A Study on Integration of AI with ESG Reporting

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Abstract

Corporates operate their businesses in a very dynamic and complex landscape. The connection between corporates, society, and the eco-system is inseparable. The way of reporting business information has changed drastically due to the changing needs of information by different stakeholders and changes in reporting frameworks. BRSR aims to standardize reporting related to ESG criteria, helping stakeholders make informed decisions regarding their investments. Traditional method of reporting often requires processing huge data from different departments, which is a time-consuming process and error prone. Integration of AI in BRSR reporting can potentially lead to numerous benefits and can mitigate the challenges of various ESG reporting frameworks.

This study seeks to highlight the importance of leveraging AI in ESG Reporting with an objective to exhibit the ESG Reporting preparedness of Indian Companies and the prospects and challenges of integrating AI with ESG Reporting. The study comprises secondary Data collected from Survey Reports of Deloitte and others, NSE Publications, SEBI, S&P website, etc.,

Keywords: Environmental, Social and Governance (ESG), Business Responsibility and Sustainability Reporting (BRSR), Artificial Intelligence (AI), Sustainable Development Goals (SDG), Global Reporting Initiative (GRI), Carbon Disclosure Project (CDP), Green House Gas (GHG), Climate Disclosure Standards Board (CDSB), Sustainability Accounting Standards Board (SASB), Task Force on Climate-related Financial Disclosures (TCFD)

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Introduction

Corporates operate their businesses in a very dynamic and complex landscape. The connection between corporates, society, and the ecosystem is inseparable. Traditionally, main motive of the companies is to earn profit. This perspective has been changing over a decade with the changes in Law as well as business environmental landscape. Apart from profit maximization, companies are now focusing on wealth maximization of stakeholders, society well-being and environmental sustainability. The way of reporting business information has also changed drastically because of the changing needs of information by different stakeholders. The evolution from BRR to BRSR reflects India's growing commitment to Sustainable Development, Corporate citizenship, and transparent reporting under Securities and Exchange Board of India's (SEBI) regulations. BRSR aims to standardize reporting on ESG criteria, helping stakeholders make informed decisions regarding their investments.

Traditional method of reporting often requires processing huge data from different departments, which is a time-consuming process and error prone. The integration of AI in BRSR reporting can potentially lead to numerous benefits, such as increased accuracy of data, enhanced capability to handle large datasets, improved consistency across reports, and more insightful analysis of sustainability practices. The integration of emerging technologies like AI into sustainable reporting represents a significant advancement in how companies approach ESG issues.

Evolution of Sustainable Reporting Framework:

In India, MCA released guidelines on "*Corporate Social Responsibility*" (CSR) in the year 2009, which are voluntary. In 2011, the MCA introduced the "*National Voluntary Guidelines*" (NVGs) on Social, Environmental and Economic Responsibilities of Business, which provided a framework comprising nine principles that covered various aspects of business responsibility. Securities and Exchange Board of India enforced the "*Business Responsibility Reporting*"

BRR) for the "*top 100 listed companies*" in 2012. In 2014, CSR compliance under the Companies Act 2013 came into force. In 2015, India adopted "*Sustainable Development Goals Agenda 2030*" and Business Responsibility Reporting was expanded to include "*top 500 listed companies*". In 2018, BSE introduced the guidance document on "*ESG disclosures*". MCA released "*National Guidelines on Responsible Business Conduct*" (NGRBC) in 2019. In 2021, SEBI replaced BRR with BRSR and mandated its applicability for "*top 1000 listed companies*" on the basis of their "market capitalization" from the

FY 22-23, to bring the reporting practices in line with global practices. SEBI issued a framework on BRSR Core disclosures regarding supply chain which is applicable to top 250 listed companies by market capitalization from FY 24-25.

Review of Literature

Here are a few reviews of literature on Artificial Intelligence (AI) and its role in Environmental, Social, and Governance (ESG) reporting:

Bozic, 2023 explored the role of AI in the context of ESG considerations in his study "*Environmental, Social and Governance & Artificial Intelligence*" highlighting the importance of leveraging AI to analyse vast ESG data, enhance data driven insights and automate the ESG analysis process for enhanced efficiency.

Moodaley & Telukdarie, 2023 in their study "*Greenwashing, Sustainability Reporting, and Artificial Intelligence: A Systematic Literature Review*" examined the interrelationship between green washing, sustainability reporting and artificial intelligence by bibliometric and thematic analysis. It is stated that use of AI with ML in relation to green washing and sustainability reporting is an unexplored research field.

Skaug, 2022 in his study "*The AI ESG protocol: Evaluating and disclosing the environment, social, and governance implications of artificial intelligence capabilities, assets, and activities*" proposed a framework to evaluate and disclose an organisation's "AI and data capabilities, assets, and activities impact sustainability issues", highlighting the importance of understanding the impact for proper governance.

Zhang et al., 2020, conducted research on the application of Artificial Intelligence (AI) in Environmental, Social, and Governance (ESG) reporting. Their research revealed that AI can significantly enhance ESG reporting in several ways by improving data collection, analysis, and disclosure.

Khan et al., 2020, has observed that, AI-powered tools can help companies to identify and manage ESG-related risks, reducing the likelihood of reputational damage and financial losses.

Hassan et al. 2019, emphasized the potential of Artificial Intelligence (AI) in enhancing the accuracy and transparency of ESG reporting by automating data collection, analyzing large datasets, and identifying patterns and trends. This, in turn, enables stakeholders, including investors, customers, and regulators, to make more informed decisions about a company's ESG performance. By leveraging AI, companies can also reduce the risk of errors, inconsistencies, and greenwashing, ultimately promoting trust and confidence in their ESG reporting.

Serafeim et al. 2019, highlighted the potential of AI in integrating ESG factors into investment decisions. AI can analyze large datasets, identify patterns, and provide insights that support more sustainable and responsible investment practices. This integration of ESG factors can lead to better risk management and improved long-term financial performance. Investors can make this can help the investors to take more informed decisions that balance financial returns with social and environmental responsibility.

Overall, the literature highlights the potential of AI to revolutionize ESG reporting and promote sustainable development.

Research Gap

There are a few studies on integrating AI in ESG Reporting in India and abroad. How AI can mitigate the challenges of various ESG reporting frameworks is an unexplored area of study. This study attempts to highlight the importance of leveraging AI in ESG Reporting.

Objectives of the Study

The objectives of the study are:

- To exhibit the ESG Reporting preparedness by Indian Companies
- To present the challenges of traditional ESG reporting
- To present the prospects and challenges of integrating AI with ESG Reporting

Research Methodology

The study comprises Secondary Data collected from articles, newspaper clippings, Journals, Magazines, blogs, Survey Reports of Deloitte and others, NSE Publications, information gathered from S&P website, SEBI, etc.,

Global Scenario of ESG Frameworks

There are various frameworks around the world which provide guidance on sustainable repoting focusing on various areas where there is a need to address the sustainable issues which are majorly considered to be need of the hour.

- **Sustainable Development Goals (SDG)**

SDGs are developed by the United Nations in 2015 and adopted by India. According to Department of Economic and Social Affairs, UN, - "SDGs provides a shared blueprint for peace and prosperity for people and the planet, now and into the future by 2030". There are 17 different goals which include specific targets that countries should aim to achieve. The goals address areas such as education, health, social protection, and job opportunities while tackling climate change and environmental protection.

- **Global Reporting Initiative (GRI)**

GRI has developed the GRI Standards. As per GRI : Standards, "These are a set of globally recognized guidelines for reporting on sustainability. These standards cover a range of topics, including environmental impact, labour practices, human rights, and anti-corruption measures. Its primary goal is to enable organizations to report on their sustainability performance in a way that is consistent, comparable, and credible. This helps stakeholders—including investors, customers, and regulators—make informed decisions."

- **Carbon Disclosure Project (CDP)**

CDP founded in London, is a non profit organisation that operates a worldwide disclosure platform for various stakeholders like for investors, entities, and regions to manage their impacts on environment. The activities of CDP in India, according to CDP India, include **– "** Increasing disclosure in India to achieve net-zero targets, Assisting Indian companies in their transition towards a low carbon world, Helping corporates engage their value chain to drive action, Supporting financial decision-makers to design sustainable finance measures, Engaging with governments to develop integrated climate strategies." Organisations report information about their impact through CDP, which then scores them on their environmental management.

- **Green House Gas (GHG) Protocol**

It is a joint initiative by the World Resources Institute and the World Business Council for Sustainable Development, developed in US. According to Greenhouse Gas Protocol, - "GHG protocol has established as a global standardized framework for quantifying and managing greenhouse gas (GHG) emissions from both private and public sector activities, supply chains, and mitigation strategies."

- **Climate Disclosure Standards Board (CDSB)**

  The CDSB founded in London, gives a framework for organisations to disclose details related to environmental and natural capital that investors require, within their mainstream corporate reports. CDSB's framework aligns information more closely with international accounting standards and focuses on linking financial and environmental performance. Now, CDSB has been integrated into "IFRS Foundation".

- **Sustainability Accounting Standards Board (SASB)**

  SASB of USA, provides standards to help public corporations disclose financially material, sustainability information useful for decision making to investors. The standards are industry-specific and focus on financially material issues. They assist entities They assist companies globally in identifying, managing, and reporting on the sustainability issues that are most significant to their investors

- **Task Force on Climate-related Financial Disclosures (TCFD)**

  TCFD was developed by Financial Stability Board which is an international body established by the G20 countries, which are a group of world's major economies. According to "Climate-Related Financial Disclosures : The Core Elements of Recommended Disclosures" TCFD include disclosures on – "the organization's governance about the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material, how the organization identifies, assesses, and manages climate-related risks, the metrics and targets used," which are for voluntary use.

ESG Framework in India:

Business Responsibility and Sustainability Report (BRSR):

In India, the "top 1000 listed companies" on the basis of their "market capitalization" should disclose information regarding their ESG policies and practices from FY 2022-23 as mandated by SEBI. BRSR report includes 9 Principles covering disclosures on Environment, Social, Governance and stake holder engagement.

Apart from the mandatory frameworks, Indian companies are voluntarily reporting as per global reporting frameworks such as GRI, CDP, TCFD considering the information needs of international stakeholders.

ESG Preparedness of Companies in India:

Deloitte conducted an extensive "ESG preparedness survey" involving 150 entities, out of which 67 were MNCs and 7% respondent organisations identified as PSUs. More than 70% of the organisations in the survey, were listed in India. The report brings together the responses of CEOs, CFOs, CSOs, CSR heads, Management and Operations executives and their readiness to address ESG issues from both, a regulatory and reporting standpoint, as well as their role as emerging value drivers.

According to the *"Deloitte ESG preparedness survey report" May 2023,*

"Overall, 88% organisations believed sustainability regulations will directly impact their businesses. More than 75% organisations agreed that ESG is a boardroom discussion. Nearly 90% organisations believed ESG reporting improves brand reputation. Nearly 75% organisations stated that their investors rate their ESG performance. 71% businesses agreed that their organization voluntarily participates in ESG ratings. Almost 60% organisations placed high-level importance on establishing ambitious ESG goals for the future.

But how is Indian incorporations moving from commitment to action on ESG ?

- Only 27% businesses are well - prepared to meet ESG requirements.
- Only 15% organisations suppliers are ESG ready.
- Lessthan half i.e 49% of the organisations are well aware of ESG reporting mechanisms and regulations in India.
- 65% organisations suggested evolving ESG regulations to be the

major challenge in building ESG preparedness capacity, followed by multiple ESG frameworks indicated by 62% organisations. Three-fourth organisations i.e 75% also concurred that there is a need to simplify ESG compliance or improve ESG reporting procedures.

- While 83% organisations have a designated sustainability leader, only 1/3rd (33%) have both internal ESG champions/ambassadors and sustainability leaders.
- Nearly 68% organisations surveyed have been able to formally integrate ESG strategies and mechanisms into their organisations.
- Most organisations i.e 80% report into their ESG efforts. The prevalent method used is Sustainability reports - 81%, followed by ESG reports - 50%, and BRSR and Integrated Reports - 44%.
- Nearly 75% organisations cited that their organisation communicates their ESG efforts, with awareness programmes - 85% being the most-used method, followed by annual meetings - 76% and investor decks - 50%."

Source: ESG preparedness survey report May 2023, Insights on Environmental, Social, and Governance Practices - Deloitte India.

Table 1: NIFTY 100 vs NIFTY 100 ESG sector Leaders in India as on 28 March 2024

NIFTY 100 ESG sector leaders Index - Top 10 as on 28 March 2024	NIFTY 100 Index - Top 10 as on 28 March 2024
Reliance Industries	HDFC
HDFC	Reliance Industries
ICICI	ICICI
Infosys	Infosys
Larsen & Turbo	Larsen & Turbo
TCS	TCS
Bharti Airtel	ITC
Axis bank	Bharti Airtel
Kotak Mahindra bank	Axis bank
Hindustan Unilever	SBI

Source: NSE Indexogram

The Nifty 100 index represents the top 100 companies based on their market capitalization across the National Stock Exchange (NSE) of India. This index intends to measure the performance of large market capitalization companies.

The Nifty 100 ESG Leaders Index is a subset of the Nifty 100 index and includes companies that score high on environmental, social, and governance (ESG) parameters and demonstrate better ESG practices compared to their peers and those which do not have involvement in any major controversies. It is intended for investors who are looking to invest in companies with strong ESG credentials within the large cap segment.

- The Nifty 100 is based purely on market capitalization, without specific consideration for the ESG performance of the companies.

- The Nifty 100 ESG Leaders incorporates additional filters for ESG performance, selecting only those companies from the Nifty 100 that meet certain ESG criteria.

It can be observed from Table -1 that most of the Top 10 companies of Nifty100 ESG Sector Leaders are the Top 10 companies in Nifty 100. This implies that Top 10 companies based on the market capitalization in India are leading in ESG practices. This would indicate a significant shift towards sustainable and responsible business practices across all major companies, reflecting strong governance, environmental stewardship, and social responsibility across the board. It can be viewed as the change in investors perception and preference towards sustainability.

Table.2: Indian Companies in S&P Global ESG Scores for the year 2023 and 2024

S&P Global ESG Scores	**2023** **Number of Companies**	**2024** **Number of Companies**
S&P Global ESG Score : Top 1%	2	2
S&P Global ESG Score : Top 5%	2	0
S&P Global ESG Score : Top 10%	3	5
Sustainability Yearbook Member	12	24

Source: S&P Global ESG Scores

S&P Global ESG Scores are derived from the annual Corporate Sustainability Assessment (CSA), which are used to evaluate the sustainability performance of companies based on industry-specific criteria that focus on various ESG factors. The S&P Global Sustainability Yearbook is an annual publication that distinguishes companies within their respective industries that have demonstrated high levels of performance on the CSA. "Inorder to include in the yearbook, companies must score within the top 15% of their industry and achieve an S&P Global ESG Score within 30% of their industry's top-performing company." - *S&P Global ESG Scores - Sustainability Yearbook: Methodology Overview.*

"The Sustainability Yearbook 2023 considered over 7,800 companies assessed in the 2022 Corporate Sustainability Assessment (CSA) and provided the rankings of the 712 companies selected for the 2023 Yearbook out of which total 19 companies are from India, while The Sustainability Yearbook 2024 considered over 9,400 companies assessed in the 2023 Corporate Sustainability Assessment (CSA) and provided the rankings of the 759 companies selected for the 2024 Yearbook based on their S&P Global CSA Scores out of which total 31 companies are from India." - *S&P Global ESG Scores.*

Challenges in Traditional (Manual) ESG Reporting:

The main drawback of traditional reporting is data compilation. The data in large organisations is spread in bits among different departments and different teams. It is difficult to manually gather and consolidate the data due to complexity and volume of data. It is often time consuming, error prone and can also result in loss of data due to inefficiency to handle or negligence. The quality of data reported can be inconsistent, which affects its reliability.

The integration of AI with Business Responsibility and Sustainability Reporting (BRSR) can overcome numerous limitations associated with manual reporting processes. AI integrated reporting results in time reduction, cost reduction, increases efficiency thereby improving consistency and reliability. AI can process huge complex data and helps in better data collection. AI can derive more meaningful insights and identify patterns which might not be possible through manual reporting.

Companies using Artificial Intelligence for ESG activities:

Tata Power

Praveen Sinha, CEO of Tata Power said that they have been using AI for the last 10 years for managing the grid and for predictability of the weather, because the consumption of power depends on the weather conditions. In Delhi AT&C loss i.e., technical and commercial loss used to be 53%, after using AI it has reduced to 6% and that is the saving happened.

Source : Economic Times website

Adani Green Energy

According to *Adani Green Energy Media Releases* - "Adani Green Energy Limited plans to develop 30 GW of clean energy at Khavda Renewable Energy Park to generate nearly 81 billion units of electricity annually which is expected to be operationalized in the next five years. The company is deploying India's largest onshore wind turbine generator of 5.2 MW capacity, bifacial solar PV modules, and horizontal single-axis tracker systems. It will be leveraging its state-of-the-art Energy Network Operation Centre (ENOC) platform with AI/ ML integration to enable real-time automated monitoring."

Microsoft

The CSO of Microsoft in the blog, *"The official Microsoft Blog* : *Accelerating Sustainability with AI: a playbook by CSO Microsoft"* stated that "Microsoft through its AI for Good Lab, Microsoft Research's AI4Science Lab, and Microsoft Climate Research Initiative (MCRI), already applying AI to overcome large sustainability bottlenecks. Through the Microsoft Climate Innovation Fund, it is investing in companies like LineVision that are using AI to expand the capacity of transmission lines. Microsoft continuously researching and developing innovative ways to make its datacenters and AI systems ever more energy and water efficient."

Amazon

The *Amazon News - Sustainability, from Amazon website* reported that "Amazon is using AI to fulfil its climate pledge commitment of net zero carbon by 2040. It has leveraged AI for reducing packaging use, to detect damaged goods, monitoring produce to reduce food waste, measuring carbon footprints for products. Amazon is improving the sustainability of AI by using Aws chips to power AI more efficiently with potential cost savings upto 50% and reduction in energy consumption upto 29%."

Companies providing AI integrated ESG solutions

The following are the few select companies which are providing AI driven ESG reporting solutions for different clients around the globe include:

IBM – Envizi ESG reporting (*Source: IBM website)*

Amazon – Amazon Bedrock (*Source : Aws re: Invest 2023 video from AWS events youtube channel)*

Microsoft – Microsoft Cloud for Sustainability (*Source: Microsoft website)*

Prospects of ESG Reporting with AI

By enabling AI driven ESG reporting, companies can enhance the efficiency, accuracy, consistency and reliability of their sustainable reporting practices. This can help companies not only meet regulatory requirements but also improve their overall sustainability performance.

- AI can automate the data collection and compilation. It can extract huge data from different sources, from different departments and teams, including internal systems like ERP and CRM and external sources. This reduces the manual effort required and improves the speed and accuracy of data collection.

- Manually sustainable professionals and financial analysts collect and analyses dense regulations and documents which can be over 100s of pages long. AI rapidly and accurately analyses large volumes of text-based information, summarizes and provide meaningful insights.

- AI can be used to automate filling of data gaps, automate environmental impact factor selection and to build models on rapidly evolving ESG methodologies.

- Mapping ESG matrix for multiple ESG frameworks can be easy using AI. It can be used to query and summarize documents. It helps in identifying gaps in ESG disclosures.

- Generating ESG reports based on the framework of a choice, anomaly detection, interactive Q&A dashboard can be possible using AI.

- AI can used to compare a company's performance against industry standards and competitors, offering a clearer image of where it stands in terms of its sustainability efforts.

- At times companies may involve into undesirable reporting practices, popularly known as Green washing, wherein companies exaggerate sustainable claims, disclose false information regarding ESG practices. This challenge can be tackled using AI which enhances accuracy and transparency of sustainable claims and practices.

Challenges of using AI in reporting

AI has huge potential to overcome the limitations of traditional reporting. However, there are a few challenges of using AI. Developing an appropriate and efficient AI model is complex. Training AI requires huge data. Insufficient or improper data can lead to inaccurate models which do not perform well as per the expectations or needs. AI technologies that process large amounts of personal data can lead to privacy concerns. AI is always prone to technological risks. Developing, training, and deploying AI solutions can be costly and requires substantial computational power, which can have a significant environmental impact. Excessive use of AI often results in adverse environmental impacts due to huge power consumption and carbon footprints.

Findings and Conclusion

There are various sustainable frameworks around the world, guiding the elements need to be disclosed in the sustainable reports by the companies. This creates a challenge for the large organisations having international stakeholders. Because the information needs to be reported as per various reporting frameworks. Leveraging AI can tackle this risk by preparing the reports as per the multiple frameworks of company's choice. Apart from that, the information regarding ESG activities of the company may be spread among various departments and teams which makes the data compilation a tedious task. AI automate data compilation and enhances accuracy, transparency and consistency of the reports. However, leveraging AI can result in adverse environmental impacts due to excessive power consumption and carbon-footprints. In order to mitigate this risk, companies should focus on Sustainable AI models.

References

Adani Renewables, Media Releases. (2024). Retrieved from adanigreenenergy.com: https://www.adanigreenenergy.com/newsroom/media-releases/adani-green-begins-generation-from-the-worlds-largest-renewable-energy-park

Amazon News, Sustainability. (2024). Retrieved from aboutamazon.eu: https://www.aboutamazon.eu/news/sustainability/7-ways-amazon-is-using-ai-to-build-a-more-sustainable-future

AWS Events. (2023). Retrieved from Youtube: https://www.youtube.com/watch?v=LPdd6kqzEBM

Bozic, V. (2023). Environmental,Social, and Governance approach & Artificial Intelligence. *Research Gate*. doi:10.13140/RG.2.2.34753.12641

Deloitte. (May 2023). *ESG Preparedness Survey Report.* Retrieved from https://www2.deloitte.com/in/en/pages/about-deloitte/articles/ESG-preparedness-survey-report.html

Economictimes.indiatimes.com. (2024, Febraury 22). Retrieved from Economic Times: https://economictimes.indiatimes.com/markets/expert-view/ai-helped-tata-power-bring-down-atc-losses-in-delhi-from-53-to-6-praveersinha/articleshow/107905742.cms?from=mdr

Hassan, A., et al. (2019). The role of artificial intelligence in enhancing transparency and accountability in corporate sustainability reporting. Corporate Social Responsibility and Environmental Management, 26(3), 531-543.

IBM Envizi. (n.d.). Retrieved from ibm.com: https://www.ibm.com/products/envizi

Khan, M., et al. (2020). Artificial intelligence and environmental, social, and governance (ESG) risks: A systematic review. Journal of Cleaner Production, 276, 122927.

Microsoft, Sustainability. (n.d.). Retrieved from microsoft.com: https://www.microsoft.com/en-in/sustainability/cloud

Moodaley, W., & Telukdarie, A. (2023). Greenwashing,Sustainability Reporting and Artificial Intelligence:A Systematic Literature Review. *MDPI,Sustainability, 15*(2), 15(2). doi:10.3390/su15021481

NIFTY 100 ESG Sector Leaders. (2024, March 28). Retrieved from niftyindices.com: https://www.niftyindices.com/Factsheet/Factsheet_Nifty100_ESG_Sector_Leaders

NSE Indexogram NIFTY 100. (2024, March 28). Retrieved from nseindia.com: https://nsearchives.nseindia.com/content/indices/ind_nifty_100.pdf

Serafeim, G., et al. (2019). ESG and financial performance: Uncovering the relationship using artificial intelligence. Journal of Applied Corporate Finance, 31(2), 105-118.

Skaug, H. (2022, October 31). The AI ESG Protocol:Evaluating and disclosing the environment,social and governance implications of artificial intelligence capabilities,assets and activities. *Wiley Online Library, Sustainable Development, 31*(2), 1027-1037. doi:10.1002/sd.2438

Smith, B. (2023). *Accelarating Sustainability with AI: A Playbook.* Microsoft. Retrieved from https://blogs.microsoft.com/on-the-issues/2023/11/16/accelerating-sustainability-ai-playbook/

The Sustainability Yearbook Rankings. (2023). (S&P Global) Retrieved from spgloal.com: https://www.spglobal.com/esg/csa/yearbook/2023/ranking/

The Sustainability Yearbook Rankings. (2024). (S&P Global) Retrieved from spglobal.com: https://www.spglobal.com/esg/csa/yearbook/2024/ranking/

Zhang, Y., et al. (2020). Artificial intelligence in ESG reporting: A literature review. Sustainability, 12(10), 3921.