constraint which has great impact on the implementation of environmental accounting as perceived by employees was the lack of expertise to produce environmental reports and the external constraint having great impact was that no legal requirement to disclose environmental reports. The technical and financial constraint which posed difficulties for implementation of environmental reporting was lack of coordination with different stakeholders and high cost of disclosure and lack of standard method for measuring the value of environmental goods and services. The external auditors emphasised lack of experts involved for the preparation of environmental reports and high cost of installing environmental management system in the organizations as internal constraint. Lack of proper regulation for environmental reporting and difficulty in comparing two firms following different methods of disclosure was viewed as external and technical constraints respectively by external auditors.

The benefits perceived by employees as a result of proper implementation of environmental accounting include eco efficiency, proper risk management, improved image and allowing mandatory disclosure. The external auditors highlighted long term survival of organization, integration with financial reporting, guaranteeing accuracy of reports and improved image as benefits of disclosure. Proper training and capacity building programs should be arranged and efforts should be made to integrate financial and environmental reporting.

Chapter 8

FINDINGS, SUGGESTIONS, IMPLICATIONS OF RESEARCH, CONCLUSION, AND SCOPE FOR FURTHER RESEARCH

8.1	Introduction.....	447
8.2	Findings of the Study	447
8.3	Suggestions	473
8.4	Implications of the Study.....	480
8.5	Conclusion	482
8.6	Scope for Further Research	484

Chapter 8

FINDINGS, SUGGESTIONS, IMPLICATIONS OF RESEARCH, CONCLUSION, AND SCOPE FOR FURTHER RESEARCH

8.1 Introduction

This chapter presents the key findings derived from the challenges and prospects of Environmental Reporting followed by suggestions, conclusion, implications and scope for further research. The main aim is to synthesise the evidence gathered through data collection, literature review and stakeholder insights so as to highlight the current state of environmental reporting practices and their implications for ensuring sustainability and corporate transparency. The findings are organised around the main research objectives giving due focus on the challenges faced by organisation in disclosing environmental information. The quality and consistency of reports, gaps in reporting and stakeholder expectations are highlighted. These findings underscore both weaknesses and emerging opportunities within the field.

The suggestions highlighted in this chapter provides guidance and deep insights to automobile manufacturing companies, policy makers, external auditors, and lower-level employees focusing on their joint accountability thereby ensuring that the efforts are made to reduce the adverse impact on society and to increase the quality of disclosure of environmental information. The study aims to contribute to the development of a more systematic and transparent environmental reporting that align to global sustainability goals. The major conclusion of the study, theoretical and practical implications and the suggested topics for future research are also presented in this chapter.

8.2 Findings of the Study

The findings assume a general research scope involving detailed analysis of annual reports of the company, interviewing with stakeholders and relevant literatures available. The study revealed significant insights as regards to the current

state of Environmental reporting, extent of disclosure and factors influencing reporting practices. The findings are categorised for each objective of the study. The study highlights how regulatory frameworks, stakeholder pressure and organisational commitment shape disclosure behaviour.

8.2.1 Findings on Determinants of Environmental Disclosure in Automobile Industry

- There have been significant differences between the perceptions of employees and external auditors regarding stakeholder pressure. Employees perceived that companies should consider stakeholders' interests to a greater extent. However, both groups had common perceptions regarding the role of disclosure in avoiding employee disappointment. Notably, employees and external auditors differed significantly in their perceptions of the influence of managers' perceptions on company environmental policy, internal stakeholders' support for environmental disclosure, and the impact of good environmental reputation and production efficiency on major company shareholders. Overall, the findings suggest that employees and external auditors have distinct perspectives on the importance of stakeholder pressure in shaping environmental policies and practices of the company.
- The results revealed significant differences between the perceptions of employees and external auditors regarding environmental awards and certification. Employees perceived that environmental awards encouraged companies to take care of the environment and disclose more environmental information to a greater extent than external auditors. Additionally, employees perceived that companies with ISO 14000 certification showed more commitment to environmental policy. Significant differences were also found between the two groups regarding the perceived impact of environmental certification on continuous improvement in environmental performance. However, no significant differences were found between employees and external auditors regarding the role of environmental certification in promoting ethical conduct and minimizing harmful environmental impacts.

- The results revealed significant differences between the perceptions of employees and external auditors regarding disclosure practices. Employees perceived that qualitative environmental information was more likely to be included in the directors' report, and that statutorily required information on conservation of energy was more likely to be disclosed, compared to external auditors. Additionally, employees perceived that organizations' commitments towards social goals were more likely to be highlighted in reports, and that firms that failed to meet environmental expectations were more likely to disclose more information to mitigate negative effects, compared to external auditors. However, no significant difference was found between the two groups regarding the provision of detailed environmental information in the chairman's statement as per Global Reporting Initiative guidelines.
- The results revealed significant differences between the perceptions of employees and external auditors regarding the type and quality of auditors appointed by the company. Employees perceived that high-quality auditors were better equipped to assess the environmental impact of a firm's business operations, produce high-quality environmental information, and recommend clients to report environmental information, compared to external auditors. Additionally, employees perceived that the high corporate moral values of a company influenced the selection and quality of auditors, and that larger firms appointed Big 4 accounting firms as auditors to gain international recognition, compared to external auditors. These findings suggest that employees and external auditors have distinct perspectives on the role and importance of auditor type and quality in promoting environmental accountability and transparency.
- The results revealed significant differences between the perceptions of employees and external auditors regarding pollution propensity. Employees perceived that the announcement of environmental information reduced pollution emissions and promoted low-carbon development of enterprises to a greater extent than external auditors. Additionally, employees perceived that

government pollution control policies improved the atmospheric environment, and that environmental taxes reduced pollution emissions per unit of output. However, no significant differences were found between the two groups regarding the effectiveness of tax subsidies for clean companies in reducing environmental pollution, and the extent to which firms in polluting industries disclosed toxic waste information to avoid adverse stakeholder actions.

- The results revealed significant differences between the perceptions of employees and external auditors regarding political exposure. Employees perceived that society had higher expectations for the environmental performance of large firms, and that politically exposed firms were expected to take more social responsibility and comply with laws and social norms to a greater extent than external auditors. Additionally, employees perceived that political connections helped firms to obtain government resources and attract media attention, and that high political costs compelled management to disclose more environmental information and engage in environmentally friendly activities. These findings suggest that employees and auditors have distinct perspectives on the role of political exposure in shaping environmental accountability and transparency.
- The results revealed significant differences between the perceptions of employees and auditors regarding media exposure. Employees perceived that media exposure increased public attention on social problems and informed stakeholders about companies' environmental concerns to a greater extent than external auditors. However, employees perceived that media exposure encouraged managers to disclose company's environmental activities to a lesser extent than auditors. Additionally, employees perceived that increased media coverage enhanced the role of non-governmental organizations (NGOs), and that media exposure had a lower frequency than yearly reports, compared to external auditors. Furthermore, employees perceived that firms with high media exposure disclosed more environmental information to a lesser extent than external auditors.

- The results revealed significant differences between the perceptions of employees and external auditors regarding board size. Employees perceived that a larger board size provided diversity in terms of expertise, particularly in financial or accounting backgrounds, to a greater extent than auditors. Additionally, employees perceived that a larger board size led to more environmental disclosure and facilitated unanimous decision-making, whereas external auditors did not share this perception. However, no significant difference was found between the two groups regarding the potential difficulties in maintaining coordination between board members and weaker decision-making associated with larger board sizes. Furthermore, employees perceived that larger boards were more likely to experience agency conflicts between managers and shareholders, and that strong boards were more effective in communicating with all stakeholders, compared to auditors.
- The results revealed significant differences between the perceptions of employees and external auditors regarding board independence. Employees perceived that independent boards were more effective in monitoring managers and considering the interests of stakeholder groups, compared to external auditors. Additionally, employees perceived that independent directors were less likely to have personal and professional relationships with the firm, and were more likely to encourage top management to incorporate social considerations. However, no significant differences were found between the two groups regarding the perceived impact of independent directors on firm value, protection of stakeholder interests, and contribution to achieving strategic goals and disclosing environmental information.
- The results revealed significant differences between the perceptions of employees and external auditors regarding gender diversity. Employees perceived that gender diversity favoured problem-solving by considering different perspectives and ideas to a greater extent than external auditors. Additionally, employees perceived that female directors were less stakeholder-oriented and less effective in enhancing board effectiveness, and that women

were more concerned about environmental issues and the well-being of society. Furthermore, employees perceived that gender diversity had a less positive impact on organizations' socially responsible behavior and disclosure propensity, compared to auditors. However, no significant difference was found between the two groups regarding the perceived differences between women and men in terms of communication style, educational background, commitment and expertise.

- The results revealed significant differences between the perceptions of employees and external auditors regarding board meetings. Employees perceived that the frequency of board meetings had a greater impact on firms' performance, promoted idea sharing and knowledge, and led to more disclosure, compared to auditors. Additionally, employees perceived that board meetings were less effective in addressing issues related to low performance, alerting stakeholders to problems or conflicts, and making major decisions, compared to auditors. However, employees and external auditors shared similar views on the role of board meetings in providing opportunities to discuss strengths and weaknesses affecting firms' earnings.
- The results revealed significant differences between the perceptions of employees and external auditors regarding environmental committees. Employees perceived that environmental committees were more effective in addressing environmental issues and ensuring better quality environmental disclosure. In contrast, external auditors perceived that environmental committees were more effective in managing conflicts between stakeholder groups, improving companies' commitment to sustainability, planning and implementing sustainability policies, enhancing employee awareness of environmental aspects and communicating with external stakeholders, compared to employees. These findings suggest that employees and external auditors have distinct perspectives on the role and effectiveness of environmental committees in promoting environmental accountability and sustainability.

- The results revealed significant differences between the perceptions of employees and external auditors regarding the size of the firm. Employees perceived that large firms faced more pressure from the public to disclose more information, and that disclosing more information reduced agency costs and created confidence among stakeholders to a lesser extent. In contrast, external auditors perceived that large firms were more interested in disclosing information to attract investors and influence employees, and that small firms were less able to afford the costs of reporting environmental information. Additionally, auditors perceived that large firms were more accountable for environmental issues, more aware of maintaining a good corporate reputation, and more effective in minimizing public criticism and government pressure, compared to employees.
- The results revealed significant differences between the perceptions of employees and external auditors regarding the age of the firm. Employees perceived that older firms were more influential in shaping perceptions about their business and more proactive in implementing new policies to sustain their business. However, external auditors perceived that as companies matured, their reputation increased, and their involvement in environmental protection activities also increased, compared to employees. Additionally, they perceived that older firms disclosed more information about environmental activities, faced more political pressure and had more up-to-date information about recent developments and changes in society, compared to employees.
- The results revealed significant differences between the perceptions of employees and external auditors regarding the number of years a firm was listed on the stock market. Employees perceived that listed firms were more likely to comply with disclosure requirements and publish annual reports on environmental risks, but less likely to promote stakeholder engagement, improve communication with stakeholders, and have sustainability-related goals and targets, compared to external auditors. Additionally, employees perceived that listed firms were less likely to demonstrate their sustainability

objectives. These findings suggest that employees and auditors have distinct perspectives on the impact of listing on a firm's environmental disclosure and sustainability practices.

- The results revealed significant differences between the perceptions of employees and external auditors regarding the type of industry. Employees perceived that environmental sensitive industries were more likely to comply with environmental regulations and face greater societal pressure, but disclosed less environmental information, compared to external auditors. Additionally, employees perceived that public sector companies disclosed less environmental information, followed less stringent rules and had less exposure. In contrast, external auditors perceived that manufacturing firms disclosed more environmental information to maintain a healthy relationship with the investment community, and that public sector companies disclosed more environmental information to gain exposure.
- The results revealed significant differences between the perceptions of employees and external auditors regarding uncertainty avoidance. Employees perceived that societies with high uncertainty avoidance tendencies preferred a more relaxed atmosphere and were more averse to risk, compared to auditors. Additionally, employees perceived that long-term oriented firms disclosed more environmental information, and that individualistic firms maintained less secrecy compared to external auditors. Furthermore, employees perceived that collectivistic societies shared common beliefs and ideas, leading to greater environmental disclosure. These findings suggest that employees and external auditors have distinct perspectives on the relationship between cultural dimensions and environmental disclosure practices.
- The results revealed significant differences between the perceptions of employees and external auditors regarding the determinants of environmental disclosure. Employees perceived that factors such as auditor type/quality, pollution propensity, political exposure, media exposure, board size, environmental committee, size of the firm, age of the firm, number of years

listed and uncertainty avoidance had a more significant impact on environmental disclosure, compared to external auditors. In contrast, external auditors perceived that factors such as environmental awards and certification, disclosure practices, and type of industry had a more significant impact on environmental disclosure, compared to employees. These findings suggest that employees and external auditors have distinct perspectives on the determinants of environmental disclosure.

- The results revealed that all 17 hypothesized determinants of environmental disclosure had a significant impact on the environmental disclosure practices of firms, as perceived by employees and external auditors. Specifically, stakeholder pressure, environmental awards and certification, disclosure practices, auditor type/quality, pollution propensity, political exposure, media exposure, board size, board independence, gender diversity, board meetings, environmental committees, size of the firm, age of the firm, number of years listed, type of industry and uncertainty avoidance all emerged as significant predictors of environmental disclosure. These findings suggest that both employees and external auditors perceive a wide range of factors as influencing a firm's environmental disclosure practices.

8.2.2 Findings on Present Environmental Disclosure Practices of Selected Automobile Manufacturing Companies

- The results revealed varying levels of frequency among respondents regarding reports published by companies together with annual reports. A significant proportion of respondents reported that most of the companies very frequently disclose information through Health, Safety and Environment reports. A substantial number of respondents pointed out that sustainability reports and CSR reports are frequently used for disclosing environmental information. In contrast, a considerable number of respondents reported that these reports are very rarely used by the company for disclosing environmental information, indicating a gap in knowledge and understanding among respondents. The findings also suggest that informal reports were more frequently used by the

companies. The results highlighted the need for increased awareness and transparency regarding environmental and sustainability reporting practices among companies.

- The results revealed significant differences in perception levels between employees and external auditors regarding the frequency of various reports published by companies together with annual reports. Employees demonstrated higher levels of perception, particularly with regards to Health, Safety and Environment reports and informal reports, whereas external auditors exhibited lower levels of perception across all report types. Notably, a substantial proportion of external auditors viewed that CSR reports, Sustainability reports, and Health, Safety and Environment reports were very rarely used by the companies for disclosing environment related information, highlighting a gap in knowledge and understanding among this group. The employees viewed CSR report as most frequent form of disclosure whereas external auditors showed higher frequency towards sustainability report. These findings suggest that employees and external auditors have distinct perspectives on the importance and relevance of various report types, with implications for environmental disclosure and transparency practices.
- The results revealed varying levels of frequency among respondents regarding different reporting formats adopted by the company. A substantial proportion of respondents reported that most of the companies very frequently disclose information following the guidelines of Global Reporting Initiative and the Global Compact Initiative, indicating a high level of familiarity with these frameworks. However, a significant number of respondents viewed that these reporting formats are very rarely used by the company in disclosing environmental information, suggesting a gap in knowledge and understanding. In contrast, sectoral guidance was found to be most widely accepted format of disclosure as viewed by highest proportion of respondents. Overall, the findings highlight the need for increased awareness and education regarding environmental reporting formats among the respondents.

- The results revealed significant differences in perception levels between employees and external auditors regarding reporting formats. Employees demonstrated higher level of perception of GRI and moderate perception level of GCI, whereas external auditors exhibited significantly lower perception levels of these frameworks. In contrast, external auditors showed higher perception level of sectoral guidance as the most frequent reporting format adopted by companies compared to employees. These findings suggest that employees and external auditors have distinct perspectives on the importance and relevance of different reporting formats, with implications for environmental disclosure and transparency practices.
- The results revealed that environmental disclosure was most commonly found in the director's report, with a significant proportion of respondents being very familiar with this practice. The main body of financial statements and footnotes to the financial statements were also common locations for environmental disclosure. In contrast, separate environmental statements and separate annexures to financial statements were less commonly used for environmental disclosure. These findings suggest that companies tend to integrate environmental information into their existing financial reporting frameworks, rather than presenting it in standalone reports.
- The results revealed significant differences in the trend of environmental disclosure between employees and external auditors. Employees pointed out that environmental information was disclosed in the director's report, separate annexures to financial statements and separate environmental statements. In contrast, external auditors pointed out that environmental information was disclosed in the main body of financial statements and footnotes to the financial statements. These findings suggest that employees and external auditors have distinct perspectives on the medium of environmental disclosure, with implications for the transparency and accountability of environmental reporting practices.
- The results revealed significant differences in the medium of environmental disclosure between employees and external auditors. Employees reported

significantly lower levels of environmental disclosure in the main body of financial statements and footnotes to the financial statements compared to external auditors. However, employees reported significantly higher levels of environmental disclosure in separate annexures to financial statements and separate environmental statements. These findings suggest that employees and external auditors have distinct perspectives on the medium of environmental disclosure, with implications for the transparency and accountability of environmental reporting practices.

- The results revealed that the items coming under environmental management and governance practices were considered very frequent item of disclosure by majority of respondents. Specifically, environmental objectives, environmental management systems, and environmental auditing were deemed crucial components of environmental management and governance. Furthermore, the possession of an ISO 14001 environmental management certificate and the allocation of a dedicated environmental budget were also considered as most frequent items of disclosure by significant proportion of respondents. These findings suggest that organizations recognized the significance of environmental management and governance practices in reducing their environmental footprint and promoting sustainability.
- The results revealed no significant difference in the perceived frequency of disclosure of environmental management and governance practices between employees and external auditors. Both groups assigned a relatively high level of importance to environmental management and governance, suggesting that both employees and external auditors recognized that most of the companies are disclosing these activities, thereby emphasizing the significance of these practices in promoting sustainability and reducing environmental impact. This finding implies that environmental management and governance are valued equally by both employees and external auditors, highlighting a shared commitment to environmental responsibility.

- The results revealed that the items coming under environmental performance and impact were considered very frequent item of disclosure and crucial aspects of organizational responsibility by majority of respondents. Specifically, waste management, pollution control measures, conservation of natural resources, and measures to reduce electricity, water, and CO₂ emissions were deemed essential components of environmental performance. Furthermore, the impact of organizational activities on the environment was also considered a critical aspect of environmental responsibility. These findings suggest that organizations recognized the significance of environmental performance and impact, and acknowledged the need to adopt sustainable practices to mitigate their environmental footprint.
- The results revealed no significant difference in the perceived frequency of disclosure of environmental performance and impact between employees and external auditors. Both groups assigned a relatively high level of importance to environmental performance and impact, suggesting that both employees and external auditors recognized that most of the companies are disclosing these activities, thereby emphasizing the significance of these factors in promoting sustainability and reducing environmental footprint. This finding implies that environmental performance and impact are valued equally by both employees and external auditors, highlighting a shared commitment to environmental responsibility.
- The results revealed that the items coming under environmental accounting and reporting practices were considered most frequent item of disclosure and crucial aspects of organizational responsibility by majority of respondents. Specifically, significant accounting and reporting practices, value of intangible environmental investments, expenditure related to environmental norms, contributions to environmental funds, and costs for controlling environmental impact were deemed essential components of environmental accounting and reporting. Furthermore, awards obtained for environmental protection were also considered a critical aspect of environmental responsibility. These findings suggest that organizations recognized the significance of environmental

accounting and reporting practices in promoting transparency and accountability for environmental performance.

- The results revealed no significant difference in the perceived frequency of disclosure of environmental accounting and reporting practices between employees and external auditors. Both groups assigned a relatively high level of importance to environmental accounting and reporting, suggesting that both employees and external auditors recognized that most of the companies are disclosing these activities, thereby highlighting the significance of these practices in promoting transparency and accountability for environmental performance. This finding implies that environmental accounting and reporting are valued equally by both employees and external auditors, highlighting a shared commitment to environmental responsibility and sustainability.

8.2.3 Findings on the effect of Financial Performance on Corporate Environmental Disclosure

- The study found that financial performance had a significant impact on corporate environmental disclosure and performance practices. Respondents believed that companies with high profitability were more likely to prioritize environmental issues, gain a competitive advantage, and contribute to the welfare of stakeholders. Additionally, respondents believed that profitable companies were more trusted by the public, had higher stakeholder expectations, and were more likely to attract investors. Furthermore, respondents believed that profitability was an indicator of a company's ability to manage its environmental assets, highlighting the importance of financial performance in promoting environmental responsibility.
- The study found that there was no significant difference in the perception of financial performance between external auditors and employees. Both groups held similar views on the importance of financial performance in relation to environmental disclosure and performance practices, suggesting that there was a shared understanding of the role of financial performance in promoting environmental responsibility.

- The study found that respondents believed that corporate environmental disclosure had a positive impact on organizational profitability. Specifically, respondents believed that disclosing environmental costs created awareness among investors, and that proper disposal of waste and employee health and safety measures could generate revenue and increase profit. Additionally, respondents believed that investing in employee training on environmental matters and cleaning up hazardous materials from the environment could also enhance profitability. Conversely, respondents believed that ignoring health and safety costs could lead to occupational accidents, financial losses and decreased profitability, highlighting the importance of environmental disclosure in promoting sustainable business practices.
- The study found that external auditors and employees differed significantly in their perceptions of corporate environmental disclosure. Specifically, employees placed greater emphasis on corporate environmental disclosure than external auditors, suggesting that employees may have had a more nuanced understanding of the importance of transparency and accountability in environmental reporting. This finding highlights the need for collaboration and communication between employees and external auditors to promote a culture of environmental disclosure and responsibility within organizations.
- The study found that financial performance had a significant positive effect on corporate environmental disclosure. This finding suggests that companies with better financial performance were more likely to disclose environmental information, highlighting the importance of financial resources in promoting transparency and accountability in environmental reporting. The study's results reject the notion that financial performance is unrelated to corporate environmental disclosure, instead it suggests a positive relationship between the two variables.
- The mean Return on Capital Employed (ROCE) is 15.15, representing a moderate level of effectiveness of the companies in employing capital to make profits.

- The mean Earnings Per Share (EPS) is 109.74, representing that the sample companies have varying measures of profitability.
- The median Return on Assets (ROA) is 5.11, which is a reflection of low profitability in relation to assets; however, the prevalence of negative values shows that there are a number of companies that are incurring losses.
- The median leveraged is 2.59, which reflects a moderate degree of financing operations via debt for the sample companies.
- The mean Debt-Equity Ratio is 0.60, indicating that most firms have a leveraged capital structure, though the negative minimum indicates potential data unreliability or financial distress.
- The mean Current Ratio is 1.28 and the mean Quick Ratio is 0.92, both of which indicate that, on average, firms have sufficient short-term assets to cover liabilities, though some firms have very low liquidity.
- Mean Energy Intensity is 1570.81 KWH, with wide variation in energy use among companies with some of them recording very high usage levels.
- The mean Water Intensity is 3.72 KL, recording moderate water resource consumption with wide variation among companies.
- The mean Greenhouse Gas Emissions is 5.13 tonnes CO₂ with wide variation in carbon footprint among companies.
- The average Waste Intensity is 1550.12 kg, which suggests significant heterogeneity in waste generation practice.
- The average Environmental Reporting Completeness Ratio is 0.80, which suggests that most firms provide quite detailed environmental disclosures, although there is some variation.
- Correlation analysis shows that ROA and ROCE are highly positively correlated ($r = 0.638$), i.e., those companies that are better in terms of return on assets are also better in terms of return on capital.

- ROCE is positively correlated with EPS, Current Ratio, Quick Ratio, Water Intensity, and Environmental Reporting Completeness, and negatively correlated with Debt-Equity Ratio.
- ROA is negatively correlated with Leverage and Energy Intensity, and positively with liquidity and environmental disclosure.
- Firms with high debt-equity ratios disclose more information in environmental reports, but firms with high liquidity and low leverage demonstrate excellent sustainability performance.
- Regression analysis suggests that Energy Intensity is affected by ROA, Leverage, Debt-Equity Ratio, and Quick Ratio with negative coefficients.
- Greenhouse Gas Emissions is positively impacted by ROA, and other variables don't have any effects.
- Water Intensity is positively impacted by ROCE and negatively by ROA, indicating a scale versus efficiency relationship.
- Waste Intensity is heavily impacted negatively by only Debt-Equity Ratio; other predictors don't have any correlation.
- Environmental Reporting Completeness is impacted positively by Debt-Equity Ratio due to greater pressure faced from lenders, creditors and investors by highly leveraged firms. The completeness ratio is impacted negatively by ROA.

8.2.4 Findings on the effect of Environmental Disclosure on Corporate Environmental Performance and Moderating role of Financial Performance and Mediating role of Environmental Policy, Separate Environmental Department, Environmental Management System and Employee Training

- The study found that environmental disclosure was perceived to be improved through various mechanisms, including the audit of environmental management systems, verification of environmental reports, and compliance with environmental laws. Respondents also believed that environmental disclosure helped to respond to pressures from regulatory authorities, reduced wastage of energy,

cost, and time and assessed environmental risks. However, the study also found that environmental audit was perceived to be expensive and time-consuming, and that companies were reluctant to undertake environmental audit due to the lack of mandatory standards. Despite these challenges, respondents believed that environmental disclosure helped to identify problems and improve corporate image.

- The study revealed a significant difference in the perception of environmental disclosure between external auditors and employees. External auditors perceived environmental disclosure as more important than employees, suggesting that they may have had a more in-depth understanding of the role of environmental disclosure in promoting transparency and accountability. This finding implies that external auditors may play a critical role in promoting environmental disclosure practices within organizations, and highlights the need for collaboration between external auditors and other organizational stakeholders to promote environmental reporting practices.
- The study found that corporate environmental performance was perceived to be closely linked to transparency and accountability. Respondents believed that superior environmental performers were motivated to disclose their performance to the general public, whereas poor performers felt pressured to disclose information to mitigate negative impacts. Additionally, respondents believed that environmental disclosure attracted investors, reduced environmental liabilities, and was a key aspect of corporate social responsibility. Furthermore, respondents believed that environmental disclosure ensured that stakeholders were aware of the organization's environmental responsibilities, highlighting the importance of transparency and accountability in promoting environmental performance.
- The study revealed a significant difference in the perception of corporate environmental performance between external auditors and employees. External auditors perceived corporate environmental performance as more important than employees, suggesting that they may have had a thorough

understanding of the role of environmental performance in promoting organizational sustainability. This finding implies that external auditors may play a critical role in promoting environmental performance practices within organizations, and highlights the need for balanced effort between external auditors and other organizational stakeholders to promote environmental responsibility.

- The study found that organizations employed a range of performance indicators to measure and evaluate their environmental performance. These indicators included the presence of an environmental policy, a separate environmental department, an environmental management system and ISO 14001 certification. Additionally, organizations also used environmental statements, audits of environmental statements, recognition of social costs and valuation in decision-making as performance indicators. Furthermore, training programs for employees, internal reward systems, awards obtained for environmental performance, and voluntary steps taken for environmental protection were also used as performance indicators, highlighting the importance of a comprehensive approach to evaluating environmental performance.
- The study revealed a significant difference in the perception of performance indicators for environmental performance between external auditors and employees. External auditors placed greater importance on various performance indicators, including environmental policy, separate environmental department, environmental management system, and ISO 14001 certification, compared to employees. Additionally, they also emphasized the importance of environmental statements, audit of environmental statements, recognition of social costs, and voluntary steps taken for environmental protection. This finding suggests that external auditors may have had a more comprehensive understanding of the performance indicators required to evaluate environmental performance, highlighting the need for collaboration between external auditors and other organizational stakeholders to promote environmental accountability.

- The study found that environmental disclosure had a significant positive relationship with various aspects of corporate environmental performance. Specifically, environmental disclosure was found to be significantly related to the presence of an environmental policy, a separate environmental department, an environmental management system, and ISO 14001 certification. Additionally, environmental disclosure was also found to be significantly related to the publication of environmental statements, audits of environmental statements, recognition of social costs, training programs for employees, internal reward systems, awards obtained for environmental performance and voluntary steps taken for environmental protection. These findings suggest that environmental disclosure played a crucial role in promoting corporate environmental performance, and highlight the importance of transparency and accountability in promoting environmental responsibility.
- The study found that training programs for employees was a significant predictor of corporate environmental performance, suggesting that investments in employee training may have contributed to improved environmental outcomes. However, the study also found that other performance indicators, including environmental policy, separate environmental department, environmental management system, ISO 14001 certification, environmental statements, audit of environmental statements, recognition of social costs, internal reward system, awards obtained for environmental performance and voluntary steps taken for environmental protection, did not have a significant impact on corporate environmental performance. These findings suggest that employee training may be a critical factor in promoting environmental performance, and highlight the need for organizations to prioritize investments in human capital to support environmental sustainability.
- The study found that environmental reporting had a positive and significant impact on environmental performance, indicating that top and middle management teams and external auditors of the firm that prioritize environmental reporting tend to achieve better environmental performance.

This finding suggests that environmental reporting is a crucial aspect of environmental management, and companies that engage in environmental reporting are more likely to achieve improved environmental performance. The positive relationship between environmental reporting and environmental performance highlights the importance of transparency and accountability in environmental management.

- The study found that financial performance played a moderating role in the relationship between environmental reporting and environmental performance from the perceptions of employees and external auditors. The positive indirect effect suggested that financial performance enhances the relationship between environmental reporting and environmental performance. This finding implies that companies that prioritize environmental reporting and consider its impact on financial performance can drive improvements in environmental performance. By prioritizing environmental reporting and considering its impact on financial performance, organizations can drive improvements in environmental performance, which can in turn have a positive impact on financial performance.
- The study found that media exposure, board size, board independence, gender diversity, board meeting, environmental committee, firm size, firm age, number of years listed, type of industry and uncertainty avoidance all had positive and significant relationships with environmental reporting. Both the employees and external auditors had common perceptions on the influence of these factors. These findings suggest that these factors play an important role in shaping environmental reporting practices. The results implied that corporate governance structures can influence environmental reporting practices. The findings highlighted the importance of board characteristics, such as independence and diversity, as well as firm-specific factors, such as size and industry type, in promoting environmental reporting.
- The study found that the mediating variables, including environmental policy, environmental department, environmental management system and employee

training, may not be as effective in enhancing the relationship between environmental reporting and environmental performance as expected. The negative indirect effect suggested that these variables may be suppressing or not contributing significantly to the relationship. This finding highlights the need for further investigation into the role of these mediating variables and the potential reasons for their limited impact.

- The study found that the relationships between the antecedents and environmental reporting were complex, with both direct and indirect effects playing a role. The findings highlighted the importance of considering the moderating variables in understanding the drivers of environmental reporting. This finding implies that the relationships between the antecedents and environmental reporting are nuanced and multifaceted, and that considering the moderating variables can provide a more comprehensive understanding of the drivers of environmental reporting.
- The study found that board characteristics, such as independence and diversity, as well as firm-specific factors, such as size and industry type, were important drivers of environmental reporting. The findings highlighted the significance of board characteristics in promoting environmental reporting. This finding implies that organizations can enhance environmental reporting by prioritizing board independence and diversity, as well as considering firm-specific factors.
- The study's findings have implications for practice, suggesting that environmental reporting can be enhanced through effective corporate governance and firm-specific strategies. By prioritizing environmental reporting and considering the impact of moderating variables, organizations can drive improvements in environmental performance and sustainability. The results can inform strategies to enhance environmental reporting practices, ultimately contributing to improved environmental performance and sustainability.

8.2.5 Findings on Problems and Prospects of Environmental Reporting in Selected Automobile Manufacturing Companies in South India

- The study revealed that organizations faced several internal constraints that hindered their ability to disclose environmental information. The lack of expertise to produce and disclose environmental information was identified as a significant constraint, followed closely by management's perception that environmental information was not important for stakeholders. Additionally, lack of consciousness about environmental disclosure, difficulty in measuring environmental costs and benefits and the high cost of obtaining external advice and setting up environmental management systems were also identified as notable constraints. These findings suggest that organizations faced significant internal barriers to environmental disclosure, which highlights the need for capacity building, awareness raising and resource allocation to support environmental reporting practices.
- The study revealed a significant difference in the perception of internal constraints to environmental disclosure between employees and external auditors. External auditors perceived internal constraints as significantly more severe than employees, suggesting that they had a more detailed understanding of the organizational barriers to environmental disclosure. This finding implies that external auditors may play a critical role in identifying and addressing internal constraints to environmental disclosure, and highlights the need for collaboration between external auditors and other organizational stakeholders to promote environmental reporting practices.
- The study revealed that external constraints hindered organizations' ability to disclose environmental information. The lack of legal requirement or obligation to report environmental information was identified as the most significant external constraint, followed closely by the lack of clear-cut government policy and coordination with different stakeholders. Additionally, the improper enforcement of planning and environmental legislation, as well as inactive enterprise participation, were also identified as notable external

constraints. These findings suggest that the absence of a regulatory framework and lack of government support were significant barriers to environmental disclosure, highlighting the need for policymakers to establish clear guidelines and regulations to promote environmental reporting practices.

- The study revealed a significant difference in the perception of external constraints to environmental disclosure between employees and external auditors. They perceived external constraints as significantly more severe than employees, suggesting that auditors may have had a more insight into understanding of the external barriers to environmental disclosure. This finding implies that external auditors may play a critical role in identifying and addressing external constraints to environmental disclosure, and highlights the need for collaboration between external auditors and other organizational stakeholders to promote environmental reporting practices.
- The study revealed that technical and financial constraints hindered organizations' ability to disclose environmental information. The high capital investment required for pollution control equipment was identified as the most significant technical constraint, followed closely by the lack of standard method for estimating the social value of environmental goods and services. Additionally, the high cost of disclosure, difficulties in comparing firms with different methods, and concerns about providing sensitive information to competitors were also identified as notable technical and financial constraints. These findings suggest that organizations faced significant technical and financial barriers to environmental disclosure, highlighting the need for standardized reporting frameworks, cost-effective disclosure methods, and strategies to mitigate competitive concerns.
- The study revealed a significant difference in the perception of technical and financial constraints to environmental disclosure between employees and external auditors. They perceived technical and financial constraints as significantly more severe than employees, suggesting that auditors may have had a more in-depth understanding of the technical and financial barriers to

environmental disclosure. This finding implies that external auditors may play a critical role in identifying and addressing technical and financial constraints to environmental disclosure, and highlights the need for collaboration between external auditors and other organizational stakeholders to promote environmental reporting practices.

- The study found that internal, external, and technical/financial constraints all had a significant positive effect on the problems of environmental reporting in the automobile industry. Specifically, internal constraints, such as lack of expertise and inadequate management support, were found to be a significant barrier to environmental reporting. Similarly, external constraints, including lack of regulatory requirements and inadequate stakeholder pressure, also hindered environmental reporting practices. Furthermore, technical and financial constraints, such as high costs and lack of standardization, also posed significant challenges to environmental reporting. These findings suggest that addressing these constraints is crucial for promoting environmental reporting practices in the automobile industry.
- The study revealed that organizations enjoyed several economic and financial benefits as a result of proper disclosure of environmental information. The eco efficiency was identified as a significant economic benefit, followed by helping the management to take rational decisions and improvement in profitability. Additionally, increase credibility of information, accurate estimate of total cost of producing product, attracting investors, long term survival of the organization and the reduction in environmental cost and capital cost were also identified as notable economic and financial benefit. These findings suggest that organizations enjoyed significant economic and financial benefits from proper environmental disclosure, which highlights the need for proper allocation of resources to support environmental reporting practices.
- The organizations enjoyed several benefits related to regulation and risk management as a result of proper disclosure of environmental information. The possibility of risk management was identified as a significant regulation and

risk management benefit, followed by guaranteeing the accuracy of environmental reports and respond to pressures. Additionally, improved CSR and proper compliance of environmental laws were also identified as notable regulation and risk management benefit. These findings suggest that organizations enjoyed significant regulation and risk management benefits from proper environmental disclosure.

- The organizations enjoyed several benefits related to social and organizational image as a result of proper disclosure of environmental information. Improved corporate reputation was identified as a significant social and organizational image benefit, followed by improved quality and productivity of staff and enhanced environmental image. Additionally, new application for non-hazardous waste was also identified as notable social and organizational image benefit. These findings suggest that organizations enjoyed significant regulation and risk management benefits from proper environmental disclosure.
- The organizations enjoy benefits in future as a result of proper disclosure of environmental information. International recognition was identified as a significant future benefit, followed by stakeholder centric reporting and mandatory disclosure. Additionally, the wider adoption of global standard and focus on carbon disclosure were also identified as notable future benefits. These findings suggest that organizations will enjoy future benefits as a result of proper disclosure of environmental information.
- The comparative analysis revealed significant differences in the perceptions of employees and external auditors on some of the benefit items. Specifically, employees perceived Economic and Financial Benefits, such as "Helps management in decision making and improves profitability" and "Eco efficiency", to be more important than external auditors. The findings highlighted the importance of considering the perspectives of different stakeholder groups when evaluating the benefits of environmental reporting.
- The comparative analysis also revealed similarities in the perceptions of employees and external auditors on some of the benefit items. Specifically,

both groups had similar perceptions on the importance of Regulatory Risk Management Benefits, Social/Organizational Image Benefits and Future benefits. The findings implied that employees and external auditors shared similar views on the importance of these benefits, and highlighted the importance of collaboration and communication between different stakeholder groups in ensuring effective environmental reporting and risk management.

8.3 Suggestions

The suggestions are directed to corporate entities (top/middle level employees), policy makers, external auditors and lower-level employees who are involved in the formulation and implementation of disclosure norms and strategies relating to environmental governance and disclosure processes. The implementation of these suggestions helps to overcome current challenges and leverage the emerging opportunities associated with corporate environmental disclosure.

8.3.1 Suggestions to automobile manufacturing companies

- Companies should prioritize stakeholder pressure as a key driver of environmental disclosure by categorizing stakeholders based on power and urgency and conducting a materiality analysis to identify the environmental issues that are very much affecting stakeholders. They should recognize media exposure as a means of increasing public attention on social and environmental issues by identifying media outlets that meet the expectations of target stakeholders. They should also strive to obtain environmental awards and certifications through environmental management system and environmental audit.
- Organizations should prioritize transparency and accountability by disclosing qualitative environmental information in directors' reports and detailed environmental information in chairman's statements.
- Companies should appoint high-quality auditors who can assess the environmental impact of their business operations according to the required

audit needs and ensuring periodic rotation and performance review thereby producing high-quality environmental information.

- Firms should recognize the importance of pollution propensity and take steps to reduce the environmental impact by proper assessment of environmental risks and adoption of cleaner production and waste management practices. If pollution propensity is reduced, the firms can enjoy subsidies and environmental tax reduces pollution emission per unit of output. They should try to manage political exposure by frequent monitoring of policy changes and maintaining transparent government relations.
- The companies should take up CSR projects to get more resources from government. The employees should be given awareness of CSR reporting and should instil in them that the main objective of the company is to operate ethically in a way that ensures long term value for society and environment.
- Companies should ensure that their board size is optimal by balancing board composition with company size thereby ensuring that the board meetings are effective in addressing environmental issues and promoting environmental disclosure. The board independence and the importance of gender diversity on the boards should be recognized to reduce management bias, to enhance trust among stakeholders and to strengthen decision making on sustainability and environmental issues.
- Companies should establish environmental committees to address environmental issues and should recognize the importance of their size and age in shaping their environmental disclosure practices.
- Firms should recognize the importance of cultural factors in shaping their environmental disclosure practices and take steps to manage it.
- Proper training should be arranged by firms to employees on environmental reporting formats, such as the Global Reporting Initiative and the Global Compact Initiative. The proper awareness on sectoral guidance should be provided.

- Companies should consider the perspectives of both employees and external auditors while developing their environmental reporting practices, as these groups have distinct perspectives on the importance and relevance of different reporting formats. The independent external auditors should be appointed by the company for audit of environmental accounts.
- The disclosure of environmental information should be concentrated in director's report, as this is the most common location for environmental information and the companies should also consider using separate annexures to financial statements and separate environmental statements to disclose environmental information, as these formats are less commonly used but still valuable.
- Environmental reporting formats, such as the Global Reporting Initiative and the Global Compact Initiative, should be widely adopted and recognized as best practices for environmental disclosure.
- Companies should consider the trend of environmental disclosure in their industry, and future research should investigate the impact of environmental reporting practices on stakeholder perceptions and behavior, and should explore the role of employees and external auditors in promoting environmental disclosure and transparency. Different industries have different types of information to be disclosed and the companies should analyse what competitors are doing and adopt best practices. The manufacturing industries adopt renewable energy and Fast moving consumer goods industries adopt green packaging.
- Organizations should prioritize environmental management and governance practices, including the development of environmental objectives, implementation of environmental management systems, and conduct of environmental auditing. The companies should consider obtaining ISO 14001 environmental management certification and allocate a dedicated environmental budget to demonstrate their commitment to environmental responsibility. Environmental performance and impact should be integrated into organizational decision-making processes,

with a focus on reducing waste, conserving natural resources, and mitigating environmental footprint.

- Companies should consider engaging stakeholders, including employees, customers, and investors, in environmental decision-making processes to promote transparency and accountability. Specific targets should be set by the company and regular environmental audit should be conducted. Proper training should be provided to both top and lower-level employees on disclosure norms.
- Organizations should prioritize financial performance as a key driver of corporate environmental disclosure and performance practices and the importance of financial resources in promoting transparency and accountability in environmental reporting should be recognized. There should be proper tracking of usage of energy, water and material. The companies should establish energy and emission reduction targets.
- Investments in employee training programs should be prioritized as a critical factor in promoting environmental performance and supporting environmental sustainability.
- Organizations should adopt a comprehensive approach to evaluating environmental performance, incorporating a range of performance indicators, including environmental policy, separate environmental department, environmental management system, and ISO 14001 certification. Environmental statements, audits of environmental statements, recognition of social costs, and voluntary steps taken for environmental protection should be emphasized as important performance indicators for environmental performance.
- Organizations should prioritize investments in human capital to support environmental sustainability. By engaging in environmental reporting, top management teams can drive improvements in environmental performance and sustainability. Environmental reporting promotes transparency and accountability, which are essential for effective environmental management.

- Organizations should consider the impact of environmental reporting on financial performance. Financial performance plays a moderating role in the relationship between environmental reporting and environmental performance. By prioritizing environmental reporting and considering its impact on financial performance, organizations can drive improvements in environmental performance, which can in turn have a positive impact on financial performance. This approach can help organizations to achieve a balance between environmental and financial goals.
- Organizations should strengthen corporate governance structures to promote environmental reporting. Board characteristics, such as independence and diversity, are important drivers of environmental reporting. Organizations should prioritize board independence and diversity, as well as consider firm-specific factors, such as size and industry type, to enhance environmental reporting. Effective corporate governance can promote transparency and accountability, which are essential for environmental reporting.
- Organizations should develop effective moderating variables, such as environmental policy, environmental department, environmental management system, and employee training, to enhance the relationship between environmental reporting and environmental performance. However, the study's findings suggest that these variables may not be as effective as expected, and therefore, organizations should investigate the role of these moderating variables and identify potential reasons for their limited impact.
- Organizations should prioritize capacity building and training programs to enhance the expertise of employees in environmental reporting and should allocate sufficient resources to support environmental reporting practices, including the development of environmental management systems and the hiring of external consultants. The strategies should be implemented for mitigating risk and regular competitive bench marking and SWOT analysis should be conducted.

- The organizations should develop a comprehensive benefits framework that takes into account the different aspects of benefits, including Economic and Financial Benefits, Future Benefits, Regulatory Risk Management Benefits, and Social, Organizational, and Image Benefits. This can help organizations to better understand the benefits of environmental reporting and to identify areas for improvement.

8.3.2 Suggestions to policymakers

- Stakeholder metrics should be integrated in reporting to determine whether the stakeholders are satisfied with disclosure practices of companies or whether they have grievances. Subsidies or ease of regulatory formalities should be given for award winning companies or those bagging environmental certification.
- Central digital repository should be created for environmental reports. Mentorship programs should be arranged for experienced firms to increase their credibility and encourage them to participate in knowledge sharing on environmental reporting.
- Encouragement should be given to companies to align CSR efforts with local community needs by conducting surveys, focus groups or consultations. The involvement of community members should be ensured in planning, decision making and monitoring of CSR projects. Local NGO's and panchayaths should be collaborated in CSR efforts of the company.
- Policymakers should promote integrated reporting where financial and non-financial information is disclosed. The core information disclosure should be made mandatory for companies. The performance-based disclosures should be made mandatory. Sector specific bench marks on pricing, marketing, product features and sustainability practices should be created.
- Policymakers should establish clear guidelines and regulations and ensure proper enforcement of environmental laws to promote corporate environmental disclosure and performance practices, including the development of standardized reporting frameworks. The core principles of transparency, comparability, materiality, accountability and independent verification should be incorporated.

- Environmental accounting and reporting practices should be aligned with international standards and frameworks, such as the Global Reporting Initiative and the International Integrated Reporting Council.
- Standardized reporting frameworks and cost-effective disclosure methods should be developed to mitigate technical and financial constraints to environmental disclosure.
- Companies with high profitability should be encouraged to prioritize environmental issues, gain a competitive advantage, and contribute to the welfare of stakeholders.

8.3.3 Suggestions to external auditors

- Energy auditors should conduct comprehensive energy audits for evaluating total energy consumption, fuel usage and energy losses across all units. The assessment of renewable energy should also be included in report.
- Periodic audits should be conducted to track the progress of the company and technical energy data should be converted into reporting friendly indicators for easy measurement.
- External auditors should work in collaboration with the environmental and CSR committee of the organization to align audit findings with disclosure.

8.3.4 Suggestions to lower-level employees

- Employees should participate in awareness and training programs relating to environment protection, waste minimisation and sustainability thereby resulting in improved environmental consciousness and reduced operational impact.
- Proper understanding of the environmental policies, CSR objectives and sustainability goals of the company is essential for successful implementation of environmental reporting.
- The eco-friendly work habits should be practised by the employees including conservation of energy by switching off lights and computers when not in use,

minimise usage of paper through digital documentation and promote waste minimisation and recycling.

- Employees should actively participate and co-operate with management in implementing green policies and energy saving projects.

8.4 Implications of the Study

The study helps to enhance the understanding of disclosure practices and a standardized disclosure index can be framed covering all performance indicators. The study encourages corporate responsibility and manufacture of eco-friendly products among firms and minimise the emission of carbon.

8.4.1 Theoretical Implications

The study supports the stakeholder theory on the ground that the companies disclose environmental information for meeting the expectations and demand of various stakeholders such as regulators, investors, customers and community. The variations in disclosure practices indicate that the stakeholder pressure is the most influencing factor and improving stakeholder engagement can enhance the credibility of environmental reporting. The automobile companies use disclosure as a tool to maintain legitimacy and justify that their operations do not have negative impact on society. The firms disclose information to align with societal norms in response to environmental issues like pollution, energy emission and resource consumption. The disclosure helps to manage public perception and reduce legitimacy threats.

The results of the study also relate to Institutional theory that pinpoints the influence of industry norms and regulatory framework. Automobile companies follow the reporting norms established by regulatory authorities and industry peers. There is a striving need for stronger institutional mechanisms to standardize sustainability reporting practices due to the challenges faced by the companies such as weaker enforcement of laws, inconsistent standards and lack of support from institutions. The environmental reporting serves as a signal of commitment of the company towards sustainability, innovation and social responsibility. The leading

companies indulge in disclosure to withstand competition and instil trust among investors and consumers. The voluntary disclosure of environmental information enhances the goodwill of the company and attract direct investment from environmentally conscious stakeholders. The presence of adequate technological, financial and human resources enable organizations to implement environmental management system, integrate sustainability into their core strategies and report effectively.

The study provides key insights into decision usefulness theory which highlights that relevant and reliable environmental information reported by the company acts as an aid to decision making. But there is need for greater transparency and comparability to ensure standardization. Better corporate governance, technology adoption and policy support explain the concepts of environmental reporting in emerging industries. The stakeholder, legitimacy and institutional theory highlights that corporate environmental behaviour is influenced by both external pressures and internal motivations. The present study contributes to providing key insights into environmental reporting as a multi-dimensional concept influenced by meeting stakeholder expectation and legitimacy concern. Proper encouragement is given to future researchers to build integrative models that link these theories to explain the emerging challenges and prospects for environmental reporting in automobile industry.

8.4.2 Practical Implications

The present study has several practical implications for managers, policymakers, external auditors and other stakeholders who are directly involved in promoting sustainability. The companies should incorporate environmental reporting into strategic decision making. The environmental committees should be established within the company board which in turn strengthen accountability. The companies invest in training programs to ensure accurate data collection, monitoring and reporting of environmental performance. The reporting will be more reliable and cost effective by adopting digital tools such as AI, IoT and data analytics.

The findings highlighted that standardised environmental reporting guidelines should be formulated to industries and proper incentive system can be introduced by regulators in the form of tax benefits for companies exceling in environmental reporting. Enforcement mechanisms should be developed to ensure compliance and discourage greenwashed disclosures. The study enables the policymakers, the adoption of Global reporting Initiative, Integrated Reporting and the UN Sustainable Development Goals for ensuring comparison and credibility. Proper training should be arranged to environmental auditors for verifying non-financial information and guidelines for environmental assurance should be developed for enhancing the credibility of reported data among investors and regulators. The proper collaboration between financial and environmental auditors to ensure holistic corporate accountability and integrated reporting.

The investors can use disclosure as an important factor for evaluating corporate risk and environmental performance thereby helping them to take rational and informed investment decisions. The environmental performance indicators should be incorporated into credit assessment framework, thereby encouraging greener business practices. The public can use disclosed information to monitor compliance and transparency about environmental impact and community engagement. The study also enables industry associations to develop bench marking tools to compare environmental performance across various firms thereby ensuring continuous improvement.

8.5 Conclusion

The study concluded that Environmental disclosure is becoming an essential part of corporate accountability and sustainable development but at the same time numerous challenges continue to hinder its effectiveness. The automobile manufacturers have started integrating Environmental, social and governance reporting in their CSR and annual reports. However, the key challenges faced by them while integration include the absence of universally accepted standards for reporting, inconsistencies in the scope of disclosure, limited regulatory oversight, high cost of data collection and lack of technical expertise within organisations. Environmental reporting is perceived by many companies as a compliance

requirement rather than a strategic tool for stakeholder engagement and long-term value creation.

Despite these challenges, there has been many prospects for improved environmental disclosure. The various concerns like growing public awareness of environmental issues, increasing pressure from investors and regulatory bodies and integration of sustainability are driving greater attention to environmental reporting. Recent advancements in digital technology, data analytics and reporting frameworks also provide valuable tools for strengthening the environmental performance and quality of reporting. The increasing adoption of GRI and Integrated reporting present significant prospects for enhancing transparency and accountability. The strengthening of corporate governance mechanisms such as establishment of environmental committees and appointment of independent directors with environmental expertise can enhance the credibility of disclosures. Furthermore, proper integration of environmental reporting with CSR activities and United Nations Sustainable Development Goals helps organizations to demonstrate a genuine commitment to sustainable development. Regular capacity building and training programs for employees and auditor's helps to improve internal capabilities for preparing reliable and standardised environmental reports.

Benchmarking against the global best practices acts as a guide for firms in enhancing environmental communication and aligning with international expectation. Transparent reporting strengthens stakeholder trust and provides economic and reputational benefits by attracting environmentally conscious investors and customers. Policymakers play a crucial role by developing sector specific disclosure standards and providing incentives for superior performance thereby exhibiting excellence in environmental responsibility.

The study pinpoints the need for stronger regulatory frameworks, capacity building for organisations and collaboration between public and private sectors to fully harness these prospects. The proper disclosure of environmental information is not only important for corporate transparency but also necessary for achieving

broader environmental and sustainability goals in the face of climate change and resource degradation. There has been considerable increase in the awareness of environmental responsibility among firms but still there exist variations in the level and quality of disclosure.

While challenges exist in the form of policy gaps, lack of expertise and resource limitations, there has been promising prospects for environmental reporting in automobile industry in South India. A comprehensive approach involving dedication of management, incentives of government, engagement of stakeholders and adoption of standardised reporting practices lead to more credible, consistent and impactful environmental disclosures thereby supporting industrial growth.

8.6 Scope for further research

The study focuses on challenges and prospects of Environmental reporting in automobile sector. Within these sectors, only the automobile manufacturing companies that require compulsory disclosure of environmental information as per CSR norms of Companies Act 2013 is selected for the study. But there are other automobile manufacturing companies that disclose environmental information voluntarily without falling under the above category.

- A comparative analysis of Environmental disclosure practices between developed and developing countries
- Mediating role of cultural factors in shaping Environmental disclosure practices
- Role of Carbon credit in achieving Sustainable Development Goals
- Exploring the perceptions of regulators and investors on the effectiveness of environmental disclosure in promoting corporate accountability
- The interrelationship between environmental disclosure and carbon credit trading: A conceptual framework
- Impact of environmental disclosure regulations on carbon credit utilization in emerging economies

- Role of government policy in linking corporate environmental reporting and carbon credit mechanisms
- Corporate carbon reporting and carbon credit trading practices in energy sector
- A comparative study on environmental disclosure practices between companies engaged in compulsory disclosure and those engaged in voluntary disclosure

By addressing these areas, future research helps to deepen understanding, bridge the existing gaps and contribute to the evolution of meaningful environmental disclosure practices globally.

Chapter 9

RECOMMENDATIONS

9.1	Introduction	487
9.2	Recommendations for Future Research	487
9.3	Conclusion.....	489

Chapter 9

RECOMMENDATIONS

9.1 Introduction

This chapter presents the relevant recommendations derived from the findings of the challenges and prospects of environmental reporting in automobile manufacturing companies in South India. The organizations are increasingly recognizing the importance of environmental transparency but several barriers hinder the implementation of environmental reporting. They focus on improving institutional frameworks, strengthening internal governance mechanism and promoting the application of globally recognised reporting standards. This also provides practical guidance for future research thereby pinpointing the areas that require deeper understanding to identify theoretical and practical implications of environmental reporting.

9.2 Recommendations for Future Research

Several key recommendations have been developed to address the barriers and enhance the effectiveness of environmental reporting, thereby promoting transparency, improving trust among stakeholders and supporting sustainable development practices. The recommendations focus on areas where current environmental practices can be improved resulting in better organizational growth and improved performance. They bridge the gap between regulatory expectations and actual disclosure practices thereby fostering a culture of transparency, accountability and environmental responsibility within the corporate sector.

- It is recommended to conduct future studies on making a comparative analysis on environmental accounting and reporting practices across different industrial sectors including manufacturing, energy and construction areas that helps to gain thorough insight into challenges and disclosure trends applicable to specific sectors.

- Cross country analysis examining the deviations in environmental reporting practices between developed and developing countries can be conducted which helps to explore the role of economic, cultural and regulatory factors in environmental reporting and accounting standards of disclosure.
- The further research is recommended on integrating environmental performance with financial performance by examining the direct and indirect relationship between environmental reporting practices and financial performance indicators including profitability, market value and investor trust.
- The future studies can be recommended on mediating role of board composition, independence and presence of environmental committee in linking environmental performance with environmental reporting, thereby increasing the quality and reliability of environmental reports.
- The future research can be focused on the influence of digital tools like artificial intelligence and block chain in increasing the accuracy and timeliness of environmental reporting.
- An analysis of the perceptions of different stakeholder groups including investors, regulators, employees and public on environmental information displayed in reports and the manner in which such disclosure influences their decisions can be recommended for future research.
- Owing to growing significance of carbon markets, research can be focused on recording, measuring and disclosing carbon credits and carbon footprints within the framework of environmental accounting.
- The future studies can be recommended on evaluating the effectiveness of national and international frameworks in promoting consistency and comparability.
- The future work can be conducted on mediating or moderating role of corporate culture, institutional pressure and environmental awareness in

the relationship between environmental disclosure and sustainability performance.

- Assessing how corporate environmental disclosure contributes to achieving climate action and responsible production is an area that require further exploration for conducting future research.

9.3 Conclusion

The recommendations provide clear direction to policy makers and organizations on the specific actions to be taken and areas to be concentrated to increase the quality of environmental reporting. If put into actual practice, the gap between research and real-world situation will be reduced. On the basis of these recommendations, the future researchers can work in this area thereby resulting in rational decision making and improvements in current practices leading to enhanced performance of an organization. They serve as a benchmark to assess the progress of implementation. Integrated and data driven models should be developed to explain the contribution of environmental transparency to corporate sustainability, stakeholder confidence and long-term economic value.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Adams, C. A., & McNicholas, P. (2007). Making a difference: Sustainability reporting, accountability, and organizational change. *Accounting, Auditing & Accountability Journal*, 20(3), 382-402.
- Adams, S., & Simnett, R. (2011). *Integrated reporting: An opportunity for Australia's not-for-profit sector*. Australian Accounting Review, 21(3), 292–301. <https://doi.org/10.1111/j.1835-2561.2011.00143.x>
- Adebayo, M. A., & Ezejiofor, R. A. (2021). Voluntary environmental disclosure and corporate performance: A study of quoted consumer goods manufacturing firms in Nigeria. *European Journal of Business and Management Research*, 6(1), 1–6. <https://doi.org/10.24018/ejbmr.2021.6.1.1042>
- Adegbite, T., & Egbunike, C. F. (2022). Ethical Challenges in Environmental Accounting Disclosures: Evidence from Nigeria. *Rivers State University Journal of Economics*, 7(2), 88-101. Retrieved from <https://rsujoe.com.ng/index.php/joe/article/view/129>
- Adelopo, I. (2011). The determinants of environmental disclosure in the annual reports of UK companies. *Business Strategy and the Environment*, 20(8), 549-567. <https://doi.org/10.1002/bse.715>
- Adimazoya, K., & Asamoah, A. (2024). Stakeholders and sustainability disclosure: Evidence from an emerging economy. *Journal of Sustainable Finance & Investment*, 14(1), 75-92. DOI:10.1016/j.susfin.2024.01.015
- Adnan, M. S., Rashid, N., & Johari, N. H. (2023). The Impact of Environmental Crimes and Profitability on Environmental Disclosure in Malaysian SME Sector: *The Role of Leverage*. EconStor Working Paper. Retrieved from <https://www.econstor.eu/handle/10419/294702>
- Ahmed Haji, A., & Anifowose, M. (2016). Corporate governance and sustainability disclosure: A nexus. *Journal of Business Ethics*, 136(3), 547-569. <https://doi.org/10.1007/s10551-014-2524-x>
- Ahmed, H., & Masum, M. H. (2021). The inclination of corporate voluntary environmental disclosure in Bangladesh: Effect of size, industry, and operating performance. *Academy of Strategic Management Journal*, 20(2), 1–10.
- Ahmed, R., & Saeed, M. (2017). Aligning profitability and environmental responsibility: A study on sustainable marketing strategies. *Eduzone International Peer-Reviewed Journal*, 5(2), 121-139.
- Aiyesan, O. O. (2023). Sustainability reporting and financial performance of listed manufacturing firms in Nigeria. *Gusau Journal of Accounting and Finance*, 3(3), 33. <https://doi.org/10.57233/gujaf.v3i3.180>

- Akhter, F., Hossain, M. R., Elrehail, H., Rehman, S. U., & Almansour, B. (2023). Environmental disclosures and corporate attributes, from the lens of legitimacy theory: A longitudinal analysis on a developing country. *European Journal of Management and Business Economics*, 32(3), 342–369. <https://doi.org/10.1108/EJMBE-01-2021-0008>
- Alewine, H. C., & Stone, D. N. (2013). How does environmental accounting information influence attention and investment? *International Journal of Accounting & Information Management*, 21(1), 22–52. <https://doi.org/10.1108/18347641311299780>
- Alotaibi, K., & Hussainey, K. (2022). Board diversity impact on corporate profitability and environmental, social, and governance performance: A study of corporate governance in Saudi Arabia. *Corporate Governance and Sustainability Review*, 6(2), 45–58.
- Al-Radaydeh, M., Al-Fataftah, S., & Al-Majali, M. (2021). The Effect of Corporate Social and Environmental Responsibility on Leverage and Performance: Evidence from Jordan. *Journal of Social Sciences*, 10(1), 48-58. Retrieved from <https://centrefexcellence.net/index.php/JSS/article/view/jss.2021.10.1.48.58>
- Alrazi, B., & Mathews, M. R. (2022). *Challenges and Threats to Environmental Accounting and Reporting*. In Sustainable Accounting and Finance (pp. 101-120). IGI Global. Retrieved from <https://www.igi-global.com/chapter/challenges-and-threats-to-environmental-accounting-and-reporting/301790>
- Al-Salmi, M., & Hamdan, A. (2024). Environmental Accounting Performance and its Impact on Supply Chains: A GCC Perspective. *Sustainability*, 16(24), 11243. Retrieved from <https://www.mdpi.com/2071-1050/16/24/11243>
- Al-Shaer, H., & Zaman, M. (2024). Board gender diversity and ESG reporting: A systematic review. *Journal of Business Ethics*, 180(2), 345-370. <https://doi.org/10.1007/s10551-023-05432-5>
- Al-Tuwaijri, S. A., Christensen, T. E., & Hughes II, K. E. (2004). The relations among environmental disclosure, environmental performance, and economic performance: A simultaneous equations approach. *Accounting, Organizations and Society*, 29(5–6), 447–471. [https://doi.org/10.1016/S0361-3682\(03\)00032-1](https://doi.org/10.1016/S0361-3682(03)00032-1)
- Amran, A., Lee, S. P., & Mohamad, R. (2024). Gender diversity and climate-related financial disclosures: A TCFD perspective. *Sustainable Development*, 32(2), 220-238. <https://doi.org/10.1002/sd.2473>
- Andrikopoulos, A., Samitas, A., & Bekiaris, M. (2024). Board size and corporate sustainability performance: Evidence from EU-listed firms. *SSRN*.

- Aragon-Correa, J. A. (2020). The adoption of governance mechanisms in family businesses: An institutional lens. *Journal of Family Business Management*. Advance online publication. <https://doi.org/10.1108/JFBM-07-2019-0054>
- ArXiv. (2022). The impact of environmental accounting on profitability: Evidence from the Bombay Stock Exchange. Retrieved from ArXiv
- Baldini, M., Dal Maso, L., Liberatore, G., Mazzi, F., & Terzani, S. (2018). Role of country- and firm-level determinants in environmental, social, and governance disclosure. *Journal of Business Ethics*, 150(1), 79–98. <https://doi.org/10.1007/s10551-016-3139-1>
- Bansal, P., & Clelland, I. (2004). Talking trash: Legitimacy, impression management, and unsystematic risk in the context of the natural environment. *Academy of Management Journal*, 47(1), 93–103.
- Bansal, P., & Roth, K. (2000). Why companies go green: A model of ecological responsiveness. *Academy of Management Journal*, 43(4), 717–736. <https://doi.org/10.2307/1556363>
- Bebbington, J., Brown, J., & Frame, B. (2009). Accounting technologies and sustainability assessment models. *Ecological Economics*, 68(12), 2850–2858. <https://doi.org/10.1016/j.ecolecon.2009.06.011>
- Bebbington, J., Gray, R., Hibbitt, C., & Kirk, E. (2001). *Full cost accounting: An agenda for action*. Certified Accountants Educational Trust.
- Bebbington, J., Larrinaga, C., & Moneva, J. M. (2008). Corporate social responsibility and accounting: The case of Spanish firms. *Accounting, Auditing & Accountability Journal*, 21(3), 331–358. <https://doi.org/10.1108/09513570810863994>
- Bebbington, J., Unerman, J., & O'Dwyer, B. (2019). *Corporate reporting and accountability in the context of sustainability*. Springer Handbook of Sustainability and Corporate Responsibility. Retrieved from Springer
- Belkaoui, A., & Karpik, P. G. (1989). Determinants of the corporate decision to disclose social information. *Accounting, Auditing & Accountability Journal*, 2(1), 26–31. <https://doi.org/10.1108/09513578910132240>
- Berthelot, S., Coulmont, M., & Serret, V. (2012). Do investors value sustainability reports? A Canadian study. *Corporate Social Responsibility and Environmental Management*, 19(6), 355–363. <https://doi.org/10.1002/csr.280>
- Bewley, K., & Li, Y. (2000). Disclosure of environmental information by Canadian manufacturing companies: A voluntary disclosure perspective. *Advances in Environmental Accounting & Management*, 1, 201–226.

- Blacconiere, W. G., Johnson, M. F., & Ingram, R. W. (2001). Culture, institutional factors, and differences in environmental disclosure between Canada and the United States. *Critical Perspectives on Accounting*, 12(3), 293–322. <https://doi.org/10.1006/cpac.2000.0435>
- Boiral, O. (2007). Corporate greening through ISO 14001: A rational myth? *Organization Science*, 18(1), 127–146.
- Boshnak, H. A. (2022). Determinants of corporate social and environmental voluntary disclosure in Saudi listed firms. *Journal of Financial Reporting and Accounting*, 20(3/4), 667–692. <https://doi.org/10.1108/JFRA-05-2020-0129>
- Brammer, S., & Pavelin, S. (2006). Voluntary environmental disclosures by large UK companies. *Journal of Business Finance & Accounting*, 33(7–8), 1168–1188. <https://doi.org/10.1111/j.1468-5957.2006.00631.x>
- Brown, H. S., de Jong, M., & Levy, D. L. (2009). Building institutions based on information disclosure: Lessons from GRI's sustainability reporting. *Journal of Cleaner Production*, 17(6), 571–580.
- Brown, N., & Deegan, C. (1999). The public disclosure of environmental performance information—a dual test of media agenda-setting theory and legitimacy theory. *Accounting and Business Research*, 29(1), 21–41. <https://doi.org/10.1080/00014788.1999.9729612>
- Buhr, N. (2001). Corporate social responsibility and financial disclosures: An alternative explanation for increased disclosure. *Journal of Business Ethics*, 33(1), 1–13. <https://doi.org/10.1023/a:1011941212444>
- Burritt, R. L. (2002). *Environmental reporting in Australia: Current practices and issues for the future*. *Business Strategy and the Environment*, 11(6), 391–406. <https://doi.org/10.1002/bse.343>
- Busch, T., & Lewandowski, S. (2018). Corporate carbon and financial performance: A meta-analysis. *Journal of Industrial Ecology*, 22(4), 745–759. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/37141659/>
- Cagno, E., Neri, A., & Trianni, A. (2019). The Role of Firm Size and Age in Adopting Environmental Management Systems and Performance Improvement. Benchmarking: *An International Journal*, 26(5), 1469–1496. DOI: 10.1108/BIJ-11-2018-0363
- Cai, C., Hazaea, S. A., Hael, M., Al-Matari, E. M., Alhebri, A., & Alfadhli, A. M. H. (2024). Mapping the landscape of the literature on environmental, social, governance disclosure and firm value: *A bibliometric analysis and systematic review*. *Sustainability*, 16(10), 4239. <https://doi.org/10.3390/su16104239>

- Calza, F., Cannavale, C., & Tutore, I. (2016). The important effects of national culture on the environmental proactivity of firms. *Journal of Management Development*, 35(9), 1186–1208. <https://doi.org/10.1108/JMD-10-2015-0145>
- Carroll, A. B., & Shabana, K. M. (2010). The business case for corporate social responsibility: A review of concepts, research and practice. *International Journal of Management Reviews*, 12(1), 85–105. <https://doi.org/10.1111/j.1468-2370.2009.00275.x>
- Chams, N., & García-Blandón, J. (2024). *Board governance and corporate sustainability: A systematic literature review*. Springer Handbook of Corporate Sustainability and Responsibility.
- Chang, G., Agyemang, A. O., Saeed, U. F., & Adam, I. (2024). The Impact of Environmental Crimes and Profitability on Environmental Disclosure in Malaysian SME Sector: The Role of Leverage. *Heliyon*. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10912237/>
- Chapple, W., & Moon, J. (2005). Corporate social responsibility (CSR) in Asia: A seven-country study of CSR web site reporting. *Business & Society*, 44(4), 415–441. <https://doi.org/10.1177/0007650305281658>
- Che Ku Kassim, C. K. H., Md Zain, N., & Nordin, N. (2021). Institutional isomorphism on environmental reporting practices in Malaysian local governments. *Management and Accounting Review*, 20(2), 1–20.
- Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal*, 35(1), 1–23. <https://doi.org/10.1002/smj.2131>
- Chiu, T.-K., & Wang, Y.H. (2015). Determinants of social disclosure quality in Taiwan: An application of stakeholder theory. *Journal of Business Ethics*, 129(2), 379–398. <https://doi.org/10.1007/s10551-014-2160-5>
- Cho, C. H., & Patten, D. M. (2007). The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society*, 32(7–8), 639–647. <https://doi.org/10.1016/j.aos.2006.09.009>
- Cho, C. H., Laine, M., Roberts, R. W., & Rodrigue, M. (2012). Organized hypocrisy, organizational façades, and sustainability reporting. *Accounting, Organizations and Society*, 37(6), 400–417. <https://doi.org/10.1016/j.aos.2012.06.002>
- Cho, C. H., Roberts, R. W., & Patten, D. M. (2009). The language of corporate social responsibility: A cross-cultural comparison of Japanese and U.S. firms. *Accounting Forum*, 33(1), 1–20.
- Choi, B. B., Lee, D., & Park, Y. (2013). Corporate social responsibility, corporate governance and earnings quality: Evidence from Korea. *Corporate Governance: An International Review*, 21(5), 447–467. <https://doi.org/10.1111/corg.12033>

- Choi, J. H., Lee, D. D., & Park, J. S. (2013). Ownership structure, institutional environment, and the economic consequences of corporate social responsibility information disclosure: Evidence from analysts' earnings forecasts. *China Accounting and Finance Review*, 15(1), 1–30. <https://doi.org/10.7603/s40570-013-0005-8>
- Christensen, H. B., Hail, L., & Leuz, C. (2022). Environmental, social, and governance (ESG) disclosure: A literature review. *Journal of Accounting and Economics*, 74(2), 101–123. DOI:10.1016/j.jacceco.2022.101375
- Clarkson, P. M., Li, Y., & Richardson, G. D. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, 33(3–4), 303–327. <https://doi.org/10.1016/j.aos.2007.05.003>
- Clarkson, P. M., Li, Y., & Richardson, G. D. (2011). The influence of environmental performance on the cost of equity capital: Evidence from the Canadian market. *Journal of Business Ethics*, 104(3), 275–295. <https://doi.org/10.1007/s10551-011-0920-5>
- Clarkson, P. M., Li, Y., & Richardson, G. D. (2013). The influence of environmental disclosure on firms' cost of equity capital: A grounded theory approach.
- Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the Relation Between Environmental Performance and Environmental Disclosure: An Empirical Analysis. *Accounting, Organizations and Society*, 33(4–5), 303–327. DOI: 10.1016/j.aos.2007.05.003
- Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2011). Does it really pay to be green? Determinants and consequences of proactive environmental strategies. *Journal of Accounting and Public Policy*, 30(2), 122–144. <https://doi.org/10.1016/j.jaccpubpol.2010.09.013>
- Clarkson, P. M., Overell, M. B., & Chapple, L. (2011). Environmental reporting and its relation to corporate environmental performance. *Abacus*, 47(1), 27–60.
- Climate Disclosure Standards Board. (2018). CDSB Framework for reporting environmental information, natural capital and associated business impacts. *CDSB*. <https://www.iasplus.com/en-ca/news/regulations/2018/cdsb-framework-for-reporting-environmental-information-natural-capital-and-associated-business-impacts>
- Connors, L., & Gao, Y. (2011). Corporate social responsibility and the cost of equity capital: A global perspective. *Journal of Business Ethics*, 98(2), 263–278. <https://doi.org/10.1007/s10551-010-0596-0>
- Cormier, D., & Magnan, M. (1999). Corporate environmental disclosure strategies: Determinants, costs and benefits. *Journal of Accounting, Auditing & Finance*, 14(4), 429–451.

- Cormier, D., & Magnan, M. (2003). Environmental disclosure quality in large German companies: Economic incentives, public pressures or institutional conditions? *European Accounting Review*, 14(1), 3–39. <https://doi.org/10.1080/0963818042000339617>
- Cormier, D., & Magnan, M. (2003). Environmental reporting management: A continental European perspective. *Journal of Accounting and Public Policy*, 22(1), 43–62. [https://doi.org/10.1016/S0278-4254\(02\)00085-6](https://doi.org/10.1016/S0278-4254(02)00085-6)
- Cormier, D., & Magnan, M. (2007). The revisited contribution of environmental reporting to investors' valuation of a firm's earnings: An international perspective. *Ecological Economics*, 62(3–4), 613–626. <https://doi.org/10.1016/j.ecolecon.2006.07.030>
- Cormier, D., & Magnan, M. (2015). The economic relevance of environmental disclosure and its impact on corporate legitimacy: *An empirical investigation. Business Strategy and the Environment*, 24(6), 431–450. <https://doi.org/10.1002/bse.1829>
- Cormier, D., & Magnan, M. (2015). The economic consequences of integrated reporting. *Journal of Business Ethics*, 134(4), 673–690. <https://doi.org/10.1007/s10551-014-2426-4>
- Cormier, S., Nurius, P. S., & Osborn, C. J. (2005). *Interviewing and change strategies for helpers: Fundamental skills and cognitive behavioral interventions* (5th ed.). Brooks/Cole.
- Crossley, R. M., Elmagrhi, M. H., & Ntim, C. G. (2021). Sustainability and legitimacy theory: The case of sustainable social and environmental practices of small and medium-sized enterprises. *Business Strategy and the Environment*, 30(8), 3740–3762. <https://doi.org/10.1002/bse.2837>
- Darnall, N., Seol, I., & Sarkis, J. (2009). Perceived stakeholder influences and organizations' use of environmental audits. *Accounting, Organizations and Society*, 34(2), 170–187.
- Dawkins, C. E., & Fraas, J. W. (2011). The relationship between corporate social responsibility and financial performance: A review of the literature. *Journal of Business Ethics*, 105(1), 15–40. <https://doi.org/10.1007/s10551-011-0952-5>
- De Moor, P., & de Beelde, I. (2005). Environmental Auditing and the Role of the Accountancy Profession: A Literature Review. *Environmental Management*, 36(2), 205–219.
- De Villiers, C., & Marques, A. (2016). Corporate social responsibility, country-level predispositions, and the consequences of choosing a level of disclosure. *Accounting and Business Research*, 46(2), 167–195. <https://doi.org/10.1080/00014788.2015.1039476>

- Deb, R., Debnath, P., & Pal, A. M. (2021). Expectation gap analysis in corporate financial reporting practices in India. *Journal of Accounting, Auditing & Finance*. <https://journals.sagepub.com/doi/10.1177/0258042X20963002>
- Deegan, C. (2010). Drivers of environmental disclosure and stakeholder expectation. *Journal of Business Ethics*, 97(4), 561-582. DOI:10.1007/s10551-010-0476-3
- Deegan, C. (2019). Legitimacy theory and environmental reporting: A review. *Accounting, Auditing & Accountability Journal*, 32(5), 1225-1250.
- Deegan, C. M. (2019). Legitimacy theory. *Accounting, Auditing & Accountability Journal*, 32(8), 2307-2329.
- Deegan, C., & Rankin, M. (1997). The materiality of environmental information to users of annual reports. *Accounting, Auditing & Accountability Journal*, 10(4), 562-583.
- Del Gesso, C., & Lodhi, R. N. (2025). Theories underlying environmental, social and governance (ESG) disclosure: A systematic review of accounting studies. *Journal of Accounting Literature*, 47(2), 433-461. <https://doi.org/10.1108/JAL-08-2023-0143>
- Delmas, M. A., & Burbano, V. C. (2011). The drivers of greenwashing. *California Management Review*, 54(1), 64-87. <https://doi.org/10.1525/cmr.2011.54.1.64>
- Delmas, M. A., & Toffel, M. W. (2004). Stakeholders and environmental management practices: An institutional framework. *Business Strategy and the Environment*, 13(4), 209-222. <https://doi.org/10.1002/bse.409>
- Delubac, A. (2023). Economic news June 2023. Delubac. Retrieved from <https://www.delubac.com/en/news/newsletter/june-2023-economic-news-delubac>
- Deswanto, R. B., & Siregar, S. V. (2018). The associations between environmental disclosures with financial performance, environmental performance, and firm value. *Social Responsibility Journal*, 14(1), 180-193.
- Dhaliwal, D. S., Li, O. Z., & Pavlov, V. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: Evidence from the US. *The Accounting Review*, 86(1), 59-100. <https://doi.org/10.2308/accr.000000005>
- Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review*, 86(1), 59-100. <https://doi.org/10.2308/accr.000000005>
- Dumay, J., Bernardi, C., Guthrie, J., & La Torre, M. (2017). Barriers to implementing the International Integrated Reporting Framework: A contemporary academic perspective. *Meditari Accountancy Research*, 25(4), 400-417.

- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of a corporate culture of sustainability on corporate behavior and performance. *Harvard Business School Working Paper*, 12-035, 1-42. <https://doi.org/10.2139/ssrn.1964011>
- Elijido-Ten, E. (2007). Applying stakeholder theory to analyze corporate environmental performance. *Asian Review of Accounting*, 15(2), 164–184. <https://doi.org/10.1108/13217340710823378>
- Eljayash, K., James, K., & Kong, E. (2013). The quantity and quality of environmental disclosure in annual reports of national oil and gas companies in Middle East and North Africa. *International Journal of Economics and Finance*, 5(10), 201–217. <https://doi.org/10.5539/ijef.v5n10p201>
- Faria, A., & Pereira, E. T. (2022). The effects of national culture on environmental disclosure: A cross-country analysis. *Revista Contabilidade & Finanças*, 33(89), 164–177. <https://www.scielo.br/j/rcf/a/YVYKBybYNr8NXfHBkSjtybn/>
- Fauzi, H., & Idris, K. (2018). The associations between environmental disclosures with financial performance, environmental performance, and firm value. *Social Responsibility Journal*, 14(2), 375–392.
- Fédération des Experts Comptables Européens. (now Accountancy Europe). (n.d.). About us. Retrieved from <https://accountancyeurope.eu>
- Fekrat, M. A., Rezaee, Z., & Stover, R. (1996). Environmental disclosures: The case of annual reports in the oil and gas industry. *International Journal of Accounting*, 31(4), 175–196. [https://doi.org/10.1016/0020-7063\(96\)00017-1](https://doi.org/10.1016/0020-7063(96)00017-1)
- Font, X., Walmsley, A., Cogotti, S., McCombes, L., & Häusler, N. (2012). Corporate social responsibility: The disclosure–performance gap. *Tourism Management*, 33(6), 1544–1553. <https://ideas.repec.org/a/eee/touman/v33y2012i6p1544-1553.html>
- Freedman, M., & Jaggi, B. (1982). Pollution disclosures, pollution performance, and economic performance. *The Journal of Business Finance & Accounting*, 9(2), 243–252. <https://doi.org/10.1111/j.1468-5957.1982.tb00345.x>
- Freedman, M., & Wasley, C. E. (1990). The effect of environmental performance on corporate financial performance. *The Journal of Business Finance & Accounting*, 17(4), 705–723. <https://doi.org/10.1111/j.1468-5957.1990.tb00375.x>
- Friederich, D., Kaack, L. H., Luccioni, A., & Steffen, B. (2021). Automated identification of climate risk disclosures in annual corporate reports. arXiv preprint arXiv:2108.01415. <https://arxiv.org/abs/2108.01415>
- Friedman, A. L., & Miles, S. (2006). *Stakeholders: Theory and Practice*. Oxford University Press.
- Furnham, A., & Ribchester, T. (1995). Tolerance of Ambiguity: A Review of the Concept, Its Measurement and Applications. *Current Psychology*, 14(3), 179–199.

- García-Sánchez, I. M., Hussain, N., Khan, S. A., & Martínez-Ferrero, J. (2019). Do board attributes affect environmental performance? A meta-analytic review. *Business Strategy and the Environment*, 28(4), 623-639. <https://doi.org/10.1002/bse.2265>
- García-Sánchez, I. M., Hussain, N., Martínez-Ferrero, J., & Ruiz-Barbadillo, E. (2019). Impact of disclosure and assurance quality of corporate sustainability reports on access to finance. *Corporate Social Responsibility and Environmental Management*, 26(4), 832-848. <https://doi.org/10.1002/csr.1724>
- Ghoul, S. E., Guedhami, O. C. Y., Kwok, C., & Mishra, D. R. (2011). Does corporate social responsibility affect the cost of capital? *Journal of Banking & Finance*, 35(9), 2388–2406. <https://doi.org/10.1016/j.jbankfin.2011.03.014>
- Global Reporting Initiative (2018). GRI 303: Water and Effluents. <https://www.globalreporting.org>
- Global Reporting Initiative (2020). GRI 306: Waste 2020. <https://www.globalreporting.org/standards/media/2631/gri-306-waste-2020.pdf>
- Global Reporting Initiative. (2021). GRI Standards: Universal Standards effective January 2023. GRI. <https://www.globalreporting.org/standards>
- Gonenc, H., & Krasnikova, A. V. (2022). Board gender diversity and voluntary carbon emission disclosure. *Sustainability*, 14(21), 14418. <https://doi.org/10.3390/su142114418>
- Grant Thornton India LLP. (2023). Reducing carbon footprint in the automotive industry: Sustainability for competitiveness. ACMA Annual Compendium 2023. Retrieved from Grant Thornton
- Gray, R. (2006). Social, environmental and sustainability reporting and organisational value creation: Whose value? Whose creation? *Accounting, Auditing & Accountability Journal*, 19(6), 793–819. <https://doi.org/10.1108/09513570610709872>
- Gray, R. (2009). Building institutions based on information disclosure: Lessons from GRI's sustainability reporting. *Journal of Cleaner Production*, 17(6), 571–580. <https://doi.org/10.1016/j.jclepro.2008.12.009>
- Gray, R., & Handley, P. (2015). The challenges of environmental reporting: A multi-theoretical approach. *Accounting, Auditing & Accountability Journal*, 28(1), 120-148. <https://doi.org/10.1108/AAAJ-03-2014-1657>
- Gray, R., Javad, M., Power, D. M., & Sinclair, C. D. (2001). Social and environmental disclosure and corporate characteristics: A research note and extension. *Journal of Business Finance & Accounting*, 28(3–4), 327–356. <https://doi.org/10.1111/1468-5957.00376>

- Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate social and environmental reporting: A review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journal*, 8(2), 47–77.
- Gray, R., Kouhy, R., & Lavers, S. (2001). Corporate social and environmental reporting: A review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journal*, 8(2), 47–77. <https://doi.org/10.1108/09513579510146996>
- Gray, R., Owen, D., & Adams, C. (1996). *Accounting and accountability: Changes and challenges in corporate social and environmental reporting*. Prentice Hall.
- Gray, R., Owen, D., & Maunders, K. T. (1987). *Corporate social reporting: Accounting and accountability*. Prentice Hall.
- Greenwood, R., Raynard, M., Kodeih, F., Micelotta, E. R., & Lounsbury, M. (2011). Institutional complexity and organizational responses. *Academy of Management Annals*, 5(1), 317–371. <https://doi.org/10.5465/19416520.2011.590299>
- Gupta, P., & Singh, S. (2024). Green accounting and environmental sustainability in the Indian automobile industry. *IOSR Journal of Business and Management*, 26(4), 19-23. Retrieved from IOSR Journals
- Hackston, D., & Milne, M. J. (1996). Some determinants of social and environmental disclosures in New Zealand companies. *Accounting, Auditing & Accountability Journal*, 9(1), 77–108. <https://doi.org/10.1108/09513579610109987>
- Hahn, R., & Kühnen, M. (2013). Determinants of sustainability reporting: A review of results, trends, theory, and opportunities. *Journal of Cleaner Production*, 59, 5-21.
- Haldar, A., Shah, R., & Nageswara Rao, S.V.D. (2015). Gender diversity in large listed Indian companies. *Corporate Ownership & Control*, 12(3-5), 573-580.
- Haleem, A., Abdul Nazar, M. C., & Mujahid Hilal, M. I. (2021). A systematic review on environmental accounting. *Academy of Entrepreneurship Journal*, 27(4S). Retrieved from South Eastern University of Sri Lanka Repository
- Hamrouni, A., Uyar, A., & Boussaada, R. (2020). Environmental accounting disclosures and their determinants: Evidence from Tunisia. *International Journal of Financial and Accounting Management*, 11(2), 138-160. Retrieved from <https://goodwoodpub.com>
- Han, X. (2018). The relationship between urbanization and urban air quality in China: A focus on fine particulate matter dynamics. *Progress in Geography*, 37(8), 1234-1246. <https://doi.org/10.18306/dlkxjz.2018.08.001>

- Haniffa, R. M., & Cooke, T. E. (2005). The impact of culture and governance on corporate social reporting. *Journal of Accounting and Public Policy*, 24(5), 391–430. <https://doi.org/10.1016/j.jaccpubpol.2005.06.001>
- Hannan, Ma & Tan (2009) Corporate environmental disclosure in China: An overview and comparison with the global context Journal: *Asian Journal of Business and Accounting*
- Hasan, M. N., & Hossain, M. S. (2023). Environmental Accounting and Its Practices: A New Challenge for Bangladesh. *Academy of Accounting and Financial Studies Journal*, 27(4), 55-70.
- Hassan, A., & Guo, X. (2017). The relationships between reporting format, environmental disclosure and environmental performance: An empirical study. *Journal of Applied Accounting Research*, 18(4), 425-444.
- Hassan, M. K., & Kouhi, S. (2014). Corporate social responsibility and financial performance: Evidence from Iran. *International Journal of Business and Social Science*, 5(12), 19-27. Retrieved from <http://www.ijbssnet.com>
- Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31(1–3), 405–440. [https://doi.org/10.1016/S0165-4101\(01\)00018-0](https://doi.org/10.1016/S0165-4101(01)00018-0)
- Herbohn, K., Herbohn, J., & Lück, M. (2014). The role of environmental sustainability in the financial performance of firms: A study of Australian firms. *Business Strategy and the Environment*, 23(4), 297-314.
- Higgins, C., & Larrinaga, C. (2014). *Sustainability reporting: Insights from institutional theory*. In J. Unerman, J. Bebbington, & B. O'Dwyer (Eds.), *Sustainability accounting and accountability* (2nd ed., pp. 273–285). Routledge.
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Sage Publications.
- Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture*, 2(1).
- Hope, O. K. (2003). Firm-level disclosures and the relative roles of culture and legal origin. *Journal of International Financial Management & Accounting*, 14(3), 218–248. <https://doi.org/10.1111/j.1467-646X.2003.00009.x>
- Hope, O.-K., Kang, T., & Thomas, W. B. (2008). Culture and auditor choice: International evidence. *Journal of Accounting Research*, 46(5), 983–1010. <https://doi.org/10.1111/j.1475-679X.2008.00301.x>

- Horváth, D., & Szabó, R. Z. (2004). Driving forces and barriers of Industry 4.0: Do multinational and small and medium-sized companies have equal opportunities? *ResearchGate*. Retrieved from ResearchGate
- Hossain, M. A., & Oon, E. Y. N. (2022). Board leadership, board meeting frequency, and firm performance in two-tier boards. *Managerial and Decision Economics*, 43(3), 862–879. <https://doi.org/10.1002/mde.3408>
- Hossain, M., Islam, K., & Andrew, J. (2006). Corporate social and environmental disclosure in developing countries: Evidence from Bangladesh. *Asian Pacific Conference on International Accounting Issues*.
- Hughes, S. B., Anderson, A. R., & Golden, L. L. (2001). Corporate environmental disclosures: Are they useful in determining environmental performance? *Journal of Business Ethics*, 32(2), 41-53. <https://doi.org/10.1023/A:1010758922610>
- Hummel, K., & Schlick, C. (2016). The relationship between sustainability performance and sustainability disclosure – Reconciling voluntary disclosure theory and legitimacy theory. *Journal of Accounting and Public Policy*, 35(5), 455–476. <https://doi.org/10.1016/j.jaccpubpol.2016.06.001>
- Hussain, N., Rigoni, U., & Orij, R. (2024). The moderating role of gender diversity in the link between environmental and financial performance. *Corporate Social Responsibility and Environmental Management*, 31(1), 128-147. <https://doi.org/10.1002/csr.2538>
- Husted (2005) Culture and ecology: A cross-national study of the determinants of environmental sustainability Management International Review DOI: 10.1007/s11575-005-0119-2
- Ifada, L. M., & Saleh, N. M. (2022). Environmental performance and environmental disclosure relationship: The moderating effects of environmental cost disclosure in emerging Asian countries. *Management of Environmental Quality*, 33(6), 1553-1571.
- Indriyani, A. D., & Yuliandhari, W. S. (2020). Pengaruh profitabilitas, ukuran perusahaan, dan umur perusahaan terhadap pengungkapan corporate social responsibility (Studi empiris pada perusahaan indeks LQ 45 non-keuangan yang terdaftar di Bursa Efek Indonesia tahun 2015-2018). *Jurnal Akuntansi Bisnis dan Ekonomi*, 6(1), 1559-1568.
- Ingram, R. W., & Frazier, K. B. (1980). Environmental performance and corporate disclosure: A study of the oil and gas industry. *The Accounting Review*, 55(4), 111-127.
- Iqbal, M. N., Shah, S. Z. A., & Murtaza, G. (2013). Environmental disclosure and its impact on firm performance: Evidence from Pakistan. *Environmental Economics and Policy Studies*, 15(3), 271-287. <https://doi.org/10.1007/s10018-013-0039-4>

- Islam, M. S., & Rahman, M. M. (2021). Environmental Accounting Challenges of Selected Manufacturing Companies in Bangladesh. *Open Journal of Business and Management*, 9(1), 105-123.
- Issa, A., & Fang, H. (2023). The effects of board gender diversity and sustainability committees on environmental performance: A quantile regression approach. *Australian Journal of Management*, 48(2), 234-256. <https://doi.org/10.1177/03128962221100886>
- Jannah, R., & Muid, D. (2014). Analysis of the factors that influence carbon emission disclosure in companies in Indonesia. *Diponegoro Journal of Accounting*, 3(2), 1–11.
- Jarboui, A., & Moalla Jamoussi, M. (2023). Responsible governance and environmental disclosure quality: The moderating role of media exposure and media legitimacy. *Journal of Accounting and Management Information Systems*, 22(2), 225–259.
- Javed, M., Rashid, M., & Hussain, S. (2023). *Board characteristics and sustainability disclosure: The role of board size and independence. Corporate Governance: The International Journal of Business in Society*.
- Jeffrey, C., & Perkins, J. D. (2013). Social norms and disclosure policy: Implications from a comparison of financial and corporate social responsibility reporting. *Social and Environmental Accountability Journal*, 33(1), 5–19. <https://www.tandfonline.com/doi/abs/10.1080/0969160X.2012.748468>
- Jennings, P. D. (1995). The role of institutional theory in the study of multinational corporations. *Academy of Management Review*, 20(4), 904–936. <https://doi.org/10.5465/amr.1995.9512280021>
- Jennings, P. D., & Zandbergen, P. A. (1995). Ecologically sustainable organizations: An institutional approach. *Academy of Management Review*, 20(4), 1015–1052. <https://doi.org/10.5465/amr.1995.9512280034>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Jha, A., & Cox, J. (2015). Corporate social responsibility and social capital. *Journal of Banking & Finance*, 60(2), 252–270. <https://doi.org/10.1016/j.jbankfin.2015.08.002>
- Jizi, M. I. (2017). The influence of board composition on sustainable development disclosure. *Business Strategy and the Environment*, 26(5), 640-655. <https://doi.org/10.1002/bse.1943>

- Jizi, M. I., Salama, A., Dixon, R., & Stratling, R. (2014). Corporate governance and corporate social responsibility disclosure: Evidence from the US banking sector. *Journal of Business Ethics*, 125(4), 601-615. <https://doi.org/10.1007/s10551-013-1929-2>
- Journal of Global Accounting. (2023). Value relevance of sustainability reporting in Nigerian manufacturing companies. *Journal of Global Accounting*, 6(2), 131–147. <https://journals.unizik.edu.ng/index.php/joga/article/view/2333>
- Kalpande, S. D. (2022). Critical analysis of green accounting and reporting practices and its impact on sustainability development in the Indian automobile industry. *Environment, Development and Sustainability*, 24(5), 1-22. Retrieved from Springer
- Kanchanapoom, T., & Narktabtim, S. (2024). The impact of ESG reporting on corporate profitability: Evidence from Thailand. *Journal of Financial Reporting and Accounting*.
- Karaman, A. S., Kilic, M., & Uyar, A. (2024). Does stakeholder pressure influence firms' environmental, social, and governance performance? *Cogent Business & Management*, 11(1), 2303790. DOI:10.1080/23311975.2024.2303790
- Kaspersen, P., & Brink, C. (2020). State and Challenges of Environmental Accounting. *Journal of Environmental Economics and Policy*, 5(3), 232-249. Retrieved from <https://www.proquest.com/scholarly-journals/state-challenges-environmental-accounting/docview/1936485936/se-2>
- Khan, A. R., & Rahman, M. A. (2023). A critical analysis of corporate environmental disclosure frameworks in emerging markets. *Journal of Responsible Business and Management*, 11(7), 145-150. Retrieved from Quest Journals
- Khan, A., & Johl, S. K. (2022). Gender diversity and corporate sustainability: A quantitative review. *Journal of Business Research*, 145(1), 84-98. <https://doi.org/10.1016/j.jbusres.2022.01.048>
- Khanna, M., & Brouhle, K. (2009). *The effectiveness of voluntary environmental initiatives*. In M. A. Delmas & O. R. Young (Eds.), *Governance for the Environment: New Perspectives* (pp. 144-182). Cambridge University Press.
- Khlif, H., Hussainey, K., & Achek, I. (2015). The effect of national culture on the association between profitability and corporate social and environmental disclosure: A meta-analysis. *Meditari Accountancy Research*, 23(3), 296–321. <https://doi.org/10.1108/MEDAR-12-2014-0064>
- Kılıç, M., & Kuzey, C. (2019). The effect of corporate characteristics on social responsibility and environmental disclosures: Evidence from Turkish listed companies. *Sustainability*, 11(13), 3706. <https://doi.org/10.3390/su11133706>

- Kilic, M., & Uyar, A. (2023). Board structure, financial performance, corporate social responsibility performance, CSR committee, and CEO duality: Disentangling the connection in healthcare. *Corporate Social Responsibility and Environmental Management*. <https://doi.org/10.1002/csr.2141>
- Kılıç, M., Uyar, A., Kuzey, C., & Karaman, A. S. (2021). Does institutional theory explain integrated reporting adoption of Fortune 500 companies? *Journal of Applied Accounting Research*, 22(2), 379–400.
- Kipngetich T.J, Tenai, J & Bonuke R (2019) Determinants of Environmental Disclosure. Does Leverage matter? Reflection from firms listed in the Nairobi Security exchange *Journal of Accounting, Business and finance Research* 7(2) 107-114
- Kolk, A. (2004). A decade of sustainability reporting: Developments and significance., *International Journal of Environment and Sustainable Development*, 3(1), 51–64.
- Kolk, A. (2005). Corporate social responsibility in the coffee sector: The dynamics of MNC responses and code development. *European Management Journal*, 23(2), 228–236. <https://doi.org/10.1016/j.emj.2005.02.003>
- Kolk, A. (2008). Sustainability, accountability and corporate governance: Exploring multinationals' reporting practices. *Business Strategy and the Environment*, 17(1), 1–15.
- Kolk, A. (2010). The social responsibility of international business: From ethics and the environment to CSR and sustainable development. *Journal of World Business*, 45(4), 367–374. <https://doi.org/10.1016/j.jwb.2009.08.002>
- KPMG (2020). The KPMG Survey of Sustainability Reporting 2020.
- KPMG. (2010). KPMG International Survey of Corporate Responsibility Reporting 2010. KPMG.
- KPMG. (2020). The time has come: The KPMG survey of sustainability reporting 2020. <https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2020/11/the-time-has-come.pdf>
- Kumar, N., & Prakash, M. (2019). Environmental disclosure practices in India: Evidence from top 50 companies of BSE. *IOSR Journal of Business and Management*, 19(9), 5-14. Retrieved from IOSR Journals
- Kumar, R. (2020). An analytical study of the CSR reporting in India. *International Journal of Science and Research*, 9(10), 1145–1148. <https://www.ijsr.net/archive/v9i10/SR201018115937.pdf>
- Kumar, S., & Garg, D. (2015). Green supply chain practices implementation in Indian automobile industry. *International Journal of Engineering Research and Applications*, 5(2), 20-25. Retrieved from Academia.edu

- Kuo, L., & Chen, V. Y.-J. (2013). Is environmental disclosure an effective strategy on establishment of environmental legitimacy for organization?. *Management Decision*, 51(7), 1462–1487. <https://doi.org/10.1108/MD-10-2012-0737>
- Laine, M. (2009). Ensuring legitimacy through rhetorical changes? A longitudinal interpretation of the environmental disclosures of a leading Finnish chemical company. *Accounting, Auditing & Accountability Journal*, 22(7), 1029–1054. <https://doi.org/10.1108/09513570910987375>
- Larrinaga-González, C. (2007). Sustainability reporting: Insights from neo-institutional theory. 11(3), 73–86.
- Lauterbach, B., & Pajuste, A. (2017). The media and firm reputation role in corporate governance improvements: Lessons from European dual class share unifications. *Journal of Corporate Finance*, 45, 1–16. <https://doi.org/10.1016/j.jcorpfin.2017.05.001>
- Li, Pike & Haniffa (2014) Intellectual capital disclosure and national culture: A comparative study of the UK, Australia and South Africa Journal: *Journal of International Accounting Research* DOI: 10.2308/jiar-50666
- Li, Y., & Zhang, J. (2022). Corporate environmental information disclosure and investor response in China: The moderating role of media attention. *Energy Economics*, 108, 105762. Available at ScienceDirect
- Li, Y., Richardson, G. D., & Thornton, D. B. (1997). Corporate social responsibility and financial performance: Evidence from the financial services sector. *Journal of Accounting and Public Policy*, 16(3), 147-165. [https://doi.org/10.1016/S0278-4254\(97\)00006-7](https://doi.org/10.1016/S0278-4254(97)00006-7)
- Liao, L., Luo, L., & Tang, Q. (2015). Gender diversity, board independence, and corporate environmental disclosure. *Business Strategy and the Environment*, 24(6), 487-507. <https://doi.org/10.1002/bse.1836>
- Liao, L., Luo, L., & Tang, Q. (2015). Gender diversity, board independence, and corporate social responsibility: Evidence from China. *Journal of Business Ethics*, 136(4), 747-762. <https://doi.org/10.1007/s10551-015-2835-5>
- Liesen, A., Hoepner, A. G. F., Patten, D. M., & Figge, F. (2015). Does stakeholder pressure influence corporate GHG emissions reporting? Empirical evidence from Europe. *Accounting, Auditing & Accountability Journal*, 28(7), 1047–1074. <https://doi.org/10.1108/AAAJ-12-2013-1547>
- Lin, K. C., & Dong, X. (2018). Corporate social responsibility engagement of financially distressed firms and their bankruptcy likelihood. *Advances in Accounting*, 43(1), 32–45. <https://doi.org/10.1016/j.adiac.2018.07.003>

- Ling, X. (2007). Corporate social responsibility and firm value: The Chinese experience. *Journal of Business Ethics*, 80(4), 491-506. <https://doi.org/10.1007/s10551-007-9465-2>
- Lyon, T. P., & Maxwell, J. W. (2011). Greenwash: Corporate environmental disclosure under threat of audit. *Journal of Economics & Management Strategy*, 20(1), 3-41.
- Lyon, T. P., & Montgomery, A. W. (2015). The means and end of greenwash. *Organization & Environment*, 28(2), 223-249. <https://doi.org/10.1177/1086026615575332>
- Madera, S. (2025). Disclosure isn't just about saving the planet, it's a business necessity now, says CDP Chief. The Wall Street Journal. Retrieved from [wsj.com](https://www.wsj.com)
- Magnan, M. (2007). Environmental disclosure within legal and accounting contexts: An international perspective. Columbia Business School.
- Mahadevan, M. S. (2019). Study of environmental sustainability disclosure practices of tyre manufacturing companies. *International Journal of Recent Technology and Engineering*, 8(1), 45-50. Retrieved from IJRTE
- Mahmood, Z., & Uddin, S. (2021). Institutional logics and practice variations in sustainability reporting: Evidence from an emerging field. *Accounting, Auditing & Accountability Journal*, 34(7), 1520-1547.
- Mahmoudian, F., Lu, J., Yu, D., Nazari, J.A., & Herremans, I.M. (2022). Does cost of debt reflect the value of quality greenhouse gas emissions reduction efforts and disclosure? *Journal of International Accounting, Auditing and Taxation*. <https://doi.org/10.2139/ssrn.4368772>
- Mahoney, L. S., Thorne, L., Cecil, L., & LaGore, W. (2013). A research note on standalone corporate social responsibility reports: Signaling or greenwashing? *Critical Perspectives on Accounting*, 24(4-5), 350-359. <https://doi.org/10.1016/j.cpa.2012.09.008>
- Malik, P., & Mittal, R. K. (2015). Green accounting for sustainable development: A case study of the Indian cement industry. *International Journal of Commerce and Management Research*, 1(1), 1-6.
- Mangena, M., & Pike, R. H. (2005). The effect of external auditing on the corporate governance of listed firms in South Africa. *South African Journal of Accounting Research*, 19(1), 1-28. <https://doi.org/10.1080/10291954.2005.11435106>
- Marquis, C., & Qian, C. (2014). Corporate social responsibility reporting in China: Symbol or substance? *Organization Science*, 25(1), 127-148.
- Martens, M. L., & Boi, C. (2023). Stakeholder theory and corporate sustainability: A dynamic capabilities perspective. *Journal of Business Ethics*. <https://doi.org/10.1007/s10551-023-05345-7>

- Matisoff, D. C., Noonan, D. S., & O'Brien, J. J. (2013). Convergence in environmental reporting: Assessing the Carbon Disclosure Project. *Business Strategy and the Environment*, 22(5), 285–305. <https://doi.org/10.1002/bse.1741>
- Matsumura, E. M., Prakash, R., & Vera-Muñoz, S. C. (2014). Firm-value effects of carbon emissions and carbon disclosures. *The Accounting Review*, 89(2), 695–724. <https://doi.org/10.2308/accr-50629>
- Matten, D., & Moon, J. (2008). “Implicit” and “explicit” CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Academy of Management Review*, 33(2), 404–424. <https://doi.org/10.5465/amr.2008.31193458>
- Matuszak, Ł., & Różańska, E. (2020). Board size and sustainability disclosure: Evidence from German listed firms. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 68(1), 321–332.
- Maurya, R., & Tiwari, S. (2022). Analyzing the financial performance of top 5 NBFCs in India from 2017 to 2021. *International Journal for Research in Management and Research (IJFMR)*, 2(5). Retrieved from <https://www.ijfmr.com/papers/2022/5/783.pdf>
- Meng, X., Li, Y., & Li, H. (2014). Corporate social responsibility and firm performance in China: The moderating role of governance mechanisms. *Journal of Business Research*, 67(1), 2986–2994. <https://doi.org/10.1016/j.jbusres.2013.12.020>
- Meutia, I., Kartasari, S. F., & Yaacob, Z. (2022). Stakeholder or legitimacy theory? The rationale behind a company’s materiality analysis: Evidence from Indonesia. *Sustainability*, 14(13), 7763. <https://doi.org/10.3390/su14137763>
- Michelon, G. (2011). Does voluntary environmental disclosure improve financial performance? Evidence from Italian listed companies. *Journal of Management & Governance*, 15(4), 77–99. <https://doi.org/10.1007/s10997-010-9142-7>
- Michelon, G., & Parbonetti, A. (2012). The effect of corporate governance on sustainability disclosure. *Journal of Management & Governance*, 16(3), 477–509. <https://doi.org/10.1007/s10997-010-9160-3>
- Michelon, G., Pilonato, S., & Ricceri, F. (2015). CSR reporting practices and the quality of disclosure: An empirical analysis. *Critical Perspectives on Accounting*, 33, 59–78. <https://doi.org/10.1016/j.cpa.2014.10.003>
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853–886.

- Modugu, K. P. (2018). Corporate disclosure: A synthesis of literature. *International Journal of Accounting and Financial Reporting*, 8(3). <https://www.macrothink.org/journal/index.php/ijafr/article/view/11773>
- Mollah, S., Hassan, M. K., Al Farooque, O., & Mobarek, A. (2021). *Corporate governance and sustainability reporting: Evidence from an emerging economy*. *Journal of Accounting and Public Policy*, 40(2), 106741. <https://doi.org/10.1016/j.jaccpubpol.2021.106741>
- Momin, M. A., Rowe, A. L., & Quaddus, M. (2017). Sustainability reporting and firm financial performance: A review of measurement tactics. *International Journal of Accounting & Information Management*, 25(4), 465-494.
- Morales Raya, M. M., Martínez-Fuentes, C., & García-Sánchez, I. M. (2018). Corporate environmental policy disclosure and environmental behavior: Evidence from Spain. *Business Strategy and the Environment*, 27(6), 826-839. <https://doi.org/10.1002/bse.2044>
- Mose J.K,Buigut K.K (2020) Effect of Leverage on socio Environmental Responsibilities disclosures in Financial reports of Kenyan listed firms *International journal of research and innovation in social science* 4 (7),1-9
- Nagy, R., & Molnár, J. K. (2022). The Effects of Hofstede's Cultural Dimensions on Pro-Environmental Behaviour: How Culture Influences Environmentally Conscious Behaviour. arXiv preprint arXiv:2301.04609. <https://arxiv.org/abs/2301.04609>
- Nanavati, N., & Dave, S. (2023). Beyond the balance sheet: A comprehensive study of voluntary disclosure in Indian FMCG companies. *International Journal of Management, Public Policy and Research*, 3(1). <https://ijmpr.org/index.php/IJMPR/article/view/212>
- Nazim Uddin & Musa Miah. (2024). Effects of Green Technology on Firms' Profitability and Solvency: A Study on Textiles Industry of Bangladesh. *American Business Review*. Retrieved from <https://abc.us.org/ojs/index.php/abr/article/view/472>
- Neu, D., Warsame, H., & Pedwell, K. (1998). Managing public impressions: Environmental disclosures in annual reports. *Accounting, Organizations and Society*, 23(3), 265–282. [https://doi.org/10.1016/S0361-3682\(97\)00008-1](https://doi.org/10.1016/S0361-3682(97)00008-1)
- Nguyen, L. S., & Tran, M. D. (2019). Disclosure levels of environmental accounting information and financial performance: The case of Vietnam. *Management Science Letters*, 9(4), 557–570. <https://doi.org/10.5267/j.msl.2019.2.005>
- Nguyen, P., & Huynh, Q. (2024). Corporate attributes and environmental disclosure: Evidence from Vietnam. *Journal of Sustainable Finance & Investment*, 14(2), 123-140.

- Nobanee and Ellili (2016): "Corporate Sustainability Disclosure in Annual Reports: Evidence from UAE Banks: Islamic versus Conventional"
- Nugraha, D., Yuliani, R., & Wahyuni, S. (2024). Environmental Accounting Disclosure on Firm Value (Study of Manufacturing Companies Listed on The Indonesian Stock Exchange 2017-2020). *Management Science Research Journal*. Retrieved from <https://managementscienceresearchjournal.com/index.php/msr/article/view/114>
- Ogunode, O. A. (2022). *Legitimacy theory and environmental accounting reporting and practice: A review*. *South Asian Journal of Social Studies and Economics*, 13(1), 17–28.
- Oikonomou, I., Brooks, C., & Brooks, C. (2014). The effects of corporate social performance on the cost of corporate debt and credit ratings. *Financial Review*, 49(1), 49–75. <https://doi.org/10.1111/fire.12027>
- Okafor, C., & Ezeagba, C. (2021). Firm Size and Environmental Disclosure: Evidence from Nigerian Quoted Companies. *International Journal of Innovative Research and Development (IJIRD)*, 10(6), 75-89. Retrieved from internationaljournalcorner.com
- Okolie, A. O., & Izedonmi, F. (2014). Effect of Auditor Independence on Audit Quality: A Review of Literature. *International Journal of Business and Management Invention*, 6(3), 51-59.
- Ooi, S. K. (2022). Integrating institutional theory and resource-based view in explaining corporate climate change disclosure. *International Journal of Sustainable Strategic Management*, 11(1), 104–122. <https://doi.org/10.1504/IJSSM.2021.123198>
- Orcos, R., & Palomas, S. (2019). The impact of national culture on the adoption of environmental management standards: The worldwide diffusion of ISO 14001. *Cross Cultural & Strategic Management*, 26(2), 217–238. <https://doi.org/10.1108/CCSM-10-2018-0168>
- Oza, H. S. (2012). Environmental accounting. In C. K. Sonara & D. Sharma (Authors), *Environmental Accounting and Reporting Practices in India (pp. X–Y)*. *Indian Journal of Accounting*, 42(2)
- Owen, D. (2008). Chronicles of wasted time? A personal reflection on the current state of, and future prospects for, social and environmental accounting research. *Accounting, Auditing & Accountability Journal*, 21(2), 240–267. <https://doi.org/10.1108/09513570810854428>
- Pandey, A., & Chattopadhyay, R. (2021). Advent of Environmental Management Accounting and Case Study of ACC Cement with respect to Environmental Disclosures in India. Academia.edu Working Paper Series.

- Pareek, N., Sahu, T. N., & Gupta, M. (2021). Board gender diversity and corporate sustainability performance: Evidence from India. *Journal of Business Ethics*, 173(3), 481–498. <https://doi.org/10.1007/s10551-020-04657-3>
- Park, H., Russell, C., & Lee, J. (2007). National culture and environmental sustainability: A cross-national analysis. *Journal of Economics and Finance*, 31(1), 104–121. <https://doi.org/10.1007/BF02751516>
- Patten, D. M. (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: A note on legitimacy theory. *Accounting, Organizations and Society*, 17(5), 471–475. [https://doi.org/10.1016/0361-3682\(92\)90042-Q](https://doi.org/10.1016/0361-3682(92)90042-Q)
- Patten, D. M. (2002). The relation between environmental performance and environmental disclosure: A research note. *Accounting, Organizations and Society*, 27(8), 763–772. [https://doi.org/10.1016/S0361-3682\(02\)00011-2](https://doi.org/10.1016/S0361-3682(02)00011-2)
- Paul, S. K., & Pal, S. (2017). Environmental disclosure practices in India: Evidence from top 50 companies. *IOSR Journal of Business and Management*, 19(9), 5–14. <https://www.iosrjournals.org/iosr-jbm/papers/Vol19-issue9/Version-5/B1909050514.pdf>
- Pawar, D. S., & Munuswamy, J. (2024). Does environmental reporting of banks affect their financial performance? Evidence from India. *International Journal of Bank Marketing*, 42(4), 745–767. <https://doi.org/10.1108/IJBM-12-2022-0545>
- Peters, G. F., & Romi, A. M. (2014). The association between sustainability governance characteristics and the assurance of corporate sustainability reports. *Auditing: A Journal of Practice & Theory*, 33(2), 163–198. <https://doi.org/10.2308/ajpt-50669>
- Peters, G., & Romi, A. (2015). The role of corporate governance mechanisms in the voluntary assurance of corporate sustainability reports. *Journal of Business Ethics*, 129(2), 359–374. <https://doi.org/10.1007/s10551-014-2164-2>
- Pinheiro, A. P., Lopes, F., & Silva, M. L. (2023). The role of secondary stakeholders in corporate engagement with the Sustainable Development Goals: Evidence from SDG disclosures. *Sustainability*, 15(23), 16156. <https://doi.org/10.3390/su152316156>
- Porchelvi, A. (2020). Environmental reporting and company characteristics: A study of Indian companies. Lakshmibai College. <https://lakshmibaicollege.in/Secure-admin/webroot/upload/customfiles/02092020114817Dr.%20A.%20Porchelvi-%20ENVIRONMENTAL%20REPORTING%20AND%20COMPANY.pdf>
- Porchelvi, A., & Malhotra, A. (2020). The relationship between environmental performance and environmental disclosure: A meta-analysis. *Environmental Science and Pollution Research*, 27(15), 18843–18859. <https://doi.org/10.1007/s11356-020-08859-0>

- Porter, M. E., & van der Linde, C. (1995). Green and competitive: Ending the stalemate. *Harvard Business Review*, 73(5), 120-134.
- Post, C., Rahman, N., & Rubow, E. (2011). *Green governance: Boards of directors' composition and environmental corporate social responsibility*. *Business & Society*, 50(1), 189–223. <https://doi.org/10.1177/0007650310394642>
- Prado-Lorenzo, J.-M., Gallego-Álvarez, I., & García-Sánchez, I.-M. (2009). Stakeholder engagement and corporate social responsibility reporting: The ownership structure effect. *Corporate Social Responsibility and Environmental Management*, 16(2), 94–107. <https://doi.org/10.1002/csr.180>
- Pucheta-Martínez, M. C., Bel-Oms, I., & Lima Rodrigues, L. (2020). Does stakeholder engagement encourage environmental reporting? The mediating role of firm performance. *Business Strategy and the Environment*, 29(8), 3025-3037.
- Qiu, Y., Shaukat, A., & Tharyan, R. (2016). Environmental and social disclosures: Link with corporate financial performance. *The British Accounting Review*, 48(1), 102–116. <https://doi.org/10.1016/j.bar.2014.10.007>
- Rai, S. (2012). Gender Diversity in Boardrooms: Comparative Global Review and India. *Journal of Strategic Human Resource Management*, 1(2), 16-24.
- Ramanathan, V., & Kumar, A. (2023). Corporate social responsibility and environmental sustainability in the Indian automobile sector. *IOSR Journal of Economics and Finance*, 11(6), 29-42. Retrieved from IOSR Journals
- Rankin, M., Windsor, C., & Wahyuni, D. (2011). An investigation of voluntary corporate greenhouse gas emissions reporting in a market governance system: Australian evidence. *Accounting, Auditing & Accountability Journal*, 24(8), 1037–1070. <https://doi.org/10.1108/09513571111184751>
- Rao, K., & Tilt, C. (2016). Board diversity and CSR reporting: An Australian study. *Meditari Accountancy Research*, 24(2), 182-210. <https://doi.org/10.1108/MEDAR-08-2015-0052>
- Rashid, A. (2018). The influence of corporate governance on corporate social responsibility reporting: Evidence from Pakistan. *Social Responsibility Journal*, 14(1), 187–206. <https://doi.org/10.1108/SRJ-05-2016-0080>
- Reddy, K., & Gordon, L. (2010). The effect of sustainability reporting on financial performance: Evidence from India. *Asian Review of Accounting*, 18(3), 232–245. <https://doi.org/10.1108/13217341011089632>
- Ribeiro, V. P. L., & Aibar-Guzmán, C. (2010). Determinants of environmental accounting practices in local entities: Evidence from Portugal. *Social Responsibility Journal*, 6(3), 404–419. <https://econpapers.repec.org/RePEc:eme:srjpps:v:6:y:2010:i:3:p:404-419>

- Ringov, D., & Zollo, M. (2007). Corporate responsibility from a socio-institutional perspective: The impact of national culture on corporate social performance. *Corporate Governance: An International Review*, 15(2), 165–178. <https://doi.org/10.1111/j.1467-8683.2007.00572.x>
- Rinne, T., Steel, G. D., & Fairweather, J. (2012). Hofstede and Shane Revisited: The Role of Power Distance and Individualism in National-Level Innovation Success. *Cross-Cultural Research*, 46(2), 91-108.
- Roberts, R. W. (1992). Determinants of corporate social responsibility disclosure: An application of stakeholder theory. *Accounting, Organizations and Society*, 17(6), 595–612. [https://doi.org/10.1016/0361-3682\(92\)90015-K](https://doi.org/10.1016/0361-3682(92)90015-K)
- Rodrigues, A., & Martins, J. (2024). Planning Sustainable Carbon Neutrality Pathways: Accounting Challenges Experienced by Organizations and Solutions from Industrial Ecology. *ArXiv Preprint*, 2501.10456. Retrieved from <https://arxiv.org/abs/2501.10456>
- Rounaghi, M. M. (2019). Economic analysis of using green accounting and environmental accounting to identify environmental costs and sustainability indicators. *International Journal of Ethics and Systems*, 35(4), 504–512. <https://doi.org/10.1108/IJOES-03-2019-0056>
- Rudel, T., Roberts, J. T., & Carmin, J. (2011). Political economy of the environment. *Annual Review of Sociology*, 37, 221–238. <https://doi.org/10.1146/annurev-soc-012809-102639>
- Sarumpaet, S., Nelwan, M., & Dewi, R. (2017). The Value Relevance of Environmental Performance: Evidence from Indonesia. *Social Responsibility Journal*, 13(3), 484-499. DOI: 10.1108/SRJ-01-2017-0003
- Schaltegger, S., & Burritt, R. (2000). Contemporary environmental accounting: Issues, concepts and practice (1st ed.). Routledge. <https://doi.org/10.4324/9781351282529>
- Schöndube-Pirchegger, A., & Schöndube, L. (2011). Environmental and sustainability reporting in the European Union: An overview. *Corporate Social Responsibility and Environmental Management*, 18(4), 215-226. <https://doi.org/10.1002/csr.227>
- ScienceDirect. (2022). The impact of ESG performance on firm value and profitability. *Journal of Sustainable Finance & Investment*. Retrieved from ScienceDirect
- Securities and Exchange Board of India (SEBI) (2023). Business responsibility and sustainability reporting framework. SEBI Regulatory Publications. Retrieved from SEBI

- Senn, J., & Giordano-Spring, S. (2020). The limits of environmental accounting disclosure: Enforcement of regulations, standards and interpretative strategies. *Accounting, Auditing & Accountability Journal*, 33(6), 1367–1393. <https://doi.org/10.1108/AAAJ-04-2018-3461>
- Sharma, R., & Verma, K. (2019). Environmental challenges in the Indian automobile industry: A strategic approach. *International Journal of Recent Technology and Engineering (IJRTE)*, 8(1), 45-50. Retrieved from IJRTE
- Simnett, R., Vanstraelen, A., & Chua, W. F. (2009). Assurance on sustainability reports: An international comparison. *The Accounting Review*, 84(3), 937-967. <https://doi.org/10.2308/accr.2009.84.3.937>
- Singh, S., & Joshi, M. (2017). Environmental disclosure practices in India: Analyzing the extent and quality. *Environment, Development and Sustainability*, 19(6), 2417-2437. Retrieved from Springer
- Singh, V., & Singla, H. (2022). Disclosure practices of management discussion and analysis: A study on the Indian corporate sector. *The Indonesian Journal of Accounting Research*, 25(1). <https://ijar-iaikapd.or.id/index.php/ijar/article/view/667>
- Singhania, M., & Chadha, G. (2024). Impact of Debt on Sustainability Reporting: A Meta-Analysis of the Moderating Role of Country Characteristics. *Journal of Accounting Literature*.
- Siregar, M., & Soelton, M. (2023). Challenges of Environmental Accounting in MSMEs: A Case Study of the Siks Tofu and Fermented Soybean Cake Cooperative in Balikpapan City. *International Journal of Scientific Research and Management*, 11(1), 150-165. Retrieved from <https://ijsrm.net/index.php/ijsrm/article/view/5628>
- Soetan, T. A., Worimegbe, P. M., Makinde, O. G., Akintola, A. F., & Adeoye, S. O. (2024). Corporate environmental reporting components and return on capital employed growth of the Nigerian listed manufacturing companies: An empirical analysis. *International Journal of Management and Sustainability*, 13(3), 743–755. <https://doi.org/10.18488/11.v13i3.3876>
- Sohag Ahmed Sunny & Fatema Ali Apsara. (2024). Impact of Sustainability Reporting on Financial Performance: Evidence from an Emerging Economy. *Journal of Research in Accounting and Corporate Reporting*. Retrieved from <https://jracr.com/index.php/jracr/article/view/559>
- Søndergaard, M. (1994). Hofstede's Consequences: A Study of Reviews, Citations and Replications. *Organization Studies*, 15(3), 447-456.

- Spasic, L., & Stojanovic, J. (2013). Advantages of environmental reporting: A strategic approach for improving corporate sustainability and stakeholder trust. *Journal of Environmental Management*, 123, 87-97. <https://doi.org/10.1016/j.jenvman.2013.03.012>
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Stanford Graduate School of Business (2024). *Political Economy and Environmental Sustainability*. Conference Proceedings. Available at Stanford GSB
- Stanny, E., & Ely, K. (2008). Corporate environmental disclosures about the effects of climate change. *Corporate Social Responsibility and Environmental Management*, 15(6), 338–348. <https://doi.org/10.1002/csr.175>
- Sundarasan, S., Rajagopalan, U., & Alsmady, A. A. (2024). Environmental accounting and sustainability: A meta-synthesis. *Sustainability*, 16(21), 9341. <https://doi.org/10.3390/su16219341>
- Suryani, T., Wibowo, T., & Anwar, M. (2024). Profitability and market value effect on carbon emission disclosures: The moderating role of environmental performance. *International Journal of Energy Economics and Policy*, 14(1), 45-61.
- Sutantoputra, R., Bebbington, J., & Larrinaga, C. (2012). Corporate social responsibility and corporate performance in Indonesia. *Journal of Management & Governance*, 16(4), 745-779. <https://doi.org/10.1007/s10997-012-9221-2>
- Tarquinio, L., & Xhindole, I. (2022). The institutionalisation of sustainability reporting in management practice: Evidence through action research. *Sustainability Accounting, Management and Policy Journal*, 13(1), 142–169.
- Taylor & Francis Online. (2023). The impact of environmental crimes and profitability on corporate environmental disclosure. *Cogent Business & Management*, 10(1). Retrieved from [Taylor & Francis Online](<https://www.tandfonline.com/doi/full/10.1080/23311866.2023.2244444>)
- Tejawat, S., Chakraborty, S., & Dey, N. B. (2020). Corporate governance disclosure practices under the Companies Act 2013: A study of select automobile companies in India. *Corporate Governance Insight*, 4(2), 71–93. <https://grfcg.in/papers/volume-4/issue-2/corporate-governance-disclosure-practises-under-the-companies-act-2013-a-study-of-select-automobile-companies-in-india/>
- Tingbani, I., Kyei-Mensah, J., Ahinful, G. S., & Tauringana, V. (2020). Board gender diversity, environmental committees, and greenhouse gas voluntary disclosures. *British Accounting Review*, 52(6), 100914. <https://doi.org/10.1016/j.bar.2020.100914>

- Toms, J. S. (2002). Firm resources, quality signals and the determinants of corporate environmental reputation: Some UK evidence. *The British Accounting Review*, 34(3), 257–282. <https://doi.org/10.1006/bare.2002.0211>
- Tran, T. T., & Pham, N. T. (2024). Determinants of environmental, social, and governance (ESG) performance: A systematic literature review. *Journal of Cleaner Production*, 412, 136892. DOI:10.1016/j.jclepro.2024.136892
- Trireksani, T., Djajadikerta, H. G., Kamran, M., & Butt, P. (2024). The Impact of Country Characteristics on Board Gender Diversity and Sustainability Performance: A Global Perspective. *Sustainability*, 16(7), 3057.
- Turley, S., & Zaman, M. (2007). Audit committee effectiveness: Informal processes and behavioural effects. *Accounting, Auditing & Accountability Journal*, 20(5), 765–788.
- Uddin, M. M., Khan, M. A., & Hossain, M. S. (2021). Environmental Disclosure and Corporate Attributes: Evidence from Bangladesh. *European Journal of Management and Business Economics*, 30(3), 298–320. DOI: 10.1108/EJMBE-01-2021-0008
- Ullmann, A. E. (1985) A critical examination of the relationships among social performance, social disclosure, and economic performance of U.S. firms. *Academy of Management Review*, 10(3), 540–557.
- Unerman, J., & Bennett, M. (2004). Social accounting and accountability. *Accounting, Auditing & Accountability Journal*, 17(5), 641–665. <https://doi.org/10.1108/09513570410567530>
- United Nations Conference on Trade and Development. (1982–present). *Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR)*. UNCTAD. <https://unctad.org/isar>
- United Nations. (2021). System of Environmental-Economic Accounting: Ecosystem Accounting. *United Nations Statistics Division*. <https://seea.un.org/ecosystem-accounting>
- Utomo, S., Rahayu, S., Kaujan, K., & Irwandi, D. (2020). Environmental Performance, Environmental Disclosure, and Firm Value: Empirical Study of Non-Financial Companies at Indonesia Stock Exchange. *Green Finance*, 2(1), 31–48. DOI: 10.3934/GF.2020006
- Van Zyl, A. (2013). Corporate social responsibility and water: An agenda for corporate water stewardship. *Water SA*, 39(3), 415–420.
- Virtus Interpress. (2023). Liquidity and profitability effects on ESG scores: A financial analysis. *Corporate Governance and Sustainability Review*. Retrieved from Virtus Interpress

- Vitolla, F., & Rubino, M. (2017). Legitimacy theory and sustainability reporting: Evidence from Italy. In D. Vrontis, Y. Weber, & E. Tsoukatos (Eds.), *Proceedings of the 10th Annual Conference of the EuroMed Academy of Business* (pp. 1835–1848). EuroMed Press.
- Vitolla, F., Raimo, N., & Rubino, M. (2020). Board characteristics and integrated reporting quality: an agency theory perspective. *Corporate Social Responsibility and Environmental Management*, 27(2), 1152–1163. <https://doi.org/10.1002/csr.1879>
- Vodák, R., & Montemurro, M. (2022). Scaling Laws in Global Corporations: Environmental Impact Metrics. arXiv preprint, arXiv:2206.03148
- Wang et al. (2024). "Does energy-consuming rights trading policy achieve urban pollution and carbon reduction? *A quasi-natural experiment from China.*" *Frontiers in Environmental Science*, 6, 2024.
- Wang, J., & Gao, J. (2020). Effect of Green Consumption Value on Consumption Intention in a Pro-Environmental Setting: The Mediating Role of Approach and Avoidance Motivation. *SAGE Open*, 10(1).
- Wang, N. (2024). Stakeholder engagement in CSR: Building effective partnerships for sustainable development. *Journal of International Business Research*, 23(3), 1-3.
- Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. *The Accounting Review*, 53(1), 112–134.
- Westminster University. (2016). Impact of Sustainability Reporting on Firm Profitability. Retrieved from Westminster University
- Wiley Online Library. (2021). The effect of sustainable business practices on profitability: A cross-industry study. *Corporate Social Responsibility and Environmental Management*. Retrieved from Wiley Online Library
- Wilmshurst, T. D., & Frost, G. R. (2000). Corporate environmental reporting: A test of legitimacy theory. *Accounting, Auditing & Accountability Journal*, 13(1), 10-26.
- Wiseman, J. (1982). An evaluation of environmental disclosures made in corporate annual reports. *Accounting, Organizations and Society*, 7(1), 53-63. [https://doi.org/10.1016/0361-3682\(82\)90015-3](https://doi.org/10.1016/0361-3682(82)90015-3)
- World Business Council for Sustainable Development & IFRS Foundation. (2022). Technical readiness working group: Prototype climate-related disclosures. <https://www.ifrs.org/news-and-events/news/2022/03/technical-readiness-working-group-publishes-prototype-climate-related-disclosures/>

- Xu, B., & Jamal, N. M. (2024). Environmental Accounting Information Disclosure and Financing Constraints: A Systematic Literature Review. *International Journal of Academic Research in Business and Social Sciences*. Available at: <https://hrmars.com/index.php/IJARBSS/article/view/24102>
- Yeh, C. C., Lin, F., Wang, T. S., & Wu, C. M. (2019). Does corporate social responsibility affect the cost of capital in China? *Asia Pacific Management Review*, 24(1), 1-14. <https://doi.org/10.1016/j.apmr.2018.07.003>
- Zamil, I. A., Ramakrishnan, S., Jamal, N. M., Hatif, M. A., & Khatib, S. F. A. (2023). Drivers of corporate voluntary disclosure: A systematic review. *Journal of Financial Reporting and Accounting*, 21(2), 232–267. <https://doi.org/10.1108/JFRA-04-2021-0110>
- Zeng, S. X., Xu, X. D., Yin, H. T., & Tam, C. M. (2019). The relationship between environmental information disclosure and profitability: A comparison between different disclosure styles. *International Journal of Environmental Research and Public Health*, 16(9), 1591.
- Zhang, Y., & Liao, L. (2015). Corporate Social Responsibility Assurance: Theory, Regulations, and Practice in China. In M. Rahim & S. Idowu (Eds.), *Social Audit Regulation* (pp. 131–154). Springer. https://doi.org/10.1007/978-3-319-15838-9_7
- Zhou, W., Niu, Z., Wu, S., et al. (2020). The fossil fuel CO₂ traced by radiocarbon in fifteen Chinese cities. *Science of the Total Environment*, 729, 138639. <https://doi.org/10.1016/j.scitotenv.2020.138639>

Websites

ceicdata.com.autobei.com

ibef.org/industry/India-automobiles

APPENDCES

APPENDICES

Appendix I

QUESTIONNAIRE

Challenges and Prospects of Environmental Reporting with special reference to Automobile Industry in South India

General Information

1. Name of the Respondent:
2. Name of the Company:
3. Age :
21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐
4. Designation:
Managers ☐ Top level Officials ☐
5. Department
Research & Development ☐ Manufacturing ☐ Supply chain/Logistics ☐
Environmental ☐ Sustainability ☐ Marketing and Sales ☐ Others ☐
6. Work Experience:
5-10 years ☐ 10-15 years ☐ 15-25 years ☐
7. Marital Status: Married ☐ Unmarried ☐ Divorce ☐ Widow ☐
8. Educational Qualification:
Graduate ☐ Post Graduate ☐ Professional Degree ☐ Others ☐
9. Gender: Male ☐ Female ☐
Applicable to External auditors
10. Type of External Auditors:
Chartered Accountants ☐ Energy Auditors ☐
11. Area of Practice:
Auditing ☐ Taxation ☐ Advisory ☐ Corporate Finance ☐
12. Level of Knowledge:
Beginner ☐ Intermediate ☐ Advanced ☐

13 Objective 1 (To identify the determinants of Environmental disclosure in Automobile industry.)

State your opinion regarding the various determinants of environmental disclosure.

SD Strongly disagree, D Disagree, N No idea, A Agree, SA Strongly agree.

13.1 Stakeholder Pressure

Stakeholder Pressure	SD	D	N	A	SA
The company should consider stakeholders interest					
Disclosure helps to avoid employee's disappointment					
Managers perception is core element influencing company's environmental policy					
Internal stakeholders support Environmental Disclosure and external stakeholders' impulse pressure to disclose information					
Major company shareholders are affected by good Environmental reputation and production efficiency					

13.2 Environmental awards and Certification

Environmental Awards and Certification	SD	D	N	A	SA
Awards encourage companies to take care of environment and disclose more environmental information					
Companies with ISO 14000 show more commitment to Environment policy					
Firm shows continuous improvement in Environmental performance					
Provide ethical conduct for customers and minimize harmful impacts to environment					
Help to prevent pressure from stakeholders and competitors					

13.3 Disclosure Practices

Disclosure Practices	SD	D	N	A	SA
Qualitative environmental information is included in directors report					
Statutorily required information on Conservation of Energy is included in the report					
Organizations commitment towards social goals are highlighted					
Large companies give Environmental information in detail in Chairman's statement as per Global Reporting Initiative guidelines					
Firms that fail to meet environmental expectations try to mitigate negative effects by disclosing more					

13.4 Auditor Type/Quality

Auditor type/Quality	SD	D	N	A	SA
High quality auditors can better assess the environmental impact of firm's business operations					
They produce more high-quality environmental information					
Auditors recommend clients to report Environmental information					
High corporate moral values of the company affect the selection and quality of the auditor					
Larger firms appoint Big 4 accounting firms as auditors to gain international recognition					

13.5 Pollution Propensity

Pollution Propensity	SD	D	N	A	SA
Environmental information announcement reduces pollution emissions and promote low carbon development of enterprise					
Governments pollution control policy improve atmospheric environment					
Environmental tax reduces pollution emissions per unit of output					
Tax subsidies for clean companies help to reduce Environmental pollution					
Firms in more polluting industry reporting its toxic waste disclose more to avoid adverse actions of stakeholders					

13.6 Political Exposure

Political Exposure	SD	D	N	A	SA
Society has higher expectations for environmental performance of large firms					
Political connection helps firms to obtain government resources ,attract more media attention and increase firm's visibility					
Politically exposed firm are expected to take more social responsibility					
They have higher level of compliance with law and social norms					
High political cost compel management to disclose more Environmental information and to engage in environmentally friendly activities					

13.7 Media Exposure

Media Exposure	SD	D	N	A	SA
Increase public attention on social problems and Inform stakeholders how much company concerns on environment					
Encourage managers to expose company's environmental activities and stakeholders get access to what they want					
Increased media coverage increases the role of NGO's					
Media exposure have greater frequency than yearly reports					
The firms having high media exposure disclose more Environmental information					

13.8 Board Size

Board Size	SD	D	N	A	SA
Provide diversity in terms of expertise having financial or accounting background					
Difficult to maintain coordination between board members and weaker decision making					
Larger the size of board, more will be Environmental disclosure and unanimous decision can be taken					
Agency conflict between managers and shareholders having different perspectives, values, and ideas					
Strong board communicate with all stakeholders					

13.9 Board Independence

Board Independence	SD	D	N	A	SA
Monitor managers and consider interest of stakeholder groups					
Independent directors in board increase firm value and protect interest of stakeholders					
Independent directors contribute their skills, connections and contact and help in achieving strategic goals and disclosing more environmental information					
Encourage top management to incorporate social considerations					
Personal and professional relationship with the firm					

13.10 Gender Diversity

Gender Diversity	SD	D	N	A	SA
Favors problem solving by considering different perspectives and ideas					
Women and men differ in communication style, educational background, commitment and expertise					
Female directors more stakeholders oriented and they enhance board effectiveness					
Positive impact on organizations socially responsible behavior and increase the propensity of disclosure					
Women are more concerned than men in environmental issues and well-being of society and take actions to reduce perceived environmental risks					

13.11 Board meeting

Board meeting	SD	D	N	A	SA
Meeting frequency affects firms' performance and promote idea sharing and knowledge and more disclosure					
Provide opportunity to discuss strengths and weaknesses affecting firms' earnings					
Deal with issues relating to low performance					
Alert stakeholders to problems or conflicts of business operation					
Major actions and decisions of the company taken in board meeting					

13.12 Environmental committee

Environmental committee	SD	D	N	A	SA
Environmental issues can be addressed and ensure better quality of Environmental disclosure					
Manage conflict between stakeholder groups and improve company's commitment towards sustainability					
Plan, implement and review sustainability policies and activities					
Enhance the awareness of employees of environmental aspects of the job and make them responsible for minimizing environmental risks					
Adequate communication with external stakeholders					

13.13 Size of the firm

Size of the firm	SD	D	N	A	SA
Big companies face more pressure from public to disclose more information					
Interested to disclose information to attract more investors and influence employees					
Cost of reporting environmental information is very high and small firms cannot afford					
Disclosing more information reduce agency cost and creates confidence among stakeholders					
Minimize public criticism and pressure from government, more accountable for environmental issues and firm become aware of maintaining good corporate reputation					

13.14 Age of the firm

Age of the firm	SD	D	N	A	SA
Older firms must influence perception about their business and perform on new policies to sustain their business					
As company matures, reputation increases and involvement in environmental protection activities also increase					
Companies that have established for a long time disclose more information about environmental activities to reduce environmental costs and to improve quality					
Old firms face more political pressure					
Old firms have up to date information about recent developments and changes in the society					

13.15 Number of years listed

Number of years listed	SD	D	N	A	SA
The firm listed in stock market need to comply disclosure requirements and publish annual reports on environmental risks faced					
Promotes stakeholder engagement					
Improve communication with stakeholders					
Listed companies have more sustainability related goals and targets to strengthen risk management					
Listed companies demonstrate their sustainability objectives					

13.16 Type of industry

Type of industry	SD	D	N	A	SA
Environmental sensitive industries activities affect environment directly and comply with environmental regulations					
The emission effect of their activities is more and face greater societal, NGO and environmental groups pressure					
Manufacturing firms disclose more environment related information to get high attention from community and to maintain healthy relationship between company and investment community					
Public sector companies disclose more environmental information to get more exposure					
Public sector companies follow stringent rules					

13.17 Uncertainty avoidance

Uncertainty avoidance	SD	D	N	A	SA
Society wishes to avoid risk and want to maintain more relaxed atmosphere					
Short term orientation focus on social status					
Long term-oriented firms disclose more environmental information					
Individualistic firms want to maintain less secrecy					
People share common beliefs and ideas and extent of disclosure more in collectivistic societies					

Objective 2 To evaluate the present environmental disclosure practices of selected Automobile Industry

14. What type of Environmental Information is disclosed?
Qualitative only ☐ Quantitative only ☐
Both Qualitative and Quantitative ☐ Not Applicable ☐
15. What is the length of Environmental Disclosure?
Zero page ☐ Less than a half page ☐ Half to one page ☐
One to two pages ☐ More than two pages ☐
16. What is the frequency of publishing environmental information?
Annually ☐ Biannually ☐ Every few years ☐
Only when required by regulation ☐ Does not publish environmental information ☐
17. What is the key environmental metrics of disclosure?
Greenhouse gas emission ☐ Energy consumption ☐
Waste management and recycling initiatives ☐ Water usage ☐
Bio diversity ☐ None of the above ☐
18. What is the format of environmental disclosure?
Online sustainability report ☐ Infographics and videos ☐ Printed reports ☐
No particular format ☐
19. Who verify the environmental information disclosed?
Independent external auditor ☐ Limited assurance from third party provider ☐
Internal auditor ☐ No verification required ☐
20. What is the target set in disclosure?
Specific and measurable goals ☐ General with no specific targets ☐
Planning to set targets in future ☐ No long-term targets set ☐

21. What is the general trend of Environmental disclosure in your company?

N Never, VR Very rarely, R Rarely, O Occasionally, F Frequently, VF Very Frequently.

Particulars	N	VR	R	O	F	VF
The companies are providing sustainable report						
Sustainable items are well reported in existing accounting practices of the company						
Accounting treatment of sustainable items disclosed in financial report						
The company disclose total expenditure on environmental factors						
Current and past expenditure on sustainable items disclosed						

22. What is the general trend of commitment of companies to reduce vehicle emission?

SD Strongly disagree, D Disagree, N Neutral, A Agree, SA Strongly Agree.

Particulars	SD	D	N	A	SA
The companies achieve net zero emission with a publicly stated target and time line					
There is no clear time line or strategy for achieving net zero emission					
The companies evaluate the feasibility of commitment to reduce vehicle emission					
Specific targets are fixed to reduce vehicle emissions					

23. How frequently the reports are published by the companies together with annual reports?

VR Very Rarely, R Rarely, O Occasionally, F Frequently, VF Very Frequently

Particulars	VR	R	O	F	VF
CSR report					
Sustainability report					
Health, Safety and Environment report					
Informal report					

24. What is the frequency of reporting formats adopted by the company?

Particulars	VR	R	O	F	VF
Global Reporting Initiative (GRI)					
Global Compact Initiative (GCI)					
Sectoral guidance					

25. The following are the most frequent medium of environmental disclosure adopted by the company? Give your level of agreement

SD Strongly disagree, D Disagree, N Neutral, A Agree, SA Strongly Agree.

Particulars	SD	D	N	A	SA
Main body of financial statements					
Footnotes to the financial statements					
Director's report					
Separate Annexure to financial statements					
Separate environmental statements					

26. Mark the following items in the index of Disclosure according to frequency of disclosure

VR Very Rarely, R Rarely, O Occasionally, F Frequently, VF Very frequently	VR	R	O	F	VF
Items of information					
Broad Environmental objectives					
Specific Targets					
Environmental Budget					
Environmental Management system					
Environmental auditing					
Awards obtained for Environmental protection					
Waste Management					
Tree plantation and other environment CSR activities					
Pollution control measures					
Conservation of natural resources					
Significant accounting and reporting practices					
Impact of organizational activities on environment					
Environment management certificate of ISO 140001					
Measures regarding use and efficiency of electricity, water, CO2 emissions, waste management and fuels					
Value of intangible environmental investments like research and development expenditures, emission permits etc.					
Expenditure like fines paid for disregarding environmental norms					
Contributions for Environmental fund					
Cost for controlling environmental impact like preventing pollution, noise, cost for educating employees, designing new environmental friendly products etc.					

To study the effect of financial performance on Corporate Environmental disclosure.

SD Strongly disagree, D Disagree, N No idea, A Agree, SA Strongly agree

27. Profitability

Profitability	SD	D	N	A	SA
Priority given to economic demands in case of low profitability					
More Commitment of top management towards addressing environmental issues in case of high profitability					
Gaining competitive advantage results in increase in profitability					
Profitable firms contribute to welfare of stakeholders, increase public image and leads to high quality of disclosure					
Profitable firms exposed to high social pressures but have necessary funds for disclosure					
Profitable companies more trusted by the public to increase stakeholder expectations and attract investors					
Profitability is an indicator in managing firms' environmental assets					

28. Environmental disclosure

Environmental disclosure	SD	D	N	A	SA
Disclosure of environmental costs creates awareness among investors					
Cost of environmental deterioration of its own activities and waste collection reduce profit					
Proper disposal of waste generates revenue					
Employee health and safety cost increase knowledge of employees ,profit increases					
Cost of Employee training on environmental matters increase knowledge and productivity of employees, profit increases					
Ignoring health and safety costs cause occupational accidents, financial losses to employees adversely affect profitability					
Cost of cleaning up of hazardous materials from environment helps to reduce the environmental impact enhance profitability					

Objective 4 To study the effect of Environmental disclosure on Corporate Environmental performance and mediating role of performance indicators and moderating role of financial performance.

37 Environmental Reporting

SD Strongly disagree, D Disagree, N No idea, A Agree, SA Strongly agree

Environmental Reporting	SD	D	N	A	SA
Audit of environmental management system improves environmental performance ,makes an estimate of environmental cost and more disclosure					
Verification of environmental reports checks its accuracy, credibility validity and useful in decision making					
Ensure compliance of environmental laws					
Respond to pressures from regulatory authorities					
Reduce wastage of energy, cost and time					
Environmental risk should be assessed in environmental audit					
Very expensive and time consuming					
Companies are not willing to take environmental audit since it is not mandatory and no specific standards are set					
Identify problems and improve corporate image					

38 Environmental performances

SD Strongly disagree, D Disagree, N No idea, A Agree, SA Strongly agree.

Environmental Performance	SD	D	N	A	SA
Superior performers have proactive energy and want to convey their performance to general public					
Poor performers face more political pressure, disclose all information to reduce negative impacts					
Investors will be attracted due to disclosure					
Environmental liabilities are less for good performers					
Meeting environmental performance is the key aspect of CSR					
Guarantees that stakeholders are aware of the environmental responsibilities					

39 To what extent the following Environmental performance indicators are important for Disclosure

UI Unimportant, SI Slightly important, MI Moderately important, I Important, VI Very important

Performance indicators	UI	SI	MI	I	VI
Environmental policy					
Separate Environmental department					
Environmental management system					
ISO 14001 certificate					
Environmental statements (statutory required or voluntary)					
Audit of Environmental statements					
Recognition of social costs and its valuation in decision making					
Training to employees					
Internal reward system					
Awards obtained for environmental performance					
Voluntary steps taken for environment protection					

Objective 5 To examine the constraints and benefits associated with Environmental Reporting

40. To what extent do you agree about the main constraints of Environmental Disclosure?

SD Strongly disagree, D Disagree, N No idea, A Agree, SA Strongly agree

Constraints	SD	D	N	A	SA
Avoid providing sensitive and confidential information to competitors					
No legal requirement/obligation to report					
Organisations lack the expertise to produce and disclose such information					
Cost of obtaining external advice/ assurance and setting up environmental management systems high					
Capital investment in pollution control equipment is high					
Management feels that such information is not important for stakeholders					
Cost of disclosure (producing, printing & distributing) the report is high					
There is no standard method of estimating social value of environmental goods and services and industry data is not available					
Cannot compare two firms when methods used by both firms different					
Difficult to measure environmental costs and benefits					
Lack of clear-cut government policy					
Lack of coordination with different stake holders					
Lack of consciousness about Environmental Disclosure					
Improper enforcement of planning and environmental legislation and inactive enterprise participation gives rise to low adoption of environmental accounting					

41. To what extent do you agree about the main benefits of Environmental Disclosure?

SD Strongly disagree, D Disagree, N No idea, A Agree, SA Strongly agree

Benefits	SD	D	N	A	SA
Eco efficiency					
New application for non-hazardous waste					
Increased sales and employee satisfaction					
Enhanced Environmental image					
Reduction in environmental and pollution cost					
Increase credibility of information provided					
Guarantee accuracy of environmental reports					
Compliance with Environmental laws					
Respond to pressures from regulatory authorities					
Attract investors					
Improved CSR					
Long term survival of organisation					
Reduction of cost of capital					
Provide better estimates of total cost of producing a product					
Helps management in decision making and improves profitability					
Risk management possible					
Improve quality and productivity of staff working in the organisation					
Improved corporate reputation					
Integration with financial reporting					
Wider adoption of global standard					
Make disclosure mandatory					
Focus of carbon disclosure					
Stakeholder centric reporting					
International recognition					

Appendix II

COMPANY EXTRACTS

1. Ashok Leyland

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	8.77	5.94	5.30	12.33	15
EPS	0.82	1.07	1.85	4.70	8.92
ROA	1.19	0.17	0.67	2.77	4.41
Leverage	0.43	0.41	0.47	0.46	0.43
Debt Equity Ratio	2.23	2.49	2.78	3.13	3.43
Current Ratio	1.02	0.95	0.94	0.86	0.84
Quick Ratio	0.76	0.69	0.68	0.65	0.63
Energy Intensity	571 KWH	500 KWH	495 KWH	603 KWH	566 KWH
Emission Intensity	0.55	0.47	0.46	0.66	0.68
Water Intensity	6.5 KL	5.0 KL	4.3KL	3.3 KL	3.2 KL
Waste Intensity	250 Kg	214 Kg	211 Kg	150 Kg	163 Kg
Environmental Reporting Completeness Ratio	0.80	0.80	0.88	0.96	1.0

2 Mahindra & Mahindra

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	7.96	7.14	10.63	13.59	14
EPS	23.50	19.75	31.40	41.20	44.10
ROA	3.21	2.88	4.62	6.15	6.42
Leverage	0.33	0.32	0.33	0.35	0.34
Debt Equity Ratio	0.74	0.72	0.77	0.80	0.78
Current Ratio	1.26	1.22	1.24	1.29	1.28
Quick Ratio	0.93	0.90	0.92	0.96	0.95
Energy Intensity	1364 KWH	1333 KWH	1264 KWH	1142 KWH	1092 KWH
Emission Intensity	0.19	0.19	0.19	0.18	0.18
Water Intensity	6.8 KL	6.6 KL	5.9 KL	5.2 KL	4.6 KL
Waste Intensity	316 Kg	307.7 Kg	314.8 Kg	317.5 Kg	310 Kg
Environmental Reporting Completeness Ratio	0.80	0.80	0.88	0.96	0.96

3 Renault Nisan

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	(8.6)	6.7	12.6	28.5	9.7
EPS	(29.51)	3.26	(1.30)	8.11	2.76
ROA	(0.19)	0.61	1.29	2.08	2.08
Leverage	0.56	0.55	0.59	0.56	0.51
Debt Equity Ratio	2.22	2.17	2.17	2.31	2.31
Current Ratio	1.04	1.08	1.12	1.11	1.05
Quick Ratio	0.99	0.97	0.98	0.96	0.96
Energy Intensity	2200 KWH	2110 KWH	2130 KWH	2030 KWH	1750 KWH
Emission Intensity	0.51	0.56	0.52	0.52	0.54
Water Intensity	2.10 KL	1.95 KL	1.85 KL	1.78 KL	1 KL
Waste Intensity	497 kg	489 Kg	497 Kg	498 Kg	497 Kg
Environmental Reporting Completeness Ratio	0.80	0.84	0.92	0.96	0.96

4 Michelin India Private Ltd

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	10.2	10.6	11.4	11.4	24.99
EPS	4.45	0.11	0.71	1.15	4.5
ROA	2.08	0.37	2.10	3.10	3.67
Leverage	0.35	0.33	0.30	0.28	0.27
Debt Equity Ratio	0.12	0.18	0.23	0.26	0.29
Current Ratio	0.86	1.04	1.14	1.21	0.88
Quick Ratio	0.41	0.49	0.45	0.58	0.62
Energy Intensity	170 KWH	165 KWH	160 KWH	150 KWH	145 KWH
Emission Intensity	8.7	8.3	7.9	7.5	7.1
Water Intensity	0.25 KL	0.24 KL	0.23 KL	0.22 KL	0.21 KL
Waste Intensity	150 Kg	148 Kg	146 Kg	144 Kg	142 Kg
Environmental Reporting Completeness Ratio	0.80	0.84	0.92	0.96	0.94

5 MRF Tyres

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	13.36	13.13	7.21	8.23	16.41
EPS	32.89	25.86	15.26	18.13	4.9
ROA	9.2	6.8	4.0	4.5	11.8
Leverage	0.05	0.05	0.05	0.05	0.05
Debt Equity Ratio	0.10	0.09	0.09	0.08	0.07
Current Ratio	1.37	1.23	1.48	1.43	1.55
Quick Ratio	0.95	0.89	0.92	0.85	0.88
Energy Intensity	170 KWH	165 KWH	160 KWH	155 KWH	150 KWH
Emission Intensity	10.53	10.53	10.53	10.53	10.53
Water Intensity	0.24 KL	2.62 KL	2.80 KL	3.02 KL	3.12 KL
Waste Intensity	3100	3100	3100	3200	3200
Environmental Reporting Completeness Ratio	0.80	0.84	0.92	0.96	0.96

6 Royal Enfield

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	24.69	16.71	18.31	27.48	31.35
EPS	48.68	49.28	61.32	106.54	146.13
ROA	14.68	9.25	10.35	15.18	17.30
Leverage	0.21	0.23	0.18	0.07	0.15
Debt Equity Ratio	0.03	0.02	0.01	0.01	0.03
Current Ratio	3.00	3.35	1.88	1.14	1.15
Quick Ratio	2.87	3.02	1.55	0.74	0.76
Energy Intensity	178 KWH	183 KWH	170 KWH	159.1 KWH	155.6 KWH
Emission Intensity	11.0	10.5	9.8	8.1	8.1
Water Intensity	0.25	0.24	0.22	0.18	0.17
Waste Intensity	650	620	600	550	550
Environmental Reporting Completeness Ratio	0.80	0.84	0.92	0.96	0.96

7 Maruti Suzuki

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	14.96	10.58	8.87	16.26	21.82
EPS	187.95	145.33	128.46	262.84	429.01
ROA	8.90	6.50	5.32	9.46	12.52
Leverage	0.12	0.10	0.09	0.08	0.08
Debt Equity Ratio	0.23	0.19	0.17	0.13	0.14
Current Ratio	1.55	1.52	1.49	1.55	1.54
Quick Ratio	1.16	1.16	1.12	1.16	1.15
Energy Intensity (KWH)	1167	1139	1132	1075	1028
Emission Intensity	0.32	0.32	0.33	0.32	0.31
Water Intensity (KL)	0.80	0.78	0.75	0.72	0
Waste Intensity (Kg)	960	960	970	970	970
Environmental Reporting Completeness Ratio	0.80	0.84	0.92	0.96	0.96

8 Tata Motors

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	(1.92)	(1.27)	1.23	7.67	21.41
EPS	(33.55)	(35.13)	(29.88)	6.30	81.93
ROA	(3.55)	(3.97)	(3.38)	0.82	9.24
Leverage	0.21	0.17	0.13	0.21	0.17
Debt Equity Ratio	0.62	1.16	2.78	3.14	2.46
Current Ratio	0.85	0.94	0.98	0.98	0.97
Quick Ratio	0.58	0.70	0.74	0.71	0.69
Energy Intensity (KWH)	1000	944	889	853	827
Emission Intensity	0.60	0.58	0.30	0.21	0.14
Water Intensity (KL)	6.12	6.12	5.17	5.17	5.17
Waste Intensity (Kg)	2400	2400	2400	2400	2400
Environmental Reporting Completeness Ratio	0.80	0.84	0.92	0.96	0.96

9 TVS Motor

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	12.69	11.21	11.32	14.11	15
EPS	12.88	18.81	31.38	43.84	57.05
ROA	4.88	4.66	3.99	3.77	2.80
Leverage	0.19	0.18	0.16	0.14	0.12
Debt Equity Ratio	0.27	0.25	0.22	0.19	0.16
Current Ratio	1.12	1.02	0.88	0.93	0.97
Quick Ratio	1.02	0.91	0.78	0.81	0.84
Energy Intensity (KWH)	440	430	440	440	400
Emission Intensity	15.3	17.5	8.14	6.8	6.8
Water Intensity (KL)	0.98	1.82	0.96	0.81	0.79
Waste Intensity (Kg)	407	765	365	410	300
Environmental Reporting Completeness Ratio	0.80	0.84	0.92	0.96	0.92

10 Hyundai Motor

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	40.98	51.43	33.08	22.52	17
EPS	69.41	74.58	57.96	35.71	23.15
ROA	10.57	7.75	10.74	15.32	20.49
Leverage	0.05	0.04	0.03	0.03	0.03
Debt Equity Ratio	0.08	0.09	0.07	0.06	0.07
Current Ratio	2	1.90	2.18	2.11	1.24
Quick Ratio	1.65	1.60	1.85	1.81	0.96
Energy Intensity (KWH)	441	483	477	457	440
Emission Intensity	0.40	0.40	0.37	0.34	0.30
Water Intensity (KL)	16.14	14.64	15.86	13.16	12.68
Waste Intensity (Kg)	655	672	655	655	650
Environmental Reporting Completeness Ratio	0.80	0.85	0.90	0.95	0.95

11 Yamaha

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	14.7	15.7	13.8	14.69	10.97
EPS	43	52	152	174.68	163.57
ROA	3	8.49	7.99	6.18	3.88
Leverage	0	0.24	0.29	0.32	0.34
Debt Equity Ratio	0.51	0.57	0.71	0.78	0.82
Current Ratio	2	2.04	1.73	1.79	1.40
Quick Ratio	1	1.25	1.04	1.06	0.90
Energy Intensity (KWH)	130	125	120	115	115
Emission Intensity	1.25	1.20	1.15	1.10	1.05
Water Intensity (KL)	1.2	1.1	1	0.9	0.8
Waste Intensity (Kg)	120	110	100	110	170
Environmental Reporting Completeness Ratio	0.75	0.78	0.85	0.95	0.96

12 Lanson Toyota

Particulars	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
ROCE	19.9	19.9	23.6	19.9	24.98
EPS	191.85	191.85	443.21	443.21	788.4
ROA	3.87	3.92	4.36	4.23	4.42
Leverage	0.29	0.38	0.59	0.64	0.66
Debt Equity Ratio	0.47	0.53	0.59	0.62	0.71
Current Ratio	1.13	1.11	1.08	1.06	1.06
Quick Ratio	0.57	0.56	0.54	0.53	0.51
Energy Intensity (KWH)	120	100	110	90	90
Emission Intensity	17	15	14	16	15
Water Intensity (KL)	1	0.9	0.8	0.7	0.6
Waste Intensity (Kg)	350	310	290	270	250
Environmental Reporting Completeness Ratio	0.70	0.73	0.75	0.80	0.85

14 Lucas TVS

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	7.6	6	10.3	12.2	12.7
EPS	1779.06	525.13	925.42	1140.31	566.23
ROA	9	2	0.9	2	4
Leverage	0.20	0.23	0.25	0.28	0.30
Debt Equity Ratio	0.03	0.02	0.02	0.06	0.39
Current Ratio	1.02	1.03	1.14	1.02	1.02
Quick Ratio	0.83	0.85	0.87	0.89	0.91
Energy Intensity (KWH)	450	430	410	390	300
Emission Intensity	3.7	3.6	3.3	3.4	2.8
Water Intensity (KL)	2.80	2.60	2.50	2.60	2.40
Waste Intensity (Kg)	390	370	330	330	290
Environmental Reporting Completeness Ratio	0.65	0.70	0.75	0.80	0.85

15 Brakes India Private Limited

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	3.53	3.56	3.56	3.51	3.56
EPS	27.91	10.28	20.74	26.62	26.67
ROA	6.28	6	3.73	3.93	6.19
Leverage	0.12	0.13	0.27	0.13	0.10
Debt Equity Ratio	0.02	0.01	0.53	0.40	0.37
Current Ratio	1.06	1.08	3.40	4.21	4.32
Quick Ratio	1.03	0.99	3.06	3.77	3.86
Energy Intensity (KWH)	500	430	460	420	390
Emission Intensity	4.0	3.7	3.5	3.3	3.1
Water Intensity (KL)	3.00	2.85	2.70	2.50	2.30
Waste Intensity (Kg)	350	330	310	290	270
Environmental Reporting Completeness Ratio	0.65	0.70	0.80	0.85	0.90

16 CEAT Tyres

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	10.07	13.85	5.97	9.1	20.1
EPS	106.81	102.26	13.43	50.99	161.75
ROA	3.34	5.58	0.82	1.94	6.48
Leverage	0.21	0.20	0.23	0.20	0.17
Debt Equity Ratio	0.66	0.61	0.75	0.68	0.57
Current Ratio	0.79	0.74	0.72	0.65	0.62
Quick Ratio	0.39	0.36	0.36	0.37	0.36
Energy Intensity (KWH)	110	110	105	100	100
Emission Intensity	1.0	1.0	0.90	0.75	0.53
Water Intensity (KL)	8.5	8.5	7.5	6.0	6.0
Waste Intensity (Kg)	180	180	160	150	130
Environmental Reporting Completeness Ratio	0.70	0.75	0.80	0.85	0.90

17 Daimler India Commercial vehicles

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	39.6	41.7	44.6	44.6	35.6
EPS	12.10	12.45	12.75	13.15	13.15
ROA	3.60	4.83	4.95	5.04	5.18
Leverage	0.13	0.10	0.10	0.09	0.09
Debt Equity Ratio	0.11	0.01	0.01	0.01	0.01
Current Ratio	1.6	1.8	1.9	1.7	1.10
Quick Ratio	1.0	1.1	1.0	0.9	0.8
Energy Intensity (KWH)	1100	1100	1050	1000	1000
Emission Intensity	1.0	1.0	0.90	0.75	0.75
Water Intensity (KL)	12.05	12.00	11.00	10.00	11.00
Waste Intensity (Kg)	1200	1150	1120	1050	1000
Environmental Reporting Completeness Ratio	0.65	0.67	0.75	0.80	0.85

17 Rane Group

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	1.3	3.5	8.8	20.1	10.6
EPS	(37.96)	(47.66)	6.97	18.46	1.86
ROA	(4.94)	(5.92)	0.87	2.23	0.22
Leverage	0.51	0.45	0.46	0.48	0.53
Debt Equity Ratio	2	2.68	2.52	2.72	2.74
Current Ratio	0	0.78	0.89	0.93	0.86
Quick Ratio	0.47	0.52	0.60	0.62	0.56
Energy Intensity (KWH)	1500	1350	1450	1350	1300
Emission Intensity	1.55	1.50	1.45	1.40	1.35
Water Intensity (KL)	1.56	1.50	1.45	1.40	1.37
Waste Intensity(Kg)	156	152	148	144	137
Environmental Reporting Completeness Ratio	0.65	0.69	0.75	0.79	0.84

18 BMW

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	19.3	19	18.72	18.65	18
EPS	15.45	16.81	17.24	17.67	17.82
ROA	1.59	5.39	7.26	4.49	2.73
Leverage	0.50	0.51	0.49	0.50	0.48
Debt Equity Ratio	1.03	1.13	1.02	1.12	0.93
Current Ratio	1.10	1.13	1.06	1.10	1.11
Quick Ratio	0.93	0.92	0.86	0.82	0.82
Energy Intensity (KWH)	210	210	213	197	194
Emission Intensity	0.33	0.33	0.32	0.28	0.27
Water Intensity (KL)	2.25	2.05	1.90	1.78	1.67
Waste Intensity (Kg)	277	274	274	212	168
Environmental Reporting Completeness Ratio	0.95	0.96	0.97	0.98	0.99

19 Force Motors

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	3.11	(5.73)	6.4	12.07	24.51
EPS	(84.90)	(56.62)	115.4	304.86	607.13
ROA	1.96	(3.99)	(2.70)	3.53	15.60
Leverage	0.56	0.58	0.63	0.60	0.63
Debt Equity Ratio	0.32	0.45	0.61	0.51	0.54
Current Ratio	1.13	1.01	0.80	1.04	1.25
Quick Ratio	0.52	0.37	0.30	0.49	0.54
Energy Intensity (KWH)	2980	2967	2950	2944	2710
Emission Intensity	13.7	12.4	11.4	11.3	11.4
Water Intensity (KL)	3.0	2.4	2.7	2.3	2.5
Waste Intensity (Kg)	150	140	130	130	120
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.80	0.85

20 BYD Auto Company Private Limited

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	12.6	13.1	15.3	16	14.6
EPS	0.23	0.17	0.83	1.46	1.90
ROA	1.62	3.34	3.69	3.93	4.03
Leverage	0.26	0.12	0.04	0.07	0.05
Debt Equity Ratio	0.94	0.37	0.20	0.33	0.23
Current Ratio	1.05	0.97	0.72	0.67	0.75
Quick Ratio	0.68	0.66	0.42	0.44	0.51
Energy Intensity (KWH)	155	152	145	143	135
Emission Intensity	9.00	9.50	7.00	6.50	6.00
Water Intensity (KL)	3.75	3.45	3.25	3.05	2.76
Waste Intensity (Kg)	135	125	115	105	95
Environmental Reporting Completeness Ratio	0.60	0.63	0.67	0.75	0.78

21 Citreon

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	4.18	17.73	19.46	20.64	(3.33)
EPS	0.02	4.64	5.35	5.98	1.86
ROA	0.03	11.61	9.39	9.59	2.67
Leverage	0.14	0.20	0.15	0.15	0.18
Debt Equity Ratio	0.22	0.38	0.36	0.45	0.46
Current Ratio	1.26	1.15	1.27	1.24	1.09
Quick Ratio	0.90	0.82	0.80	0.92	0.77
Energy Intensity (KWH)	1800	1740	1920	2040	2100
Emission Intensity	14.5	14.0	13.5	13.0	12.5
Water Intensity (KL)	4.5	4.3	4.1	3.9	3.7
Waste Intensity (Kg)	750	700	650	600	600
Environmental Reporting Completeness Ratio	0.60	0.65	0.70	0.75	0.80

22 Royce Motors India Private Limited

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	12.86	13	13.37	13.52	13.67
EPS	0.01	2.63	3.12	4.24	5.06
ROA	0.02	6.22	8.26	9.27	9.69
Leverage	8.9	11.2	13.4	13.8	14.2
Debt Equity Ratio	1.73	1.84	1.92	2.01	2.13
Current Ratio	0.52	0.61	0.72	0.8	0.86
Quick Ratio	0.25	0.36	0.42	0.51	0.63
Energy Intensity (KWH)	1000	2000	3000	4000	5000
Emission Intensity	35.4	54.5	63.6	73.4	75.7
Water Intensity (KL)	0.6	0.5	0.4	0.3	0.2
Waste Intensity (Kg)	850	700	600	550	800
Environmental Reporting Completeness Ratio	0.60	0.64	0.69	0.73	0.78

23 Sundaram Fasteners Limited

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	20	17.1	21.46	20.68	19.12
EPS	14.95	15.62	19.39	22.10	22.83
ROA	9.8	9.4	10.84	11.43	10.90
Leverage	0.20	0.20	0.18	0.15	0.14
Debt Equity Ratio	0.34	0.18	0.18	0.15	0.11
Current Ratio	1.30	1.60	1.69	1.90	2.04
Quick Ratio	0.21	0.93	0.97	1.09	1.21
Energy Intensity (KWH)	2149	2147	2144	1937	1925
Emission Intensity	36.12	38.27	40.26	42.34	45.56
Water Intensity (KL)	3.98	3.90	3.82	3.70	3.33
Waste Intensity(Kg)	1200	1100	1042	1024	1078
Environmental Reporting Completeness Ratio	0.60	0.60	0.70	0.70	0.80

24 JK Tyres

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	18.1	18.1	13.7	15	24.3
EPS	6.12	6.12	12.97	8.53	10.66
ROA	6.2	7.3	2.3	5.8	9.0
Leverage	-35.76	1.72	2.23	2.17	1.37
Debt Equity Ratio	1.75	1.76	1.80	1.42	1.01
Current Ratio	0.96	0.71	0.98	0.95	1.08
Quick Ratio	0.66	0.61	0.73	0.95	0.99
Energy Intensity (KWH)	2728	2704	2478	2415	2415
Emission Intensity	30.967	30.967	40.44	50.659	45.55
Water Intensity (KL)	2.20	1.87	1.72	1.62	1.62
Waste Intensity (Kg)	2135	2457	2653	3286	5332
Environmental Reporting Completeness Ratio	.72	.78	.84	.89	.93

25 TVS Srichakra

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	11	12	7	9	11
EPS	107.53	96.54	56.77	101.85	140.98
ROA	7.5	4.56	2.18	3.23	4.19
Leverage	1.60	1.60	1.52	1.40	1.29
Debt Equity Ratio	0.25	0.25	0.63	0.64	0.75
Current Ratio	1.19	1.27	1.31	1.06	1.06
Quick Ratio	0.26	0.52	0.36	0.29	0.39
Energy Intensity (KWH)	9600	9200	8900	8700	8500
Emission Intensity	34.56	33.12	32.04	31.32	30.60
Water Intensity (KL)	8.96	8.58	7.95	7.22	6.62
Waste Intensity (Kg)	114	108	100	87	79
Environmental Reporting Completeness Ratio	0.60	0.70	0.80	0.90	0.95

26 Delphi/Aptiv

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	13.4	12.9	14.1	15.3	16
EPS	18.6	16.9	19.4	21.2	23
ROA	7.8	7.2	7.9	8.5	8.9
Leverage	1.18	1.17	1.15	1.13	1.12
Debt Equity Ratio	0.62	0.58	0.54	0.50	0.46
Current Ratio	1.45	1.52	1.58	1.63	1.68
Quick Ratio	1.05	1.12	1.20	1.26	1.32
Energy Intensity (KWH)	9200	8900	8600	8400	8100
Emission Intensity	3.25	3.10	2.95	2.82	2.70
Water Intensity (KL)	7.8	7.5	7.0	6.6	6.2
Waste Intensity (Kg)	115	110	102	94	88
Environmental Reporting Completeness Ratio	0.65	0.72	0.80	0.88	0.93

27 Wheels India

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	14.5	12.8	15.6	17.9	17.5
EPS	18.5	14.0	28.0	35.5	38.0
ROA	4.5	2.5	3.8	5.2	5.8
Leverage	1.35	1.30	1.25	1.18	1.12
Debt Equity Ratio	0.95	1.00	0.86	0.30	0.30
Current Ratio	1.00	1.03	1.00	0.90	0.90
Quick Ratio	0.65	0.63	0.56	0.50	0.48
Energy Intensity (KWH)	1450	1380	1320	1280	1250
Emission Intensity	35	32.5	30.2	28.8	27.5
Water Intensity (KL)	7.2	6.90	6.70	6.40	6.10
Waste Intensity (Kg)	720	680	640	610	590
Environmental Reporting Completeness Ratio	0.70	0.74	0.78	0.82	0.85

28 Motherson Sumi Systems

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	11.5	10	12	13.8	14.5
EPS	6.5	4.8	7.2	8.9	9.8
ROA	3.8	3.2	4.0	4.5	4.8
Leverage	2.10	2.05	1.95	1.80	1.70
Debt Equity Ratio	0.70	0.80	0.65	0.55	0.50
Current Ratio	1.20	1.18	1.25	1.30	1.35
Quick Ratio	0.80	0.78	0.85	0.90	0.95
Energy Intensity) KWH)	2250	2200	2100	2000	1950
Emission Intensity	850	780	710	650	600
Water Intensity (KL)	12	11.5	10.5	9.8	9.0
Waste Intensity (Kg)	380	350	310	270	250
Environmental Reporting Completeness Ratio	0.70	0.75	0.82	0.88	0.92

29 Vinfast India

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	6	6	6	6	8.5
EPS	10	10	10	10	20
ROA	1.5	1.5	1.5	1.5	2.5
Leverage	1.40	1.40	1.40	1.40	1.25
Debt Equity Ratio	0.85	0.85	0.85	0.85	0.75
Current Ratio	1.25	1.25	1.25	1.25	1.35
Quick Ratio	0.95	0.95	0.95	0.95	1.05
Energy Intensity (KWH)	8500	8500	8500	8300	8000
Emission Intensity	280	280	280	270	250
Water Intensity (KL)	7	7	7	6.5	6.0
Waste Intensity (Kg)	110	110	110	105	95
Environmental Reporting Completeness Ratio	0.40	0.40	0.40	0.55	0.66

30 Haritha Seating System

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	0.5	0.4	1	3	4
EPS	3.5	2.8	4	6	7
ROA	1.8	1.5	2	2.8	3.2
Leverage	1.30	1.25	1.22	1.18	1.15
Debt Equity Ratio	0.75	0.82	0.70	0.60	0.55
Current Ratio	0.88	0.90	0.95	1	1.04
Quick Ratio	0.80	0.78	0.85	0.90	0.95
Energy Intensity (KWH)	8800	8600	8300	8000	7700
Emission Intensity	320	210	300	280	260
Water Intensity (KL)	7.5	7.4	7.0	6.6	6.3
Waste Intensity (Kg)	110	105	100	92	88
Environmental Reporting Completeness Ratio	0.60	0.62	0.68	0.75	0.80

31 Toyota Kirloskar Private LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	(10.1)	(4.1)	9.3	23.3	53.2
EPS	0.27	0.47	0.74	2.01	2.23
ROA	3.94	3.6	4.21	3.3	5.5
Leverage	0.60	0.61	0.60	0.49	0.41
Debt Equity Ratio	1.48	1.56	1.49	1.08	0.88
Current Ratio	1.04	1.06	1.09	1.10	1.19
Quick Ratio	0.91	0.93	0.96	0.93	1
Energy Intensity (KWH)	250	270	290	310	330
Emission Intensity	.81	.78	.75	.72	.52
Water Intensity (KL)	0.6	0.57	0.55	0.53	0.50
Waste Intensity (Kg)	150	140	130	120	110
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.80	0.85

32 Bosch LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	19.6	18.2	17	15.6	14
EPS	156.2	164.6	413	483	483
ROA	4.87	4.88	7.91	8.77	14.36
Leverage	0.12	0.10	0.08	0.07	0.06
Debt Equity Ratio	0.01	0.01	0.01	0.01	0
Current Ratio	1.91	1.95	1.94	1.76	1.95
Quick Ratio	1.61	1.61	1.66	1.38	1
Energy Intensity (KWH)	150	160	170	175	175
Emission Intensity	.240	.212	.185	.161	.158
Water Intensity (KL)	13.16	11.20	10.11	9.12	9.34
Waste Intensity (Kg)	131	112	101	91	82
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.80	0.85

33 Mercedes benz

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	6.0	6.6	7.97	5.9	5.9
EPS	2.49	4.17	24.35	13.55	13.46
ROA	0.79	1.26	8.02	5.55	5.43
Leverage	0.36	0.35	0.32	0.34	0.35
Debt Equity Ratio	1.72	1.29	1.31	1.18	1.00
Current Ratio	1	1.17	1.16	1.26	1.36
Quick Ratio	0	0.93	0.87	0.93	1.01
Energy Intensity (KWH)	2500	2600	2800	2400	2000
Emission Intensity	5.5	5.2	4.97	4.63	4.5
Water Intensity (KL)	4.65	4.87	4.36	4.08	3.70
Waste Intensity (Kg)	1250	952	857	89.2	103.3
Environmental Reporting Completeness Ratio	0.65	0.73	0.77	0.83	0.85

34 Volvo Group

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	14.7	25.3	27.4	36.7	35.8
EPS	9.50	16.12	16.09	24.50	24.78
ROA	4.3	7.1	8.5	10.3	9.7
Leverage	0.36	0.35	0.37	0.35	0.36
Debt Equity Ratio	1.06	1.09	1.30	1.31	1.33
Current Ratio	1.38	1.26	1.28	1.24	1.28
Quick Ratio	0.95	0.96	0.97	0.97	1
Energy Intensity(KWH)	2406	2158	2437	2379	2345
Emission Intensity	1.27	1.14	1.13	1.01	0.88
Water Intensity (KL)	16.4	18.2	15.1	15.8	17.2
Waste Intensity(Kg)	364	431	359	338	336
Environmental Reporting Completeness Ratio	0.65	0.70	0.75	0.80	0.85

35 Nexteer Automotive

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	7.52	4.80	3.75	2.92	2
EPS	0.05	0.05	0.02	0.01	0.20
ROA	3.15	2.09	1.65	1.25	2.98
Leverage	3.32	2.95	2.63	2.63	2.63
Debt Equity Ratio	0.16	0.07	0.06	0.05	0.02
Current Ratio	1.35	1.44	1.45	1.42	1.46
Quick Ratio	1.14	1.12	1.10	1.17	1.17
Energy Intensity (KWH)	5317	5391	5545	5714	5900
Emission Intensity	5.0	5.04	5.09	5.14	5.14
Water Intensity (KL)	0.10	0.10	0.10	0.10	0.10
Waste Intensity (Kg)	200	265	250	275	280
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.80	0.85

36 Honda Motorcycle & Scooter India Private LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	16.2	12.7	12.7	21.2	29.3
EPS	380.8	380.8	411.1	128.01	225.88
ROA	13.5	18.6	20	21	24.7
Leverage	0.87	0.98	1.07	1.37	1.33
Debt Equity Ratio	0.01	0.02	0.02	0.02	0.02
Current Ratio	1.26	1.33	1.47	1.45	1.38
Quick Ratio	1.03	1.05	1.13	1.13	1.10
Energy Intensity (KWH)	250	280	350	390	460
Emission Intensity	3.67	3.23	2.97	2.73	2.43
Water Intensity (KL)	0.20	0.19	0.17	0.16	0.15
Waste Intensity (Kg)	180	170	160	150	140
Environmental Reporting Completeness Ratio	0.55	0.60	0.65	0.75	0.80

37 Bharath Earth Movers LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	2.57	4.87	8.91	11.21	15
EPS	16.42	17.96	32.32	38.13	67
ROA	1.20	1.30	2.37	3.15	5
Leverage	6.9	13.1	14.6	7.6	8.9
Debt Equity Ratio	0.29	0.33	0.36	0.02	0.08
Current Ratio	2.90	2.32	2.38	2.38	2.46
Quick Ratio	1.50	1.37	1.36	1.23	1
Energy Intensity (KWH)	8333	8056	7778	7778	7500
Emission Intensity	1.20	1.15	1.10	1.05	1.00
Water Intensity (KL)	1.40	1.30	1.25	1.08	1.08
Waste Intensity (Kg)	1200	1150	1100	1000	1050
Environmental Reporting Completeness Ratio	0.56	0.61	0.63	0.72	0.76

38 Scania Commercial Vehicles India

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	0.73	0.73	2.82	0.73	0.73
EPS	12.61	13.92	15.35	16.56	16.5
ROA	(9.12)	(7.86)	(5.59)	(3.09)	0.01
Leverage	62.57	60.23	58.27	54.84	44.78
Debt Equity Ratio	(0.1)	(0.2)	0.1	0.1	0.1
Current Ratio	0.32	0.32	0.32	0.32	0.32
Quick Ratio	0.08	0.13	0.19	0.21	0.23
Energy Intensity (KWH)	8500	8000	7500	7000	6000
Emission Intensity	8.24	8.24	8.41	8.28	7.44
Water Intensity (KL)	6.2	6.0	5.8	5.5	5.3
Waste Intensity (Kg)	600	580	550	520	520
Environmental Reporting Completeness Ratio	0.60	0.65	0.68	0.73	0.77

39 Magna International

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	10.2	10.2	10.6	11.2	12.4
EPS	5.32	5.2	4.16	4.23	3.52
ROA	2.85	2.85	2.85	3.86	3.89
Leverage	0.19	0.18	0.21	0.21	0.23
Debt Equity Ratio	0.23	0.26	0.32	0.41	0.61
Current Ratio	1.37	1.30	1.14	1.06	1.08
Quick Ratio	1.02	0.92	0.76	0.71	0.74
Energy Intensity (KWH)	165	151	165	188	177
Emission Intensity	0.50	0.47	0.45	0.43	0.38
Water Intensity (KL)	2.5	2.4	2.3	2.2	2.1
Waste Intensity (Kg)	3500	3350	3200	3000	2850
Environmental Reporting Completeness Ratio	0.85	0.90	0.92	0.95	0.98

40 Continental Automotive India

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	9.3	7.1	12.9	10.8	10.8
EPS	1.12	0.79	1.35	1.77	1.20
ROA	2.5	1	3.6	4.6	6.5
Leverage	1.10	1.12	1.08	1.06	1.02
Debt Equity Ratio	0.10	0.10	0.10	0.10	0.10
Current Ratio	1.0	1.1	0.6	1.3	1.6
Quick Ratio	0.8	0.9	0.7	1	1.3
Energy Intensity (KWH)	8200	8000	7700	7300	7000
Emission Intensity	2.6	2.5	2.35	2.20	2.05
Water Intensity (KL)	6.5	6.3	6.0	5.6	5.2
Waste Intensity (Kg)	95	92	85	78	72
Environmental Reporting Completeness Ratio	0.70	0.74	0.78	0.84	0.90

41 ZF India ZF Group

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	5.8	5.8	7.6	7.6	7.6
EPS	54.7	54.7	74.9	74.9	74.9
ROA	2.5	1	3.6	4.6	6.5
Leverage	1.08	1.05	1.10	1.04	1.02
Debt Equity Ratio	0.20	0.10	0.40	0.10	0.10
Current Ratio	1.1	1.2	1.2	1.5	1.5
Quick Ratio	0.8	1.0	1.0	1.0	1.0
Energy Intensity (KWH)	22700	21500	20900	32032	20560
Emission Intensity	9.0	8.6	8.1	6.9	6.01
Water Intensity (KL)	13	12.5	11.8	10.5	9
Waste Intensity(Kg)	36	34	32	30	25
Environmental Reporting Completeness Ratio	0.70	0.75	0.80	0.85	0.90

42 Samvardhana Motherson

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	10.4	9	7/8	6.5	6.5
EPS	1	0.68	1.14	1.14	1.39
ROA	2.7	1.6	2.89	4.21	4.21
Leverage	1.47	1.39	1.32	1.50	1.50
Debt Equity Ratio	0.60	0.50	0.27	0.34	0.16
Current Ratio	1.2	1.2	1.25	1.3	1.3
Quick Ratio	0.95	0.75	0.73	0.69	0.75
Energy Intensity (KWH)	2000	1940	1940	1940	1940
Emission Intensity	8.5	8.0	7.1	6.5	6.0
Water Intensity (KL)	12	11.6	11	10.5	9
Waste Intensity (Kg)	32	31	30	28	28
Environmental Reporting Completeness Ratio	0.70	0.75	0.82	0.88	0.88

43 Schaeffler India

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	13.21	24.96	29.78	26.99	25.91
EPS	93.08	201.25	56.25	58.16	62.55
ROA	7.43	13.64	16.10	14.71	14.44
Leverage	1.08	1.05	1.04	1.03	1.03
Debt Equity Ratio	0.02	0.02	0.02	0.01	0.01
Current Ratio	2.85	2.88	2.87	2.93	2.87
Quick Ratio	1.50	1.40	1.25	1.60	1.60
Energy Intensity (KWH)	2400	2100	2050	1800	2000
Emission Intensity	9.0	8.0	7.5	6.8	6.5
Water Intensity (KL)	14	12	11	10	9
Waste Intensity(Kg)	360	320	300	280	250
Environmental Reporting Completeness Ratio	0.65	0.72	0.78	0.85	0.90

44 Wabtec/Wabco

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	17.39	17.39	17.39	19.20	18.66
EPS	74.90	74.90	167.48	213.41	241.81
ROA	5.7	8.2	3.6	8.2	13.6
Leverage	1.20	1.10	1.40	1.10	1.00
Debt Equity Ratio	0.03	0.03	0.03	0.03	0.05
Current Ratio	4.18	4.18	4.85	5.80	4.85
Quick Ratio	0.80	1	1	1	1
Energy Intensity (KWH)	2270	2150	2090	1919	2056
Emission Intensity	15.9	15.5	14.6	13.4	14.3
Water Intensity (KL)	13	12.5	11.8	10.5	9
Waste Intensity(Kg)	360	340	320	300	250
Environmental Reporting Completeness Ratio	0.70	0.75	0.78	0.85	0.90

45 Valeo India

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	18.5	14	19.2	21.5	20.0
EPS	20	13	29	37	42
ROA	6.8	4.2	7.5	8.9	10.1
Leverage	1.60	1.65	1.45	1.35	1.30
Debt Equity Ratio	0.55	0.60	0.45	0.40	0.35
Current Ratio	1.20	1.25	1.35	1.40	1.45
Quick Ratio	0.95	1	1.10	1.15	1.20
Energy Intensity (KWH)	9200	8900	8400	8000	7700
Emission Intensity	3.15	3.00	2.90	2.75	2.65
Water Intensity (KL)	8.60	8.10	7.50	7.00	6.60
Waste Intensity (Kg)	105	98	93	88	82
Environmental Reporting Completeness Ratio	0.70	0.75	0.85	0.90	0.95

46 Sundharam Brake Linings

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	12.4	9.1	13.8	15.6	17.3
EPS	32.6	24.8	36.4	41.7	46.8
ROA	6.8	5.9	7.4	9.2	10.8
Leverage	1.25	1.20	1.18	1.10	1.05
Debt Equity Ratio	0.18	0.15	0.12	0.10	0.08
Current Ratio	1.42	1.45	1.48	1.51	1.55
Quick Ratio	1.10	1.15	1.20	1.25	1.30
Energy Intensity (KWH)	2200	2100	2020	1950	1820
Emission Intensity	154	146	140	134	125
Water Intensity (KL)	12.5	11.8	11	10.2	9.5
Waste Intensity (Kg)	320	300	280	260	230
Environmental Reporting Completeness Ratio	0.70	0.75	0.80	0.85	0.90

47 TVS Sreechakra

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	15	12	14.1	10.7	11.5
EPS	80	60	130	160	180
ROA	7	4	6.6	5	6
Leverage	1.20	1.25	1.10	1.30	1.25
Debt Equity Ratio	0.15	0.25	0.10	0.30	0.25
Current Ratio	1.40	1.45	1.50	1.35	1.40
Quick Ratio	1.20	1.25	1.30	1.15	1.15
Energy Intensity (KWH)	9600	9200	8900	8700	8500
Emission Intensity	336	322	312	304	298
Water Intensity (KL)	8.96	8.58	7.95	7.22	6.62
Waste Intensity (Kg)	114	108	100	87	79
Environmental Reporting Completeness Ratio	0.60	0.70	0.80	0.90	0.90

48 Aptiv Delphi

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	13.5	9.5	15.2	16.5	17.8
EPS	45	25	65	80	95
ROA	6.5	4.0	7.8	9.0	10.2
Leverage	1.40	1.45	1.30	1.25	1.20
Debt Equity Ratio	0.30	0.35	0.28	0.25	0.22
Current Ratio	1.35	1.40	1.55	1.60	1.55
Quick Ratio	1.20	1.25	1.35	1.40	1.45
Energy Intensity (KWH)	9200	8900	8500	8200	8000
Emission Intensity	3.20	3.10	3	2.90	2.80
Water Intensity (KL)	8.50	8.20	7.80	7.20	6.80
Waste Intensity (Kg)	105	98	92	86	81
Environmental Reporting Completeness Ratio	0.65	0.70	0.80	0.90	0.95

49 Hella India

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	13.8	9.5	14.5	15.8	17.2
EPS	35	20	50	70	85
ROA	6.2	3.8	7	8.4	9.5
Leverage	1.50	1.55	1.40	1.30	1.25
Debt Equity Ratio	0.40	0.45	0.35	0.30	0.25
Current Ratio	1.35	1.40	1.50	1.55	1.60
Quick Ratio	1.10	1.15	1.25	1.30	1.35
Energy Intensity (KWH)	9300	8900	8600	8300	8000
Emission Intensity	3.25	3.10	2.95	2.85	2.75
Water Intensity (KL)	8.60	8.10	7.50	7.00	6.50
Waste Intensity (Kg)	110	102	96	90	84
Environmental Reporting Completeness Ratio	0.60	0.70	0.80	0.90	0.95

50 TVS Motor Company

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	17	14.2	18.8	20.5	22
EPS					
ROA	5.8	4.2	6/9	8.1	9.3
Leverage	1.55	1.60	1.45	1.35	1.30
Debt Equity Ratio	0.45	0.50	0.40	0.35	0.30
Current Ratio	1.35	1.40	1.50	1.55	1.60
Quick Ratio	1.10	1.15	1.25	1.30	1.35
Energy Intensity (KWH)	6800	6500	6100	5800	5600
Emission Intensity	2.45	2.30	2.10	2.00	1.90
Water Intensity (KL)	4.20	4.00	3.80	3.60	3.40
Waste Intensity(Kg)	82	78	72	69	66
Environmental Reporting Completeness Ratio	0.65	0.75	0.85	0.92	0.96

51 Kia India Private LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	41	41	39	66	66
EPS	278.73	865.77	892.95	1178	1439
ROA	2.59	7.48	7.70	11.37	11.27
Leverage	16.8	14	10.1	4.7	4.7
Debt Equity Ratio	0.34	0.27	0.19	0.08	0.05
Current Ratio	1.24	1.35	1.35	1.46	1.55
Quick Ratio	0.99	0.96	1.00	1.07	1.09
Energy Intensity (KWH)	1110	1115	1112	1111	1110
Emission Intensity	0.60	0.58	0.55	0.52	0.50
Water Intensity (KL)	6.5	7.7	8.9	9.4	9.7
Waste Intensity (Kg)	370	450	490	560	780
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.80	0.85

52 Isuzu Motors India Private LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	6.75	4.5	8.2	9.1	5.5
EPS	110.14	67.91	162.87	195.75	229.92
ROA	4.05	4.74	8.17	9.14	5.48
Leverage	0.10	0.03	0.02	0.01	0.01
Debt Equity Ratio	0.60	0.36	0.19	0.33	0.26
Current Ratio	1.8	1.90	1.52	1.25	1.45
Quick Ratio	1.3	1.4	1.12	1.03	1.05
Energy Intensity (KWH)	150	145	140	135	125
Emission Intensity	2.50	2.40	2.30	2.10	2.20
Water Intensity (KL)	3.50	3.40	3.30	3.20	3.10
Waste Intensity (Kg)	250	240	230	220	210
Environmental Reporting Completeness Ratio	0.61	0.63	0.71	0.78	0.81

53 Hero Motor Corporation

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	33	25.65	19.47	23.93	29.50
EPS	182.15	182	115.96	146.07	198.53
ROA	18.49	12.6	10.31	11.75	14.30
Leverage	0.12	0.10	0.09	0.08	0.07
Debt Equity Ratio	0.01	0.01	0.03	0.04	0.03
Current Ratio	2.02	1.75	1.92	1.57	1.46
Quick Ratio	1.72	1.47	1.65	1.28	1.21
Energy Intensity (KWH)	125	120	115	110	105
Emission Intensity	13.45	16.56	19.87	21.36	22.94
Water Intensity (KL)	3.60	3.95	4.15	4.35	4.75
Waste Intensity (Kg)	10000	10500	11000	12000	14000
Environmental Reporting Completeness Ratio	0.70	0.75	0.80	0.85	0.90

54 KPIT Technologies

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	13	22.33	23.59	32.23	35.40
EPS	5.46	5.33	10.00	13.90	21.92
ROA	9.05	8.39	13.24	13.84	16.13
Leverage	0.04	0.12	0.10	0.08	0.08
Debt Equity Ratio	0.01	0.01	0.01	0.03	0.02
Current Ratio	2.23	2.46	2.14	1.29	1.33
Quick Ratio	2.20	2.46	2.14	1.24	1.27
Energy Intensity (KWH)	150	145	140	135	125
Emission Intensity	0.60	0.58	0.55	0.52	0.50
Water Intensity (KL)	3.40	3.67	4.00	4.25	4.40
Waste Intensity (Kg)	2000	2300	2450	2600	2700
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.80	0.85

55 Amararaja Batteries

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	24	22.25	16.01	19.19	19.81
EPS	38.69	37.87	29.93	40.65	49.49
ROA	13	11.98	8.42	10.19	11.03
Leverage	0.22	0.20	0.19	0.16	0.14
Debt Equity Ratio	0.01	0.01	0.01	0.02	0.01
Current Ratio	1.50	1.45	1.38	1.40	1.36
Quick Ratio	1.18	1.15	1.08	1.12	1.10
Energy Intensity (KWH)	180	180	180	180	190
Emission Intensity	5.3	4.2	3.2	2.5	1.9
Water Intensity (KL)	3.67	3.40	4.00	4.25	4.40
Waste Intensity (Kg)	1500	1580	1670	1870	1970
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.80	0.85

56 Piolax India Private LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	6	4.2	5.6	6.4	10.54
EPS	5	4	7	11	11
ROA	5.0	4.2	5.6	6.4	6.8
Leverage	1.20	1.15	1.10	1.05	1.00
Debt Equity Ratio	0.20	0.15	0.10	0.05	0.05
Current Ratio	3.8	4.2	4.6	5.2	5.87
Quick Ratio	3.8	4.5	4.8	5.2	4.9
Energy Intensity (KWH)	1450	1420	1380	1320	1200
Emission Intensity	101.5	99.4	96.6	92.4	84.0
Water Intensity (KL)	12.5	12.0	11.2	10.5	9.8
Waste Intensity (Kg)	360	350	330	300	270
Environmental Reporting Completeness Ratio	0.60	0.64	0.70	0.78	0.82

57 Aisan Industry

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	10	8.5	11.5	13	14.5
EPS	4	2.5	5	6.5	8
ROA	4.5	3.8	5.0	6.0	7.0
Leverage	1.44	1.40	1.30	1.20	1.12
Debt Equity Ratio	0.44	0.40	0.30	0.20	0.12
Current Ratio	1.30	1.25	1.35	1.40	1.45
Quick Ratio	0.95	0.90	1.00	1.05	1.10
Energy Intensity (KWH)	2100	2050	2000	1950	1850
Emission Intensity	147	143.5	140	136.5	129.5
Water Intensity (KL)	11.5	11	10.5	10	9.5
Waste Intensity (Kg)	310	300	290	270	250
Environmental Reporting Completeness Ratio	0.60	0.62	0.68	0.75	0.82

58 Samvardhana Motherson

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	3.1	7.3	7	9.4	14.5
EPS	2.05	2.96	2.21	3.43	4.01
ROA	1.6	2.7	1.6	2.9	4.2
Leverage	1.71	1.85	1.62	1.54	1.66
Debt Equity Ratio	0.71	0.85	0.62	0.54	0.66
Current Ratio	1.01	1.00	1.01	0.97	0.97
Quick Ratio	1.16	0.95	1.07	1.06	1.06
Energy Intensity (KWH)	17200	16800	16000	16944	16944
Emission Intensity	12	11.8	11.2	11.9	11.9
Water Intensity (KL)	11	10.9	10.5	17	17
Waste Intensity (Kg)	3.2	3.1	3	2.9	2.9
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.85	0.88

59 Rajasree Polypack LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	12.94	12.02	11.38	12.85	11.11
EPS	8.52	9.31	8.52	9.31	8.36
ROA	4.1	4.3	4.5	4.6	4.7
Leverage	1.30	1.35	1.40	1.57	1.48
Debt Equity Ratio	0.10	0.10	0.20	0.57	0.48
Current Ratio	1.30	1.35	1.29	1.29	1.29
Quick Ratio	1.10	1.15	1.12	1.10	1.09
Energy Intensity (KWH)	14800	14500	14300	14200	14000
Emission Intensity	10.5	10.2	10.0	9.8	9.6
Water Intensity (KL)	9.0	8.8	8.6	8.5	8.3
Waste Intensity(Kg)	2.5	2.4	2.3	2.3	2.2
Environmental Reporting Completeness Ratio	0.55	0.60	0.68	0.75	0.80

60 Hyundai Mobis India LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	10	8	11	12	13
EPS	2	2	3	3	3
ROA	4.5	3.6	5.2	6	7.5
Leverage	1.40	1.45	1.35	1.25	1.20
Debt Equity Ratio	0.40	0.45	0.35	0.25	0.20
Current Ratio	1.4	1.35	1.45	1.6	1.7
Quick Ratio	1.1	1.05	1.15	1.25	1.3
Energy Intensity (KWH)	2100	2050	1980	1800	1650
Emission Intensity	147	143	139	126	116
Water Intensity (KL)	12	11.5	11	10	9.5
Waste Intensity (Kg)	32	31	30	28	26
Environmental Reporting Completeness Ratio	0.55	0.60	0.68	0.75	0.80

61 Commercial vehicle Control System

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	6	9	7	17	19
EPS	54	55	75	168	213
ROA	5.7	8.2	3.6	8.2	13.5
Leverage	1.20	1.10	1.40	1.10	1
Debt Equity Ratio	0.20	0.10	0.40	0.10	0.10
Current Ratio	1.1	1.2	1.2	1.5	4
Quick Ratio	0.8	1	1	1.3	1.3
Energy Intensity (KWH)	2270	2150	2090	1919	2056
Emission Intensity	159	150	146	134	144
Water Intensity (KL)	13	12.5	11.8	10.5	9
Waste Intensity(Kg)	36	34	32	30	25
Environmental Reporting Completeness Ratio	0.70	0.75	0.78	0.85	0.90

62 Bharath Dynamics LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	8	9	12	22.9	10.2
EPS	15.9	12.7	19.2	33.4	14.99
ROA	5	4.8	6.1	6	4.7
Leverage	1.05	1.04	1.02	1.00	1.00
Debt Equity Ratio	0.05	0.04	0.02	0.02	0.02
Current Ratio	2.5	2.7	2.9	3.1	2.4
Quick Ratio	1.6	1.8	1.9	2.1	2.0
Energy Intensity (KWH)	2250	2180	2100	2050	1980
Emission Intensity	157	152	147	144	139
Water Intensity (KL)	13.2	12.7	12.2	11.8	11.2
Waste Intensity (Kg)	31	30	29	28	26
Environmental Reporting Completeness Ratio	0.60	0.65	0.70	0.80	0.85

63 Trimax Auto Components

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	9.0	6.0	10.5	12.5	13.5
EPS	3.5	2.0	4.0	5.2	5.8
ROA	4.2	2.8	5.1	6.6	7.2
Leverage	1.45	1.50	1.38	1.30	1.25
Debt Equity Ratio	0.45	0.50	0.38	0.30	0.25
Current Ratio	1.10	1.65	1.20	1.30	1.36
Quick Ratio	0.85	0.80	0.95	1.05	1.10
Energy Intensity (KWH)	2250	2200	2100	2000	1900
Emission Intensity	158	154	147	140	133
Water Intensity (KL)	12.5	12.3	11.8	11.0	10.2
Waste Intensity(Kg)	32	31	30	28	26
Environmental Reporting Completeness Ratio	0.40	0.45	0.55	0.65	0.70

64 Kerala Automobiles LTD

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	25.12	10.32	9.63	(25.21)	(63.72)
EPS	0.50	0.25	0.10	(0.75)	(1.50)
ROA	5	2.5	0.5	(15)	(63.7)
Leverage	0.10	0.10	0.11	0.09	0.10
Debt Equity Ratio	0.01	0.01	0.01	0.01	0.01
Current Ratio	1.2	1.0	0.8	0.5	0.3
Quick Ratio	0.90	0.75	0.60	0.45	0.23
Energy Intensity (KWH)	4400	6600	8800	11000	13200
Emission Intensity	1.10	0.96	0.83	0.74	0.68
Water Intensity (KL)	5.0	4.5	4.0	3.5	3.0
Waste Intensity (Kg)	800	750	700	650	600
Environmental Reporting Completeness Ratio	0.50	0.55	0.60	0.65	0.70

65 Apollo Tyres

Particulars	2019- 2020	2020- 2021	2021- 2022	2022- 2023	2023- 2024
ROCE	7.34	5.93	7.34	10.96	17.04
EPS	8.33	5.51	10.06	16.47	27.11
ROA	2.5	1.7	2.9	4.5	6.0
Leverage	0.36	0.38	0.34	0.30	0.27
Debt Equity Ratio	0.36	0.32	0.28	0.25	0.20
Current Ratio	0.85	0.96	1.02	1.11	1.28
Quick Ratio	0.60	0.65	1.05	0.62	0.68
Energy Intensity (KWH)	3194	3111	3055	3000	2944
Emission Intensity	0.61	0.60	0.57	0.46	0.43
Water Intensity (KL)	3.93	3.73	3.86	3.65	3.25
Waste Intensity (Kg)	25000	23500	22000	20500	19000
Environmental Reporting Completeness Ratio	0.60	0.65	0.75	0.80	0.85
