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The Impact of Environmental Management Accounting on Financial Performance of Cement Companies in India

Dr. H. Rajashekar,
Professor,
Department of Commerce,
University of Mysore, Mysuru, India.

Ali Reza Keshavarz,
Ph. D. Research Scholar,
Department of Commerce,
University of Mysore, Mysuru, India.

ABSTRACT

The Cement Industry is a core sector for a nation. Its importance becomes vital especially in present running industrial era where most of the development depends on infrastructural facilities. It plays a significant role in economic and social development of the country. As industrial growth is important for the economy, environmental safety is also vital for the sustenance of mankind. Hence, the regulatory authorities have developed Environmental Accounting which is expected to assess the role played by the environment in the economy. Presently, the cement industry is growing fast and the main objective of this paper is to know how Environmental Accounting has an impact on the financial performance of the cement industries in India. For this, the production and sales, financial ratios of the companies and factors that companies consider to preserve the environment have been considered to measure the profitability status of the selected cement companies in India.

Keywords: Financial Performance, Environmental Management Accounting, Sustainability.

INTRODUCTION:

To understand the role played by business firms or corporate houses towards ensuring environmental safety and welfare, decoding how Environmental Accounting works and how it is helping organizations in preserving the environment is required. Environmental Accounting facilitates the highlighting of data with respect to the contribution that the business enterprises provide in assuring wellbeing of the economy along with the costs levied disguised as resource degradation or pollution.

Resources such as human and material being fully utilized are the main aims of every business enterprise. The firms put in their full efforts to make the fullest possible use of these resources. As any business enterprise is a corporate citizen, maximum responsibility vests in the companies to act judiciously to save the environment and society as the corporate is a member of the society. But it is a hard reality that this citizen has not been performing with utmost conviction to save and preserve the environment. As the business firms are obligated to fulfill their social responsibility, many laws have been enacted by the Government and amended from time to time with an aim to develop the Indian environment and economy in a better way. However, increased industrial activities and emissions into the atmosphere have brought to notice that the environment is degrading and it is both directly and indirectly impacting human and animal life on Earth. When environmental degradation and pollution is mentioned, it should be noted that human and animal health is spoiled leading to several severe non-curable diseases along with loss of amenities and reduction in economic productivity.

After learning about the consequences of industrial activities, pollution and hazardous manufacturing, the importance of energy conservation which includes utilization and measurement of cost and the purchase, consumption and storage of total energy of all forms such as electricity, fuel, gas, lubricant oil, conventional and non-conventional energy has been realized all over the world. The efficient use of energy resources without any compromise in the quality and to stay competitive should be the aim of the multi-national companies.

Conservation of energy in the firms results in cost reduction, market leadership and cost leadership. The concept of energy consumption has been realized and planned to be implemented in manufacturing and service sectors of industries of developed countries like USA, UK, Germany, France, Japan, Australia and New Zealand. Environmental Accounting has been named under The International Accounting Standards Board (IASB) after the measurement of energy conservation has been recognized.

Developing country like India presently faces twin problems of protecting the environment and promoting economic development. A trade-off between environmental preservation, protection and development is required. A detailed examination of the advantages and costs of the damages to the environment is important to determine the boundaries of environmental degradation and the development which should be necessarily brought.

The fact that limited resources persist on Earth for the use of all species is well known. The damage done to the environment is growing manifold each year and business enterprises are majorly responsible for this damage. There are several instances which act as an eye-opener to the world showing both the direct and indirect involvement of business enterprises such as the Tsunami in India (2004), Bhopal Chemical Leak (1984), etc.

In earlier days, industrialization referred to profit generation showing that environment and its safety were not considered an issue and its importance was not recognized. As time changed and the need for preserving the nature and its resources were brought to light, industry and environment were seen as two sides of the same coin as it would lead to the path of sustainable development. Awareness and series of protests have brought the world to realize that environmental protection is a pressing issue. The costs involved in order to preserve the environment are huge as the industries are not aware or lack upgraded practices of environmental factors. Hence the Government of India has introduced a concept called as the Corporate Social Responsibility (CSR) where corporate houses must allocate a prescribed percentage of their net profits to social activities in order to responsibly act for the society. The CSR contribution is mandated to be disclosed in the Annual Reports of the companies.

The blend of sustainable industrial development and CSR has introduced a new branch of accounting viz., Environmental Accounting. Environmental Accounting is an entrant in Accounting. Norway in 1970s was the first country to adopt this. In India, Environmental Accounting is followed only in industries like cement, power and electronics, oil and petroleum, engineering, steel and textile industries, etc.

India is the second largest producer of cement in the world. In the growth of the nation, cement industry is one of the sectors which play a major role. As this industry has its presence in the sectors of transportation, construction and coal and power, the Indian economy and its growth depends on cement industry majorly. The cement industry hugely contributes to the exchequer in the form of indirect taxes.

Varieties of Cement are produced in the Indian Industry such as Portland Pozzolana Cement (PPC), Ordinary Portland Cement (OPC), Rapid Hardening Portland Cement, Oil Well Cement, Portland Blast Furnace Slag Cement (PBFS), White Cement, Sulphate Resisting Portland Cement, etc. The Bureau of Indian Standards (BIS) specifies rules and regulations with respect to production and it is seen that the quality of cement matches with International standards.

Presently, the top players - UltraTech, Ambuja Cements, ACC, Jaiprakash Associates, Shree Cement and India Cements hold more than half of the cement market stake in the country. The Indian cement industry is growing and this is impacting the overall growth of the economy. The demand for cement is largely dependent on the industrial activities, construction activities, real estate business, and infrastructure sector. As mentioned earlier, all these sectors are interdependent on the cement industry their growth is permitting the cement market to move ahead despite the ongoing economic recession in the world.

REVIEW OF LITERATURE:

Taqi (2014) relatively examined monetary performance of two main trading corporations of India, Minerals and Metals Trading Corporation and State Trading Corporation, with the aid of bookkeeping ratios such as liquid ratio, current ratio, net profit ratio, gross profit ratio, earnings per share and inventory turnover ratio. Business practices of both the firms were also consideredrelatively. Correlation matrix and independent sample t-test were deployed in the analysis of both thecorporations. The study determined that the monetary performance of MMTC Ltd was comparatively better than STC.

Panigrahi (2013) conceded a relative study on Liquidity Management in Cement Companies of India from 2001 to 2010. The samples selected for the study were top five cement companies listed on the BSE namely ACC Cements, Ambuja Cements, Madras Cements, India Cements and Shree Cements. Secondary data was obtained from the companies' annual reports of the selected companies. The main aim was to analyze and compare the liquidity management in the aforesaid Cement companies. Also the management and adequacy of working capital was measured. Tools and techniques like ratio analysis, standard deviation, mean, coefficient of

variation, and Metal's ultimate rank test was used and the liquidity position of big companies were not as adequate as compared to smaller ones. The growth rate of quick ratio, current ratio and working capital to current assets indicating an unstable position was found. Shree Cement's liquidity position was found stable compared to other companies.

Mukhopadhyaya et al. (2012) assessed the impact of deregulation on the execution and structure of Indian cement industry from 1989 to 2006. The investigation showed that there was shriller development in the proportion of inter sequential portability for the organizations in the best most two quartiles which made a critical gains in market share and the organizations which were under the second quartile, lost their market share amid the study period. The examination additionally uncovered that there was an auxiliary break in the market share pattern of the overall industry. The distribution of markets occurred to be partial towards the bigger organizations. Convergence of four firms was in excess of 50% and two prevailing groups represented in excess of 40% market share.

Venkata Ramana et al. (2012) examined the financial performance and anticipated the danger of insolvency for chosen cement organizations from 2001 to 2010 with the assistance of Z score model and financial ratios. The investigation uncovered thatsolvency position,liquidity and working capital turnover of the chosencement organizations were not sufficient. Further, it was likewise found from the Z-Score investigation that financial performance of Kesoram Industries Ltd and KCP Ltd was poor and Dalmia Bharat Ltd was at the brim of insolvency.

Samuel (2012) led an investigation on Financial Performance of India Cements Limited from 1998/1999 to 2007/2008. The investigation was mostly founded on secondary information gathered from the annual reports of the organization. The Common size financial statements, Comparative financial statements, Trend percentage and Ratio analysis were the tools utilized for assessing the financial performance. In his investigation, the financial performance of the organization was assessed on different fronts, for example, liquidity, profitability and turnover. The impacts of all business trades were obvious in the estimation of different resources, liabilities and capital reserve where changes were examined by comparing at the opening and closingfinancial reports of the firm. It was likewise discovered that the net profit ratio over the last three years was positive and remained the key behind expanding the net profit. The high salesimplied more returns to the investors. At last, the examination inferred that the general performance of India Cements Ltd was good and helped the organization to recognize its inefficient areas.

De et al. (2011) led an Empirical Study on the Indian Cement Industry. Factor Analysis was deployed over the audited monetary data of selected cement organizations of India from 1999/2000 to 2008/2009. There were 44 factors (financial ratios) categorized in seven groups. Numerous regressionanalyseswere utilized by taking the factor scores as the dependent variable and constituent factors as independent factors. The investigation demonstrated that the gain and return of investment was significantly positive while the working capital, dividend and liquidity of the business were not palatable. The researcher likewise accentuated on eight financial ratios for assessing the financial position of the cement business of India.

Anuradha Seku and Rama Somani (2014) in their paper entitled 'Environmental Accounting –A Case Study of Cement Sector in India mentioned that Environmental accounting was a vital instrument in order to determine the importance and value of natural environment in the economy. This study considered that companies were responsible for other matters apart from the monetary issues. The other aspect was environmental accounting along with its justified application. Various factors of environmental accounting were first measured in the research. The reasons why Kyoto protocol introduced environment protection accounting as a new method of accounting is also mentioned.

Mark de Haan (2014) has specified the methods of the international synchronization of environmental accounting: matching the National Accounting Matrix including Environmental data of the Netherlands, Japan, the UK, Sweden, and Germany. These nations have exhibited their outcomes in a National Accounting Matrix including Environmental Accounts (NAMEA). The second part showed a fundamental comparison of the outcomes which led a conclusion that the comparable accounts would not spontaneously produce comparable results.

Mishelle Doorasamy (2014) in his article 'Utilizing Environmental Management Accounting to Investigate Benefits of Cleaner Production at a Paper Manufacturing Company in Kwadakuza, Kwazulu Natal' mentioned that the main aim of examination was to utilize Environmental Management Accounting (EMA) to ascertain the advantages of Cleaner Production (CP). Paper production disburses a lot of natural resources and produces large quantities of wastes. Thus, the operational activities of paper mills did not have a positive effect on the environment. The scope of investigation was however constrained to the steam production process and concentrated principally on the effectiveness of the current coal-fired boilers utilized in the boiler plant. The research methodology utilized in the investigation was both quantitative and subjective including triangulation.

Information was gathered by means of a semi-structured interviews, questionnaire and documentary review.
Daniel Mogaka Makori and Ambrose Jagongo (2013) in their article mentioned that Environmental accounting was the capacity to provide precise data in the financial decrees with respect to the evaluated social expense occasioned by group externalities on Earth. The mission of this study was to ascertain whether there was any significant association between environmental accounting and profitability of chosen firms functioning in India. The data for the said investigation was gathered from yearly reports and records of 14 randomly chosen organizations listed in the Bombay Stock Exchange in India. The information was examined utilizing various regression models. The key discoveries of the examination demonstrated that there was a significant negative relationship between Environmental Accounting, Return on Capital Employed (ROCE) and Earnings per Share (EPS) and a critical positive association existed between Environmental Accounting, Net Profit Margin and Dividend per Share. Hence it was recommended that legislature had to impose penalties to organizations that consented to act in accordance with the ecological laws but acted opposite to the same which would enhance the execution of environmental laws making it obligatory in India for the well-being of the country.

OBJECTIVES OF THE STUDY:

1. To understand the perceived financial performance levels in the cement companies in India.
2. To determine the relationship between environmental management accounting application and perceived financial performance in the cement companies in India.

HYPOTHESIS:

H0: There is no significant association between Environmental Management Accounting and financial performance of the Indian cement industries.
H1: There is a significant association between Environmental Management Accounting and financial performance of the Indian cement industries.

Environmental Management Accounting and Financial Performance

Over the past two decades, issues about preserving the environment have become important (United Nations, 2001). As required by international authorities and standards, various companies have been disclosing their activities which contribute to the environmental safety. This is done through sustainability reports which imply reporting in accordance with the Sustainable Reporting Guidelines of the Global Reporting Initiative, 2013. This guideline helps the companies to report environmental, economic and social impacts under the Global Reporting Initiative (GRI). The aim is to improve the quality of environmental reporting (Ambe, Environmental Management Accounting in South Africa: Status, Challenges and Implementation Framework, 2007). A universal approach to social, economic and environmental issues permits the management of business risks and opportunities (South African Institute of Chartered Accountants, 2009).
According to the World Commission on Environment and Development (WCED, 1987), "Sustainable development is progress that sees the requirements of the present devoid of conceding the capacity of future generations to fulfill their own requirements. It encompasses two vitalnotions: the notion of needs, referring to the important requirements of the poor which demands priority; and the notion of restrictions enforced by the social organization and state of technology testing the capacity of the environment to fulfillcurrent and future requirements." Sustainable development includes three building blocks, namely social, economic and the environment. Environmental Management Accounting (EMA) assimilates economics and environment within itself as they relate to the internal decision making of the organization (Savage &Jasch, 2005). Environmental Management Accounting is a structure that businesses can devise to support in decision making of issues relating to the environment and the costs associated with it. Environmental Management Accounting is the solicitation of conservative bookkeeping values to ecological matters, such as emission and waste analysis. According to Seal et al. (2012), EMA may be defined as the recognition, assembling and analysis of financial and physical data. Financial data refers to costs related to the environment, savings and earnings. Physical information refers to the usage and rates of energy, materials, water containing wastes. Both physical and financial data can be used by the companies pertaining to the environmental accounting in order to be viable.
Financial performance denotes to the grade to which monetary purposes have been proficient. It is the procedure of gauging the consequences of a company's policies and procedures in financial terms. It is used to measure firm's complete financial strength over a specified period of time and can also be used to relate comparable businesses across identical industries or sectors in accumulation.

Financial performance can be defined as an independent measure of how well a firm can use assets from its operations and make profits (Mills, 2008). The performance dimension conception specifies that personnel can escalate the firm's worth by expanding the size of a business' future cash flows, by quickening the reception of the aforesaid cash flows, or by making them definite or less uncertain (Cadbury, 1992).
Some of the pointers of financial performance are profitability ratios, liquidity ratios, return on equity, asset management ratios, market value ratios and leverage ratios. Carreta and Farina (2010), claim that the usage of financial performance could be useful as it would be certain as to what the managers actually perceive about financial performance and also productivity, accounting profits and cash flow are important blend of indicators. Monetary performance is ascertained by the following indicators;sales, profit or value added, fees, costs or expenditure, budget and share price. Three main indicators of financial position of any company are Return on Assets (ROA), Debt Equity Ratio and Return on Equity (ROE).
Globally, cement adds about 5% of the overall emissions of CO_2. Environmental pollution problems are caused by this sector and the pollutants generated from the production activity create an adverse impact on air, land and water. In the recent past, dust emissions from cement producing houses haveescalated manifold owing to the growth in the number of cement plants. This is increasing the dust pollutantsalong with hazardous gaseous air pollutants depleting the natural vegetation and resources. GHG emission is prominently produced in India and it remains a constant concern as there is an untoward movement towards the destruction of flora and fauna. Carbon dioxide emitted by industries in the process of producing cement is the main cause for global warming. Hence, the study with respect to Indian cement industries is initiated in order to determine the actions that are being taken by the socially responsible companies to preserve the environment. Also, there is a focus on how to assess if there exists a relationship between financial performance and the environmental practices of the companies.

ANALYSIS AND INTERPRETATION:

In order to ascertain the relationship between EMA practices and financial performance of the cement companies in India, factors affecting encompassing both EMA and financial performance needs to be taken into due consideration. Ultratech Cement Limited and Shree Cement Limited are the two companies whose respective data is analyzed and a significant relationship is drawn. The study focuses on key performance indicators using environmental factors and factors affecting financial performance for evaluating the sustainable manufacturing which is believed to be appropriate to the cement industry based on the bottom line of sustainability. The financial performance shall be measured using the debt-equity ratio of the two companies and required results are to be obtained.

Ratio Analysis:

Debt-Equity (D/E) Ratio also referred to as risk or gearing ratio measure a company's financial leverage by dividing both total liabilities by stockholders' equity. Contentious leveraging practices come along with high levels of risk where company's take huge loans and risk its reputation. If the company makes huge profits, paying off the debt is easy and the company becomes successful in retaining its reputation.

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

Debt-Equity ratio (Times)		
Year	**Ultratech Cement**	**Shree Cement**
2017-2018	0.64	0.38
2016-2017	0.22	0.17
2015-2016	0.23	0.11
2014-2015	0.35	0.12
2013-2014	0.28	0.23
Mean	0.34	0.20
SD	0.17	0.11
CV	50.37	54.61

Source: www.moneycontrol.com

The above table 1(a) shows the Debt-Equity Ratio (D/E Ratio) calculated for 2 selected cement companies from the years 2013-14 to 2017-18. An ideal D/E Ratio ranges from 0.3 to 0.6. In the year 2017-18, Shree Cement had an effective D/E Ratio and in the year 2014-15, Ultratech Cement had an ideal D/E Ratio of 0.35. The

Standard Deviation (SD) and Coefficient of Variance (CV) of the Debt-Equity Ratio values were also calculated and it was found that Ultratech Cement had the highest SD of 0.17 and Shree Cement had the highest CV of 54.61. This showed that the company's financial position was stable.

ANOVA						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	0.05041	2	0.025205	1.045231	0.400675	4.737414
Within Groups	0.1688	7	0.024114			
Total	**0.21921**	**9**				

Inference:
Since the calculated value of F (1.045231) is greater than the table value (4.737414) as shown in table ANOVA, there is a significant difference in financial performance of different cement industries of India under study in Debt-Equity Ratio.

Ultratech Cement Limited:
Ultratech Cement is the largest cement producer in India. The company constantly attemptsto findresponsibly optimal ways to safeguard the environment and its resources. The company follows its best practices and matches international standards with its sustainability practices through Cement Sustainability Initiative (CSI) which is a part of World Business Council for Sustainable Development (WBCSD).
The Key Performance Indicators (KPI) for the company has been control in the CO2 emissions and specific CO2 emissions.

Table 2: Key Performance Indicators

Key Performance Indicators	**2016-17**
Climate Protection (excludes captive power)	
Co_2 Emissions - Gross (Million Tonnes)	30.72
Co_2 Emissions - Net (Million Tonnes)	30.56
Specific Co_2 Emissions - Net (kg/tonne of cementitious material)	627.52
Target reduction for Co_2	Reduction in Co2 emission intensity by 25% from FY 2005-06 level by FY 2020-21
Independently verified Co_2 Data	Externally verified

Source: Annual Report of Ultratech Cement 2016-17

Table 2 shows the Key Performance Indicators that have helped in gauging the extent up to which the climate has been protected. The data has been analyzed from 2014 to 2017. The Carbon Dioxide (CO_2) emissions in tonnes have been determined and it is noted that the Gross CO_2 emissions in 2016-17 was 30.72 tonnes which is relatively less when compared to the previous years. The Net CO_2 emissions in 2016-17 were 30.56 tonnes which is less by a small margin when compared to the previous years. Also, the Net Specific CO_2 emissions in 2016-17 stood at 627.52 tonnes not differing a lot when compared to the previous years. As the company strives hard to reduce its CO_2 emission, it aims at reducing the intensity by 25% from FY 2005-06 level by FY 2020-21.
The company has effectively used alternative raw materials in its operations with an aim to save the natural resources from depletion. The reduction in SO_x and NO_x emissions by the company have also brought to light that measures to stop degradation of environment have been appropriately taken by the company. The company deployed 16.58% of alternate raw materials into its operations indicating reduced costs, landfill disposals and progress of the economy. Total hazardous waste (solid + liquid) disposal decreased by 28% in FY 2016-17 and there were no significant spills in the reporting period.

Shree cement Limited (SCL):
The two main halves of Shree Cement's sustainability strategy islow carbon growth and mitigation of climate change. Reduction in atmospheric emissions, waste management, energy efficiency and GHG reduction is worked upon by the management and the required disclosures are made by the company in accordance with World Business Council For Sustainable Development (WBCSD), Cement CO and Energy Protocol, Cement

sustainability initiative (CSI) as well as reporting carbon emissions and company strategy in Carbon Disclosure Project (CDP) since 2011-12 respectively.

Table 3: Key Performance Indicators

Key Performance Indicators	2016-17
Climate Protection (excludes captive power)	
Co_2 Emissions - Gross (Kg CO_2/Tonnes)	551
Co_2 Emissions - Net (Million Tonnes)	549
Specific Co_2 Emissions - Net (kg/tonne of cementitious material)	555

Source: Annual Report of Shree Cement Limited 2016-17

The above table 3 shows the specific CO_2 emissions for the year 2016-17. The gross per tonne of cement used by the company was 551 kg CO_2/ton and net per tonne of cement used by the company was 549 kg CO_2/ton. The net per tonne of cementitious product used by the company was 555 kg CO_2/ton. As CO_2 emissions occur due to clinker production, the company should take measures to reduce the same in order to preserve the environment and reduce the effects of global warming. Due to fossil fuel combustion, CO_2 is emitted during cement production. Around 5% of the global carbon dioxide (CO_2) emissions are contributed by cement industry. This can be reduced by switching to alternate fuels. Hence, the company must work in the direction of adopting alternate measures so that the environment is not degraded.

However, the company took appropriate steps in order to reduce the generation of wastes. The waste from lead acid batteries drastically reduced to 14 MT in 2016-17 from 32 MT in 2015-16. The company increased alternate raw material usage by 1% during the reported year.

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. Therefore, the null hypothesis is rejected and alternate hypothesis is accepted. It is concluded that there is a significance association between Environmental Management Accounting and financial performance of the Indian cement industries.

CONCLUSION:

It has been noted that the environmental accounting and reporting performance of the above mentioned Indian cement companies (Ultratech Cement and Shree Cement) are gradually improving with respect to environmental disclosure practices.As observed from the analysis, both the firms have justified energy consumption practices and effective use of fossil fuels. Several attempts have been made to utilize wastes generated from industrial produce as alternative fuel. Both the companies have been relatively successful in adopting alternative fuel in their cement production activities. Water conservation has been intensively accelerated by reducing the procurement of water from natural resources. The use of natural raw materials has reduced and with each passing year the production of both hazardous and non-hazardous waste has evidenced a decline.

The main aim of the study was to find a relationship between the factors of Environmental Management Accounting and Financial performances of Ultratech Cement Limited and Shree Cement Limited. After using single factor ANOVA test, it was found that there existed a significance association between Environmental Management Accounting and financial performance of the Indian cement industries.

In the past, Indian companies have exhibited negligent attitude towards the environment and its safety. As cement industries produce dust and other hazardous wastes in large quantities, these companies must pay heed towards long term sustainability of the environment and most importantly their own survival. Acting in accordance with disclosure of environmental accounting and reporting procedureshas importance as this would compel the cement industries to responsibly work towards saving the environment and its resources.

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