CHAPTER - 1

INTRODUCTION AND DESIGN OF THE STUDY
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1.1. INTRODUCTION

The role of manufacturing sector is very crucial for a developing nation like India, which is fast emerging on the world map as a strong economy and global power. The country is going through a phase of rapid development and growth. All the vital industries and sectors of the country are registering growth and thus luring investors, and cement industry is one among them.

The Indian cement industry plays a key role in the nation’s economy by generating substantial revenue for the state and central governments. The industry is highly fragmented with a number of players of global standard. In terms of quantity, productivity and efficiency standard, it competes with foreign industries. It is almost home grown, built indigenously and uses locally available input. Barring one or two exceptional years, its performance in the last two decades has been quite consistent and commendable in areas of modernization, expansion, growth in production, improvement in productivity and cost efficiency.
1.2. ORIGIN OF CEMENT COMPANY IN INDIA

The history of the cement manufacturing in India can be traced back to 1889 when a private firm in Calcutta began manufacturing cement from Argillaceous. However, only in the 1990s cement industry took an organized shape. In 1914, the India Cement Company Limited started cement production in Porbandar with an output of 10,000 tonnes and a production of 1000 installed capacity. The world war ignited the initial momentum to the cement industry in India and the segment demonstrated geometric growth in terms of installed capacity, number of manufacturing units and the volume of output. The Concrete Association of India was established in the year 1926 to create awareness among the public with respect to the utility of cement in addition to promoting cement consumption.

Cement is a mixture of compounds consisting mainly of silicates and aluminates of calcium, formed out of calcium oxide, silica, aluminum oxide and iron oxide. Cement is manufactured by burning a mixture of limestone and clay at high temperatures in a kiln and then finely grinded which results in clinker along with gypsum. The end product thus obtained is called Ordinary Portland Cement (OPC). In India, OPC is manufactured in three grades. Viz, 33 grades, 43 grades and 53 grades,
the number indicating the competitive strength obtained after 28 days, when tested as per the stipulated procedure.

Apart from OPC there are several other types of cements meant for special purposes of steel plate, resistant cement, colored cement, oil well cement, etc. However, there are some general purpose cements, the common one being Portland Pozzolana Cement (PPC). In every country, the cement industry plays a major role in deciding the growth. Though India enjoys the credit of being the second largest manufacturer of cement in the world, it falls very low in per capita consumption of cement which is estimated at 125 kg. This is largely due to the fact that the poor rural people in the country who predominantly live in mud huts cannot afford to buy cement. On the other hand, the demand and the supply of cement has undergone a phenomenal growth in India. On the whole, the fact that India is a fast developing nation presents an enormous scope for the development of cement industry.

1.3. GROWTH OF CEMENT INDUSTRY IN INDIA

India is one of the few countries, which could continue to resist global recession with minor bruises and has proved its resilience with GDP growth registered at 7.5 per cent from the low of 6.7 per cent in the previous year. The cement industry withstood the global financial
meltdown and recorded a 7.9 per cent growth during the year 2008-2009, just 0.2 per cent drop from the previous year’s growth of 8.1 per cent, when the economic growth plunged to 6.7 percent against a sustained growth of 9 per cent during the previous three years, jumped up to record a double-digit growth of 12.7 per cent in 2009-10, with an increased infrastructure projects and other construction activities supported by the government.

India is the second largest cement producer in the world, next to China. The modern Indian cement plants are the state-of-the-art plants and comparable to the best in the world. As on 31st March 2010, the cement companies comprises of 137 large cement plants with an installed capacity of 222.61 million tonnes and 365 operating Mini & White Cement plants with an estimated capacity of 11.10 million tonnes per annum, making a total installed capacity of 233.71 million tonnes. A notable feature which bears highlighting is the addition of a capacity of 37 million tonnes in the cement companies during the year 2009-2010, which is estimated to be the highest capacity ever added in any single year so far. However, in capacity wise the large plants growth was 23.2 per cent.

Cement production during the year 2010-11 from large plants was 210.28 million tonnes as against 200.95 million tonnes in the previous
year, showing a growth of 4.43 per cent. All India total cement consumption during 2010-11 was 158.25 million tonnes as against 177.98 million tonnes in the previous year, showing a record growth of 13.1 per cent.

The working group on Cement companies for the XI plan has projected cement production at 269 million tonnes and the capacity needed at 298 million tonnes by the terminal year of the plan i.e., 2011-12. The Cement companies, which have added a capacity of 88.7 million tonnes during the first three years (2007-10), are optimistic that they would reach the target of 298 million tonnes capacity by 2011-12.

Finance is the core structure of all the business. All the managerial activities center on finance. Financial management is an appendage of the finance function as it provides a framework for selecting a proper course of action and deciding viable commercial strategy. It is applicable to every type of business irrespective of its size, kind or nature. Financial management is concerned with the plan and controlling of firm’s financial resources both short term and long term. The present study focuses on the short term financial analysis that Working Capital Management.

“Working Capital” is the life blood and controlling centre of a business. No business can successfully run without an adequate amount
of working capital. It is the part and parcel of any business, especially which is required for the day-to-day operation of an undertaking. The inadequacy or improper management of working capital is one of the main causes of business failures.

Profitability and solvency are the twin objectives of Working Capital Management. Unless there is liquidity, there cannot be any profitability. The financial executive is confronted with dilemma of balancing between liquidity and profitability. If the Working Capital increases more than the adequate level, the liquidity of the firm increases but the profitability decreases and vice versa. To achieve this objective, it is necessary that Working Capital should be managed in such a manner that it is made available at the right time in the right amount and from the right sources. The aim of the present study is to analyze the extent to which these objectives are achieved by the company during the period taken for the study.

1.4. STATEMENT OF THE PROBLEM

The government must pays more attention to infrastructure development aspects. The earlier total control for a long time and then partial decontrol and then total decontrol by the government has contributed in gradual opening up of the market for cement producers.
The basic need of housing can be fulfilled only if cement is made available at an affordable cost. It is an important product that satisfies the need for housing and infrastructure. With increasing competition and growth in supply exceeding growth in demand, prices begin to fall. In the current industrial environment, consolidation within the industry has started. Most of the players weakened during the excess supply induced recession sell off to larger and stronger players. Hostile takeovers are also witnessed during this period for expansion. International giants like Lafarge of France, Ital cement of Italy, Holmic of Switzerland, Heidelberg Cements of Germany and CEMEX of Mexico have entered into the Indian cement market through acquisitions, mergers, takeovers or joint ventures.

With the mushroom growth of large plants engaging in cut-throat competition to grab a bite of the market pie, Indian cement companies are now struggling to survive in the present conditions. In order to understand such problems confronting the cement units, it is considered worthwhile to take up a study of cement manufacturing units in India and hence, ACC Cements, Ambuja Cements, Ultra tech Cements, Grasim Cements, India Cement, J.K. Cements and Madras Cements are considered for the purpose of this study. The present study focuses on
analyzing financial results of the industries for a period of ten years from 2001-2002 to 2010-2011, and for understanding the Working Capital Management of the companies. The study also tries to find out answers for the following questions.

1. How did Cement companies in India grow during the reform period?
2. How do the sample cement companies have their own pattern of Working Capital?
3. In what way do they achieve their goals with the help of Working Capital Management?

1.5. REVIEW OF LITERATURE

The researcher has gone through various research works carried out in India and abroad in the field of Cement Production. The methodology and findings of these research works have been carefully studied and analyzed by the researcher. The tips got from this research work helped the present researcher in putting the present study in a proper perspective. Some of the relevant research and research papers are presented in the ensuing chapter.

Rai Sandeep Kumar and Dwivdei Shailesh K, (2011) in their study stated that the Cement Industry in India is booming. Driven by a
booming real estate sector, global demand, increased activity and infrastructural development such as state and national highways, the cement industry has witnessed tremendous growth. The realty sector boomed but could not sustain for long and it collapsed because of the loan defaults. This situation spread like wild fire and put the Indian economy in danger like the US economy. The US financial crisis has affected many countries of the world and India is no exception to it. Because of these financial crises, Indian economy has lost more than 2% of GDP growth. Almost all sectors of the Indian economy have been affected by this crisis.

Ray Sarbapriya and Mihir Kumar Pal (2010) in their study seek to measure econometrically the performance of Indian cement industry in the light of some financial indices, capacity utilization and total factor productivity growth at aggregate as well as disaggregated level. The total productivity growth has been improved showing favourable impact of liberalization, but capacity utilization and financial indicators reflect dismal declining trend after the path-breaking economic reforms in 1991. There is an urgent need for developing a comprehensive plan for cement industry so that it can survive in the post-liberalized Indian environment and make its presence global.
Chandrakumarmangalam, P, Govindasamy (2010)^3 in their study have discussed the impact of leverage on the profitability of the firm, the relationship between the debt and equity ratio and earnings per share and how effectively the firm is financing it. The leverage and profitability and growth are related to the leveraging impact on the profitability of the firm.

Paul Mazwell-cook, (2007)^4 in his article entitled “The Current Situation in China Cement Industry and its Increased Role on the International Scene” stated that the current situation in the Chinese cement industry is one of unprecedented growth between 2001-2005. Production increased from 66 metric tonnes to 430 metric tonnes, primarily due to the introduction of dry process production. China has also seen an increase in the business it does overseas. Chinese equipment is now helping to build production lines in the Middle East and there are possibilities for extending co-operation with Russia, India, Mongolia and Kazakhstan. As the cement industry looks up to the future, four major themes stand out: the development of PC kilns, the elimination of old fashioned technology, restructuring and the impact of international corporations and financial groups will have as they move into China.
Sanjay, J. Dr, Bhayani (2006)\textsuperscript{5}, in their study made an attempt to study the cost component of cement units under the study. For the purpose of analysis of cost component, all component cost has been calculated as percentage of sales. A study has been made by using data from financial statements of top five cement companies of India, viz, Gujarat Ambuja Cements Ltd. (GACL), Dalmia Cement Ltd. (DCL), Madras Cements Ltd. (MCL), Indian Cements Ltd. (ICL), and Shree Cements Ltd. (SCL). The data of total cost in various cement companies under study have been arranged and classified under the following heads: Raw materials and stores, salaries and wages, indirect wages, power and fuel, depreciation, administrative selling and distribution and other expenses and financial charges. He found out from his study that the most influencing factor in cost structure of cement industry is power and fuel cost. The portion of this cost out of the total cost was 21 percent, where the portion of raw materials cost and selling and distribution and other cost out of the total cost was 19.27 percent and 16.60 percent respectively. So it can be concluded that to improve the profitability of units there is a need to give proper attention towards this cost by corporate. The closest view of analysis showed that the average cost in almost all elements of GACL was closer to the average of industry.
Filebeck, G. and Krueger, T. (2005)\textsuperscript{6} in their study highlighted the importance of efficient working capital management by analyzing the working capital management policies of 32 non-financial industries in USA. According to their findings, working capital practices were significantly different over the time. Moreover, those working capital practices change significantly over the time within industries.

Santanu Kr. Ghosh and Santi Gopal Maji (2004)\textsuperscript{7} “Working Capital Management Efficiency: A Study on the Indian Cement Industry”. This paper makes an attempt to examine the efficiency of working capital management of the Indian cement companies during 1992-93 to 2001-2002. For measuring the efficiency of working capital management three index, values Performance index, utilization index and overall efficiency index, are calculated. Using industry norm as target-efficiency level of the individual firms, this paper also tests the speed of achieving the target of efficiency by an individual firm during the period of the study. The finding of the study indicates that Indian cement industry on the whole did not perform remarkably well during this period.

Alovsat Muslumov (2004)\textsuperscript{8} “The Financial and Operating Performance of Private Companies in Turkish Cement Industry”. This paper examines the post-privatization performance of privatized companies
in the Turkish cement industry. The findings indicate that, when performance criteria for both the state and private enterprises are considered, privatization in the cement industry results in significant performance deterioration. Total value added and the return on investment declines significantly after privatization. This decrease mainly stems from deterioration in asset productivity. The decline in asset productivity, however, is not caused by an increase in capital investment, since post-privatization capital investment did not change significantly. Significant contraction in total employment and an increase in financial leverage after privatization are among the key research findings. Privatization through public offering, gradual privatization and domestic ownership are found to stimulate the financial and operating performance of firms.

Wairau J.J and Wachowiez (2004)9 in their study have discussed aggressive and conservative working capital management policies by using quarterly data for a period from 1984 to 1993, of US firms. The relationship between aggressive and conservative working capital management policies has been investigated by using ten different industries. The authors have concluded that the sample industries had distinguishing working capital management policies. Moreover, the
nature of the working capital management policies showed remarkable
stability over the period. The authors also found that when an aggressive
working capital policy is followed on one side, that is balanced by having
conservative policy on the other hand.

Singh and Pradeep (2002)\textsuperscript{10} has conducted a study entitled
‘Inventory and Capital Management; An Empirical Analysis’. This paper
tries to evaluate the effect of the size of inventory and the impact on
Working Capital through inventory ratio, working capital ratio, and trend
computation of inventory, working capital and liquidity raking. It was
found the size of inventory directly affect working capital and its
Management.

Santanu Kr and Santi Gopal Maji (2003)\textsuperscript{11} conducted a study on
working capital management efficiency of the Indian cement industry.
Objectives of the study were (I) to examine the efficiency of working
capital management practices of the selected cement industry (ii) to test
how fast the sample firms have been able to improve their respective
level of efficiency in their working capital management with respect to a
target level (industry average). They concluded that the Indian industry as
a whole did not perform remarkably well during the period taken up for
the study.
Rajeshwari, N, (2000)\textsuperscript{12} in her study analyzed the efficiency in liquidity management of Tamilnadu Cement Corporation Ltd. (TANCEM), Allangulam, for the period from 1993-94 to 1997-98. She analyzed the liquidity with the help of liquidity ratios and other related ratios form the annual reports of the company and concluded that the liquidity management of TANCEM was not satisfactory.

Govind Rao D, and Rao, P.M., (1999)\textsuperscript{13} studied the impact of working capital on profitability in Indian cement industry and found both positive as well as negative correlation between working capital related ratios and profitability.

Shingh. P.K, (1998)\textsuperscript{14} in his study on efficiency of working capital and corporate profitability (1975 to 1994) found a strong negative relationship between the cash conversion cycle and corporate profitability or a sample of listed American firms for the study period.’

Bhattacharya, H (1997)\textsuperscript{15} in his book “Total Management by Ratios” specified that though accounting ratios played a very important role in most of the studies, a choice of ratios or group of ratios is often a difficult task due to the absence of a proper theory of ratio analysis. To overcome this problem he developed an alternative ratio model for the measurement and monitoring the efficiency of working capital.
Ghosh, T.P and Roy, M.M (1997)\textsuperscript{16} in their study on Leverage, Risk, Market Structure and Profitability have analyzed how far the liquidity of the firm is influenced by economics and industry. Liquidity characteristics have been chosen for replication of the model used elsewhere to judge the industry and economic influence. Liquidity characteristics are judged in terms of current ratio, since they are widely accepted tools of measuring liquidity. In their study they concluded that industry and economy influence on firm’s liquidity characteristic are statistically significant although not dominating. It seems better to develop industry average and economy for comparing firm’s financial characteristics instead of comparing simply with the industry average.

Chandrasekaran N. (1993)\textsuperscript{17} has made an attempt to examine the determinants of profitability in cement industry. Profitability is determined by structural as well as behavioral variables. The other variables, which influence profitability, are growth of the firm, capital turnover ratio, management of working capital, inventory turnover ratio etc. Some of the main changes that had taken place in the cement industry during 1980s are from complete control to decontrol, number of new entrants and substantial addition of capacity, changing technology from inefficient wet process to efficient dry process and from conditions
of scarcity of cement to near glory in the market. The companies were adopting aggressive marketing strategies.

Soenen LA (1993)\textsuperscript{18} investigated the relationship between the net trade cycle as a measure of working capital and return on investment in US firms. The results of chi-square tests indicated a negative correlation between the length of net trade cycle and return on assets. Furthermore, this inverse relationship between net trade cycle and return on assets was found different across industries depending on the type of industry. A significant relationship for industries studied indicted that results might vary from industry to industry.

Jha, Raghbendra, et al. (1991)\textsuperscript{19} has made an attempt to study the structure of costs in the cement, lime, and plaster industry in India. Using aggregate data for the period from 1960-61 to 1982-83 a generalized transom cost function is estimated. It is discovered that this industry has been characterized, by and large, by a locative efficiency; production is characterized by increasing returns to scale. Technical progress has been biased against the use of capital and there exists considerable opportunities for substitution between factors of production.

Lanwani, J (1984)\textsuperscript{20} in his study entitled “Inter relationship between Productivity in Cement Industry” concluded that there was a
negative correlation between profitability and productivity. The causes for negative correlation identified in the present study are government control over the price of cement. The negative correlation is (-0.78) which was high and significant. Even though the heavy loss incurred units were eliminated from the study the negative correlation came down to (-0.31) which indicated the trend that remains the same in the cement industry.

Kanna and Subramanian (1973) have studied 10 units in the cement industry to analyze liquidity, profitability, financial structure and overall performance. They used ratio analysis and merit rating to arrive valid conclusions. They found that the financial structure of the industry had declined over the years. Non availability of funds had affected modernization of plants and periodic rehabilitation of kiln.

**Uniqueness of the present study**

After a review of the available contemporary literature, the present research attempts to differentiate it from previous studies. This research will certainly contribute to fill the gaps which are left out by the previous studies. Ray Sarbapriya and Mihirkumar pal seek to find out the performance of cement industry in the light of capacity utilization and production growth of the business. P.Govindasamy has analysed the
profitability position of the cement industry. The cost structure of the cement industry is analysed by Sanjay and Bhayani. The liquidity position of the cement industry is analysed by Rajeswari. The efficiency of Working Capital Management and corporate profitability are analysed by many researchers. Kanna and Subramanian made an attempt to study liquidity, profitability and solvency position of 10 units in the cement industry.

The researches previously undertaken by various researchers concentrated only on the performance analysis of cement industry with special reference to either solvency or profitability or liquidity position of the company, but the present study has made an attempt to find out the overall performance of the select cement companies in a multi-functional aspect, that is, to assess the liquidity, solvency and profitability of the seven leading private cement companies in India.

The present research attempts to study the comparative performance analysis of giant and leading private cement companies in India. Hence this study may be considered as a different study from earlier ones. The present research after analysing the overall performance identified the reasons for poor performance and offer suggestions for improvement of Working Capital Management of select Cement Companies. The
suggestions given in this study may help the companies to solve their problems and improve their prospects.

1.6. OPERATIONAL DEFINITION AND THE CONCEPTS
1.6.1. Management of Working Capital

The funds required by every business organization can broadly be classified into fixed capital and working capital. Fixed capital is needed for the acquisition of fixed assets, which constitute the basic tools or the means of production. Investment in fixed assets by itself is dead investment and the funds so locked up do not circulate. Similarly every business organization requires some funds to carry on the operation and to purchase goods for sale to earn profit. The funds which are represented by the current capital through various stages of production and distribution are invested in current assets. Thus the operating cycle of every business organization consists of purchasing raw material, for cash processing, production process, converting the stocks in process into finished goods and arranging for sale of these finished goods.

As one batch of raw material undergoes process, expenses of production are incurred and value is being added at each stage of the production process until the materials is converted into finished goods. Other expenses such as interest selling, general and administrative
expenses are also incurred in running the business enterprise and in arranging the sale of finished funds.

In fact as batch as of raw materials are being processed, converted to finished goods and sold, all these expenses are being continuously incurred all the time as long as the process of manufacture and sale is uninterrupted. The industrial list aims at economic operation of this process so that he earns maximum profit through the sale of the finished goods. The sum total of funds deployed at any point of time in the various current assets, used in the operating cycles is called working capital.

1.6.2. Concept of Working Capital

The concept of working capital can be of two types, namely, gross working capital and net working capital.

1.6.3. Gross Working Capital

Gross working capital refers to the capital invested in current assets of the enterprise which, in the ordinary course of business can be converted into cash within a short period of time, normally in one accounting year.

1.6.4 Components of Current Assets

Cash in hand and bank balances, bills receivable, sundry debtors (less provision for bad debts) short term loan and advances, inventories of
raw materials, work in progress, stores and spares, finished goods, temporary investment or surplus prepaid expenses and occurred income are the general components of working capital.

1.6.5. Net Working Capital

In a narrow sense, the term working capital refers to the excess of current assets over the current liabilities or

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\text{Net working capital} = \text{Current Assets} - \text{Current liabilities}
\]

Net working capital may be positive or negative when the current assets exceed the current liabilities which are intended to be paid in the ordinary course of business within a short period of time normally in one accounting year out of the current assets on the income of the business.

1.6.6. Components of Current Liabilities

Bills payable, sundry creditors account payable, outstanding expenses, short term loan, advance and deposits, dividend payable, bank over draft provision for taxation are the components of current liabilities.

1.6.7. Goal of Working Capital Management

The goal of working capital management is to assist in maximizing the value of the firm. This is accomplished by focusing on the magnitude
and timing of cash flow and on the risk and required returns involved. Working capital management focuses on the coordinated control of the firm’s current assets and current liabilities.

1.6.8. **Classification of Working Capital**

Working capital may be classified into two ways:

I. On the basis of concept
   1. Gross and Net Working Capital

II. On the basis of time
   1. Fixed and variable working capital

![Diagram of Working Capital Classification]

- **Working Capital on the basis of concept**
  - Gross Working Capital
  - Networking Capital

- **Working Capital on the basis of Time**
  - Permanent (Fixed)
    - Regular
    - Reserve
  - Temporary
    - Seasonal
    - Special
1.6.9. Permanent or Fixed Working Capital

Permanent or fixed working capital is the minimum amount which is required to ensure effective utilization of fixed facilities and maintaining the circulation of fixed asset. There is always a minimum level of current assets which is required by the enterprise to carry out the normal business operation. This minimum level of current assets is called permanent or fixed working capital as this part of capital is permanently blocked in current assets- as the business grows the requirement of permanent working capital also increases due to the increases in current assets.

The permanent working capital can further be classified into regular and reserve working capital, as the minimum amount of working capital required ensuring circulation of current assets from cash to inventories, from inventories to receivable and from receivable to cash and so on. Reserve working capital is the excess amount over the requirement for regular working capital which may be provided for contingencies that may arise at unstated periods such as strikes, rise in price, depression etc.

1.6.10. Temporary or Variable Working Capital

Temporary or variable working capital is the amount of working capital which is required to meet the seasonal demand and some special
exigencies. Variable working capital can be further classified into seasonal working capital and special working capital. Most of the enterprises have to provide additional working capital to meet the seasonal and special needs. The capital required to meet the seasonal needs of the enterprise is called seasonal working capital. Special working capital is the part of working capital which is required to meet special exigencies such as launching of extensive marketing, campaigns for conducting research etc. Temporary working capital differs from permanent working capital in the sense that it is required for short period and cannot be permanently employed in profitable business.

Figures given below illustrate the difference between permanent and temporary working capital

In Fig. 1 permanent working capital is stable (or) fixed over time while the temporary or variable working capital fluctuates.
In Fig.2 permanent working capital increases with the passage of time due to the expansion of business but fluctuates as variable working capital which increases gradually.

1.7. NEED FOR THE STUDY

The Cement companies are one of the basic industries playing an important role in the economic development of a country. The infrastructural companies and construction activities have created an unprecedented demand for cement. The need to provide adequate accommodation for everyone in the country cannot be over-emphasized. The situation suggests greater collaboration of private sector industries and government agencies towards enhancing increased production of cement in the long run. It is established that for an economy to grow, the construction component has to be 10 to 12 percent of the GDP. China has been using construction tool for the last two decades effectively for infrastructure creation to propel its economy to greater heights. India follows the footsteps of China in this regard. The Cement companies can expect to see good years ahead in the longer term. Demand is expected to grow due to greater focus on infrastructure and housing. Although the companies are capable of meeting their own challenges, still there is a need for assistance need from the government to overcome some of their external
constraints. Cement is not a product that can be easily differentiated. Unlike in the case of consumer goods, customers do not hesitate to switch over between brands. And again, unlike consumer products, the cost structure and sales realization do not permit high levels of expenditure on advertising and promotion. As a result, there is a high degree of competition in cement companies. The quality of customer service becomes an important differentiator. The last few years have seen notable mergers and acquisitions in the Indian cement companies. The companies welcome the trend in as much as it involves players who are genuinely interested in cement as an ongoing business. Consolidation can bring about greater efficiencies and productivity due to economies of scale that should ultimately reach the consumer.

The economic strength of a country is better identified by the per capita consumption of steel, power and cement. The Indian cement industry is the second largest in the world, after China with a turnover of around Rs.7.8 billion and accounting for 6 percent of the world production. The Indian per capita consumption of cement is at 118 kg compared to the world average of 317 kg. Per capita consumption is 366 kg in Thailand, 626 kg in China, 606 kg in Malaysia, and 1216 kg in South Korea. This indicates huge potential for increase in consumption.
This being an essential commodity, it has assumed special significance for its employment potential both direct and indirect. The companies provide direct employment to 1.5 lakh people and indirect employment to 1.2 million people. In this regard the utility of cement has greatly increased over the years. Cement, apart from being used in construction of houses, dams, concrete roads and bridges, is increasingly used in asbestos roof sheets, A.C. pipes, sanitary wares and railway sleeper logs. Adequate production of cement is thus a precondition for intensifying construction activity in the major sectors of the economy. The present study is not an academic one but the finding and conclusion would be more helpful to the policy makers in this regard.

1.8. OBJECTIVES OF THE STUDY

1. To study the origin and development of cement companies in India.
2. To Review the profile of select cement companies in India.
3. To analyze the Working Capital Management of select cement companies in India.
4. To compare the Working Capital Management of select cement companies in India.
5. To consolidate the findings and offer suggestions for improvement of Working Capital Management of select cement companies in India.
1.9. SCOPE OF THE STUDY

This study mainly focuses on Working Capital Management of select cement companies in India. The study also makes an attempt to review the origin and growth of cement companies in India. Profit and Loss account, Balance Sheet. Some of the important key ratios are taken for Working Capital Management analysis. The productivity, profitability, solvency and turnover ratio of selected cement companies have also been analyzed.

1.10. HYPOTHESES

The following hypotheses are framed and tested in this study:

A  There is no significant difference between the growth rate of current assets and shareholders’ funds.
A  There is no difference between the growth rate of gross profit and sales.
A  There is no significant difference between the growth rate of sales and total liabilities.
A  There is no significant difference between the growth rate of current assets and current liabilities.
A  There is no significant relationship between income and total liabilities.
A  There is no significant difference between the growth rate of total assets and shareholders’ funds
A  There is no inter relationship among the components of working capital.

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1.11. METHODOLOGY

1.11.1. COLLECTION OF DATA

The present study is based on secondary data only. Data related to profit and loss account, balance sheet and other key ratios were collected from the published annual reports of select cement companies. Besides, books, journals, magazines, reports, newspapers and various websites have also been referred. Finally the data has been correlated and the Working Capital Management analysis is evaluated.

1.12. PERIOD OF STUDY

The secondary data relating to profit and loss account, balance sheet and key ratios of Working Capital Management of select cement companies in India were collected for the period from 2001-2002 to 2010-2011, covering a period of ten years.

STATISTICAL TOOLS

The following tools were used in the analysis of the data

MINIMUM VALUE

The minimum value of the data is the lower limit.

MAXIMUM VALUE

The maximum value of the data is the upper limit.
MEAN

Mean is a representation of data which indicates the average performance of the Cement Companies.

1.12. CO-EFFICIENT OF VARIATION (CV)

Co-efficient of Variation is a relative measure of dispersion. It is used in such problems where we want to compare the variability of two or more series. It indicates the extent of uniformity or consistency. The lesser the coefficient of variation, the higher is the consistency or uniformity. Symbolically, it represents the relationship of the standard deviation with the mean in terms of percentage.

1.13. TREND ANALYSIS

To study the pattern of the financial parameters during the study period, the polynomial trend equation namely, cubic trend equation of the form, \( Y = b_0 + b_1 t + b_2 t^2 + b_3 t^3 \), where \( b_i \)'s (\( i=1, 2 & 3 \)) are trend coefficients and \( b_0 \) = constant, is fitted, \( t_1 = i \)th year (\( i= 1, 2, 3 \ldots 10 \)). The F-Values indicate the overall significance of the trend equation fitted. The \( R^2 \) the coefficient of determination indicates that to what extent the trend coefficients are able to explain the variations of the dependent variables under study.
1.14. MULTIPLE REGRESSION ANALYSIS

Regression analysis is adopted when one dependent variable is presumed to be a function of two or more independent variables. When there are two or more than two independent variables, the analysis concerning the relationship is known as multiple regression and the equation describing such relationship is known as the multiple regression equation. The objective of this analysis is to make a prediction about the independent variable based on its covariance with all the concerned independent variable. The calculations are carried out at 5 percent and 1 percent level.

1.15. ANALYSIS OF VARIANCE (ANOVA)

Analysis of Variance (ANOVA) is a tool used to test the differences among the means of population by examining the amount of variation within each of these examples, relative to the amount of variation between the samples. It is essentially a procedure for testing the difference among different groups of data for homogeneity. It consists of splitting the variance for analytical purpose. Hence, it is a method of analyzing the variance to which a response is subject to variable and its various components corresponding to various sources of variation.

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1.16. FACTOR ANALYSIS

Factor Analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved, uncorrelated variables called factors. In other words, it is possible, for example, that variations in three or four observed variables mainly reflect the variations in fewer such unobserved variables. Factor Analysis searches for such joint variations in response to unobserved latent variables. The observed variables are modeled as linear combinations of the potential factors, plus "error" terms. The information gained about the interdependencies between observed variables can be used later to reduce the set of variables in a data set. Computationally this technique is equivalent to low rank approximation of the matrix of observed variables. Factor Analysis originated in psychometrics, and is used in behavioral sciences, social sciences, marketing, product management, operations research, and other applied sciences that deal with large quantities of data. Factor Analyses are related to Principal Component Analysis (PCA), but are not identical. Latent variable models, including Factor Analysis, use regression modeling techniques to test hypotheses producing error terms, while PCA is a descriptive statistical technique.
**t-TEST**

Statistical method for testing difference between two samples.

**CORRELATION MATRIX**

A matrix giving the correlations between all pairs of statistics – a branch of applied mathematics concerned with the collective interpretation of quantitative data and the use of probability theory to population parameters

Matrix – (mathematics) A rectangular array of quantities or expressions of rows and columns; treated as a single element and manipulated according to the rules

**GEOGRAPHICAL COVERAGE OF THE STUDY UNIT**

The area of coverage of the study unit focuses on select cement companies in India.

**1.18. LIMITATIONS OF THE STUDY**

The present study is subject to the following limitations:

A This study is restricted to a few cement companies in India.

A This study is restricted to a period of ten years from 2001-2002 to 2010-2011 only.

A Policies and objectives of each company may vary so that comparative analysis becomes a crucial problem for a researcher to derive conclusions.
CHAPTER SCHEME

This present study entitled “A Study on the Working Capital Management of Select Cement Companies in India” consists of six chapters.

The First Chapter covers the Introduction and Design of the Study. It includes Introduction, need for the study, statement of the problem, scope of the study, review of literature, objective of the Study, methodology, framework of analysis, Period of study, limitations of the study and chapter Scheme.

The Second Chapter focuses on Cement companies in India – An overview.

The Third Chapter highlights the profile of the select cement companies in India.

The Fourth Chapter deals with working capital Analysis of select cement companies in India.

The Fifth Chapter deals with performance of select cement companies in India.

The Sixth Chapter presents the summary of findings and suggestions.
END NOTES


6. Filebeck, G. and Krueger, T. (2005) in their study highlighted the importance of efficient working capital management by analyzing the working capital management policies of 32 non-financial industries in USA.


10. Singh and pradeep (2002) has conducted a study entitled “inventory and capital Management; An Empirical Analysis’.


16. Ghosh, T.P and Roy, M.M (1997) in their study on Leverage, Risk, Market Structure and Profitability have analyzed how far the liquidity of the firm is influenced by economics and industry.


19. Jha, Raghbendra,(1991) has made an attempt to study the structure of costs in the cement, lime, and plaster industry in India.

20. Lanwani, J (1984) in his study entitled “Inter relationship between Productivity in Cement Industry” concluded that there was a negative correlation between profitability and productivity.