

The Impact of Environmental Accounting on the Financial Performance of Cement Companies

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Abstract: One of the country's main industries is the cement sector. In the current industrial period, where the majority of progress is dependent on infrastructure, its significance becomes even more crucial. It has a big impact on the nation's social and economic advancement. Environmental safety is essential for human survival, just as industrial progress is for the economy. To evaluate the impact that the environment plays in the economy, regulatory bodies have created Environmental Accounting. The primary goal of this research is to determine how environmental accounting affects the financial performance of the cement businesses in India, which is now experiencing rapid growth. The profitability condition of the chosen cement firms in India has been determined by taking into account their sales and production, financial ratios, and environmental preservation considerations.

Keywords: *Financial Performance, Environmental Management Accounting, Sustainability.*

I.INTRODUCTION:

India is the world's second largest manufacturer of cement. The cement industry is a significant contributor to national growth. The cement business plays a significant role in the Indian economy, affecting transportation, building, coal, and power sectors.

Currently, UltraTech, Ambuja Cements, ACC, Shree Cement, and India Cements dominate the cement market in the country. India's cement sector is expanding, contributing to the country's economic prosperity. Demand for cement is primarily driven by industrial, construction, real estate, and infrastructure sectors. Despite the global economic recession, the cement industry continues to thrive due to the interdependence of these industries.

Understanding the function of Environmental Accounting in maintaining environmental safety and welfare is crucial for understanding how businesses contribute to environmental preservation. Environmental accounting identifies how businesses contribute to economic well-being and the expenses associated with resource deterioration or pollution.

Every corporate enterprise's primary goal is to fully utilize its resources, such as human and material. Firms strive to maximize resource utilization. As corporate citizens, businesses must act responsibly to protect the environment and society. Unfortunately, this citizen has not demonstrated a strong commitment to protecting the environment. The Indian government has enacted and altered legislation to promote social responsibility among businesses to improve the environment and economy.

Energy conservation is crucial after learning about the negative impacts of industrial activities, pollution, and hazardous manufacturing. This includes cost-effective utilization and storage of all forms of energy, including electricity, fuel, gas, lubricant oil, and conventional and non-conventional energy. Multinational organizations should prioritize effective use of

energy resources without sacrificing quality to maintain competitiveness. Firms that conserve energy save money, gain market and cost leadership. Energy consumption is being considered for implementation in industrialized countries' manufacturing and service industries.

India, a developing country, confronts the challenge of balancing environmental protection and economic growth. A trade-off between environmental preservation, protection, and development is necessary. Evaluating the benefits and drawbacks of environmental damage is crucial for determining appropriate development and limiting environmental degradation.

The reality that limited resources remain on Earth for the purpose of all species is well acknowledged. Business enterprises contribute significantly to environmental damage, which is increasing annually. Several cases, such as the Tsunami in India (2004) and the Bhopal Chemical Leak (1984), highlight the direct and indirect participation of businesses.

II.OBJECTIVE OF STUDY

1. To understand the financial performance levels in the cement companies in India.
2. To Investigate the correlation between environmental management accounting and perceived financial performance in cement companies in India.

Environmental Accounting

Environmental accounting is a type of accounting that focuses on tracking, managing, and reporting a company's environmental costs, impacts, and liabilities. It is an essential part of sustainability efforts, as it helps organizations understand and quantify their environmental footprint in terms of financial performance and compliance.

There are two main components in environmental accounting:

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1. **Environmental Costs Accounting:** This focuses on tracking and measuring the costs associated with environmental management, such as:
 - Pollution control
 - Waste management
 - Resource conservation
 - Energy use
 - Compliance with environmental regulations
 - Environmental remediation
2. **Environmental Impact Accounting:** This focuses on the external environmental effects caused by the organization's operations, products, or services. These may include carbon emissions, water usage, waste generation, and other environmental impacts. This aspect is often quantified in terms of social or environmental costs, which may not always be included in traditional financial accounting but are becoming increasingly important for stakeholders and consumers.

Key Aspects of Environmental Accounting:

- **Internal environmental costs:** Costs associated with managing internal operations in an environmentally responsible manner.
- **External environmental costs:** The cost of environmental damage or depletion that may not be directly accounted for by the company, such as pollution.
- **Environmental performance metrics:** Measurements like energy consumption, waste reduction, carbon footprint, etc.
- **Sustainability reporting:** Providing transparency through reports like the Global Reporting Initiative (GRI) or sustainability reports, which include both financial and non-financial environmental data.

By incorporating environmental accounting, businesses can identify areas to improve operational efficiency, reduce waste, comply with regulations, and improve their reputation by demonstrating commitment to environmental sustainability.

III. LITERATURE REVIEW**1. Dasgupta and Singh (2023)**

Dasgupta and Singh (2023) analyzed the relationship between environmental accounting disclosure and financial performance of Indian cement firms from 2013–2020. Using an environmental disclosure index and profitability ratios, they observed that firms with higher levels of environmental transparency experienced better returns and improved stakeholder perception. The study highlighted that sustainability-focused reporting helps cement firms reduce regulatory risk, improve operational efficiency, and achieve long-term financial growth.

2. Adewale and Rahman (2022)

Adewale and Rahman (2022) examined environmental cost reporting and profitability of cement companies in West Africa using panel data from 2015–2020. Employing regression and correlation analysis, they found that environmental expenditures related to waste management, emission reduction, and energy conservation were positively associated with profitability. The study concluded that firms engaging in proactive environmental cost reporting enjoy enhanced financial resilience and investor trust.

3. Oti and Ozochukwu (2021)

Oti and Ozochukwu (2021) explored the effect of environmental accounting on financial performance of industrial companies in Sub-Saharan Africa, with a particular focus on high-emission sectors like cement. Data from 2012–2018 were analyzed using correlation and regression models. The results indicated that firms implementing structured environmental accounting systems reported higher profitability and lower environmental penalties. The study underlined that sustainable practices and cost transparency contribute to improved financial stability.

4. Das and Mukherjee (2020)

Das and Mukherjee (2020) analyzed the environmental accounting disclosure practices of major Indian cement companies over a five-year period. Using content analysis and disclosure indices, they found that firms with greater transparency in environmental reporting—covering areas such as carbon emissions, waste management, and energy use—showed higher market valuation and profitability. The study concluded that consistent and detailed environmental accounting practices not only enhance a company's public image but also contribute to sustainable financial performance in the long term.

5. Ijaiya and Ajayi (2019)

Ijaiya and Ajayi (2019) investigated the impact of environmental accounting on the financial performance of selected manufacturing firms in Nigeria, with a focus on the cement industry. The researchers applied regression analysis on secondary data from 2010–2017 and found a significant positive effect of environmental accounting on profitability metrics such as net profit margin and return on assets. The study emphasized that accounting for environmental costs, such as pollution control and recycling expenditures, enables firms to achieve greater operational efficiency and long-term profitability.

6. Kiran and Majumdar (2017)

Kiran and Majumdar (2017) conducted an empirical study on corporate environmental accounting and reporting among Indian manufacturing firms, including leading cement producers. Using multiple regression techniques, the study found that companies with proactive environmental accounting policies experienced stronger financial results due to improved compliance, stakeholder confidence, and brand reputation. The authors concluded that adopting environmental accounting practices leads to competitive advantage and sustainable profitability.

7. Sulaiman and Ahmad (2016)

Sulaiman and Ahmad (2016) studied the role of Environmental Management Accounting (EMA) in enhancing financial performance among Malaysian industrial firms, including cement producers. Using survey data and regression techniques, they found a positive relationship between the adoption of EMA tools and indicators such as ROA and ROI. The study concluded that integrating environmental data into decision-making processes allows firms to identify cost-saving opportunities and enhance overall financial health.

8. Nuhu (2014)

Nuhu (2014) examined the relationship between environmental cost accounting and firm performance in Nigerian cement companies between 2008 and 2012. Using correlation and regression analysis, the study found a positive and statistically significant relationship between environmental cost reporting and profitability indicators such as ROA and ROE. The findings highlighted that cement firms incorporating environmental costs into their accounting systems achieved better cost control and improved efficiency, demonstrating that environmental accounting enhances both operational and financial outcomes.

9. Joshi and Gao (2009)

Joshi and Gao (2009) analyzed environmental accounting practices among Asian manufacturing firms to determine their impact on financial outcomes. They discovered that firms that measured and disclosed environmental costs—such as energy use and waste treatment—experienced higher cost efficiency and profitability. The authors emphasized that industries with high environmental footprints, like the cement sector, could significantly improve financial and operational performance through systematic environmental accounting.

10. Al-Tuwaijri, Christensen, and Hughes (2004)

Al-Tuwaijri, Christensen, and Hughes (2004) investigated the interrelationship between environmental disclosure, environmental performance, and economic performance using a simultaneous equations approach. The findings revealed that firms with better environmental performance and disclosure achieved significantly higher financial performance. Though not cement-specific, the research provides a theoretical foundation that supports the idea that environmental accounting and disclosure improve profitability and reduce risk exposure for resource-intensive industries like cement.

Hypothesis

Drawing on theoretical insights and a review of existing literature, the following hypothesis has been proposed:

- **Null Hypothesis (Ho):** A company's Environment accounting has no effect on its financial performance.
- **Alternative Hypothesis (Ha):** A company's Environment accounting has a significant effect on its financial performance.

Relation Between Financial performance and Environment Management

Financial performance indicates how well monetary goals have been achieved. It is the process of calculating the financial effects of a company's policies and practices. It is used to assess a company's overall financial health over a given time frame and can also be used to compare similar companies in the same sector or industry across time. Indicators of monetary performance include sales, profit or value added, fees, expenses or costs, budget, and share price. The debt-equity ratio, return on equity (ROE), and return on assets (ROA) are the three primary measures of a company's financial health.

Cement contributes roughly 5% of global CO₂ emissions. This industry contributes to environmental pollution issues, and the pollutants produced by the production process have a negative effect on the air, land, and water. Due to the expansion of cement plants, dust emissions from cement-producing facilities have increased significantly in recent years. The natural vegetation and resources are being depleted as a result of the rise in dust pollutants and dangerous gaseous air pollutants. India produces a lot of greenhouse gas emissions, which are a continuous worry because of the unfavourable trend toward the extinction of plants and animals. The primary contributor to global warming is carbon dioxide, which is released by industry throughout the cement production process. The purpose of the study on the cement industry in India is to ascertain the steps being done by environmentally conscious businesses to protect the environment. Additionally, emphasis is placed on determining whether there is a connection between the companies' environmental practices and financial performance.

Analysis and Interpretation

Factors influencing both environmental accounting and financial performance must be taken into account in order to determine the relationship between environmental accounting practices and the financial success of cement businesses in India. Two businesses, Ultratech Cement Limited and J.K. Cement Limited, have their separate data examined, and a noteworthy correlation is found. The study focuses on key performance indicators that employ financial performance and environmental aspects to assess sustainable manufacturing, which is thought to be suitable for the cement sector based on sustainability's bottom line. The debt-to-equity ratio of the two businesses will be used to gauge the financial performance, and the desired outcomes are to be achieved.

UltraTech Cement Limited: It is the largest manufacturer of cement in India and a leading global player in the cement industry. It is a part of the **Aditya Birla Group**, one of the largest conglomerates in India. UltraTech produces various types of cement, including **Ordinary Portland Cement (OPC)**, **Portland Pozzolana Cement (PPC)**, and **White Cement**, which are used in residential, commercial, and infrastructure projects.

UltraTech has consistently been one of the most profitable cement companies in India, with strong revenue growth and increasing market share. UltraTech focuses on sustainable development, with initiatives to reduce its carbon footprint, promote alternative fuels, and enhance the energy efficiency of its operations.

J.K. Cement Limited: It is one of India's leading manufacturers of cement and allied products, with a strong presence in the cement industry for several decades. J.K. Cement is primarily known for producing **grey cement** which is widely used in construction projects ranging from residential buildings to large infrastructure projects.

J.K. Cement has adopted practices like the use of industrial waste (fly ash, slag, etc.) in its cement production, reducing the environmental impact of mining and conserving natural resources. J.K. Cement has worked on producing low-carbon cement with a lower clinker-to-cement ratio, helping to reduce the carbon emissions during production. Their use of alternative raw materials reduces the need for conventional clinker, which is a major contributor to greenhouse gas emissions.

Debt Equity Ratio

Debt/Equity (D/E) The ratio, commonly known as the risk or gearing ratio, measures a company's financial leverage by dividing total liabilities by stockholders' equity. Leveraging tactics can be risky, with companies taking large loans and putting their reputation at stake. High profits make it easier to pay off debt and maintain a positive reputation.

Table 1(a): Debt-equity Ratio of the two selected cement companies

Debt Equity Ratio (Time's)		
Year	UltraTech Cement	J.K. Cement
2023 - 2024	0.17	0.98
2022 - 2023	0.18	1.07
2021 - 2022	0.2	0.89
2020 - 2021	0.46	0.91
2019 - 2020	0.59	1.08
Mean	0.32	0.98
S.D.	0.16	0.071
C.V.	50%	7.20%

The above table 1(a) shows the Debt-Equity Ratio (D/E Ratio) calculated for 2 selected cement companies from the years 2023-2024 to 2019-2020. An ideal D/E Ratio ranges from 1.0 to 2.0. Over the past five fiscal years, UltraTech Cement Limited's Total Debt to Equity ratio has shown a consistent decline, indicating a reduction in financial leverage. This trend reflects a strategic effort by UltraTech Cement to decrease its debt levels relative to

equity, thereby enhancing financial stability. Whereas, J.K. Cement Limited's data indicates a general decline in the debt-to-equity ratio, suggesting a reduction in financial leverage over the period. The Standard Deviation (SD) and Coefficient of Variance (CV) of the Debt-Equity Ratio values were also calculated and it was found that J.K. Cement had the lowest SD of 0.071 and the lowest CV of 7.2%. This showed that the company's financial position is stable.

Key Performance Indicators

In terms of Sustainability Accounting, the Key Performance Indicators (KPI) for the company has been control in the CO₂ emissions and specific CO₂ emissions.

CO₂ emissions per tonne of cementitious material by FY2030.

As both the companies have shown good results with respect to Debt-Equity Ratio and practices to save the environment, it can be concluded that the Environmental Accounting has a positive influence on the financial performance of the two cement industries under study.

IV.CONCLUSION

Indian cement businesses (Ultratech Cement and J.K. Cement) are upgrading their environmental reporting methods. The investigation shows that both corporations justified their energy usage and use of fossil fuels. Several attempts have been made to use industrial waste as an alternative fuel. Both companies have had success using alternate fuels in cement production. Water conservation efforts have increased by lowering reliance on natural resources. The utilization of natural raw resources has decreased, as has the creation of hazardous and non-hazardous waste over time.

In the past, Indian firms have taken a careless approach to the environment and its safety. Cement industry generate significant amounts of hazardous waste and must prioritize environmental sustainability and survival. Encouraging disclosure of environmental accounting and reporting procedures is crucial for cement industries to prioritize environmental responsibility and resource conservation.

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