CHAPTER-2
RESEARCH DESIGN
The developing economies are generally faced with the problems of inefficient utilization of resources available to them. Adding to this problem, such economies also have the problem of scarcity of some of the resources critically required for development. Capital is one of such scarce productive resources, efficient utilization which is very essential to promote the rate of growth, cut down the cost of production, and above all to beef up the efficiency of the productive system. In view of its criticality, the purposeful harnessing of capital is of paramount importance in every policy of economies.

Companies within such economies can rarely be immune to their economy’s problems including scarcity of capital. Companies require capital resource for fixed and working capital requirements of their businesses and therefore, the capital needs to be sufficiently mobilized, properly utilized and managed. However, the emphasis has ever been on the growth and efficiency of fixed capital. The management of working capital has often been neglected, resulting in sub-optimal utilization of working capital and consequently the fixed capital. Management of working capital in a given enterprise has profitability and liquidity implications. Working capital represented by current assets, constitutes a dominant and controllable segment of investment, particularly in manufacturing enterprises, and efforts to prune it or optimize its size must promptly enhance the profitability. These efforts would simultaneously activate the flow of funds through the enterprise by focusing on dormant inventories and overdue outstanding and by curbing the long established tendency of funds to stagnate at different stages in the enterprise operations. Thus working capital offers a common front for profitability and liquidity management.

Importance of working capital can further be judged from the fact that many a time the main cause of the failure of a business enterprise has been found to be the shortage of current assets and their mishandling. Inadequate working capital is a serious handicap in the business. Whereas fixed capital investment generates production capacity, working capital makes the utilization of that capacity possible. Competent administration of current assets solves the problem of underutilization of capacities.
The correlation and interdependence of fixed and working capitals is more in capital intensive industries such as steel, textiles, rubber, and cement etc. Cement industry is a typical representative of the manufacturing industries which not only requires huge fixed capital but also needs significant proportion of working capital for its operations. Cement industry, is indeed the backbone of economic growth in any country. A thick relationship has been found between the level of economic growth and the quantum of cement consumption in developed as well developing countries. Cement industry, through its forward linkages provides the maximum stimulus to growth in other industry also. It is often stated that one employee in cement manufacturing activity supports eight to ten persons in related activities.

In India, since independence, great emphasis has been laid on the development of cement industry. It is one of the key basic industries in India. It plays dominant role in the national economy. Cement industry ranks second after the Iron and steel industry. Cement is indispensable in building and construction works. The production and consumption of cement, to a large extent, indicates a country’s progress. The development of transport, infrastructure, irrigation and power projects etc. depends to a very large extent on the availability of the cement. The per capita consumption level of cement is regarded as one of the indicators of development and standard of living in a nation.

Keeping in mind the above importance of the cement industry in the economic development, it has been considered significant to study the working capital management of industrial units in cement industry. The study aims to analyze the working capital issues like cash management, inventory management, receivable management and liquidity and profitability aspects of the working capital management cement industry along with an objective of analyzing various sources of working capital finance.

**REVIEW OF LITERATURE**

Considerable research has been done in the area of Working Capital Management of which few studies have been reviewed.
The first and foremost study on working capital management in relation to Indian industry was complied and published under the title “Structure of Working Capital” by the National Council of Applied Economic Research (NCAER) in 1966. The study was confined mainly to the analysis of composition of the working capital in Sugar, Cement and Fertilizer Industries during the period from 1959 to 1963. The principal objective of this study was to examine as to what extent these three industries controlled and utilized working capital components. The study revealed that there had been excessive working capital funds locked up in most of these industries. It finally concluded that the need of the hour was to establish good accounting and costing systems, including new techniques of inventory management in each company of these three industries. However, the study failed to put into sharp focus on the various problems involved in the management of different components of working capital.

Mishra analyzed the problems of working capital of six large public enterprises during the period from 1960-61 to 1967-68. The three important components of working capital namely cash, receivables and inventory in the selected units have been thoroughly analyzed. The basic issues outlined in this study and the findings therein have gained currency and relevance to many of the units even today.

Agrawal in his study relating to 34 large manufacturing and trading public limited companies, observed the use of modern control techniques in the areas of inventory, receivables and cash management. His study revealed that there exists a sufficient scope for reduction in investment in almost all the segments of working capital. However, the study tried to draw only general conclusions for all categories of industries and businesses covered in the sample.

Khandelwal in his study analyzed the performance of working capital management in 40 small scale industries located in Jodhpur Industrial Estate. This study made a detailed analysis of performance of management of inventory, receivables, cash and financing aspects in the selected units during the period from 1975-76 to 1979-80.

Rajeswara Rao thoroughly examined the managerial aspects of inventories, receivables and advances and cash of certain Central Public Enterprises in India.
during the period from 1971-72 to 1976-77. The study concluded that the policies and practices of working capital management in Public Enterprises are not useful for achieving the objectives of working capital management.

Eljelly\(^6\) elucidated that efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets. The relation between profitability and liquidity was examined, as measured by current ratio and cash gap (cash conversion cycle) on a sample of joint stock companies in Saudi Arabia using correlation and regression analysis. The study found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that affects profitability. The size variable was found to have significant effect on profitability at the industry level. The results were stable and had important implications for liquidity management in various Saudi companies. First, it was clear that there was a negative relationship between profitability and liquidity indicators such as current ratio and cash gap in the Saudi sample examined. Second, the study also revealed that there was great variation among industries with respect to the significant measure of liquidity.

Deloof\(^7\) discussed that most firms had a large amount of cash invested in working capital. It can therefore be expected that the way in which working capital is managed will have a significant impact on profitability of those firms. Using correlation and regression tests he found a significant negative relationship between gross operating income and the number of days accounts receivable, inventories and accounts payable of Belgian firms. On basis of these results he suggested that managers could create value for their shareholders by reducing the number of days’ accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

Mohan Reddy\(^8\) in his study on “Management of working capital”, studies various issues related to working capital management among selected (six companies) private large – scale companies in the state of Andhra Pradesh during the period from 1977 to 1986. The study revealed that investment in current assets was more than that of fixed assets and inventories constituted highest percentage of total current assets.
Study also pointed out that the liquidity and solvency position of sample units was found to be highly unsatisfactory. The study is based on his findings, suggested the direct need for improvement of liquidity and solvency position of sample companies failing which the situation would lead to serious liquidity crunch.

Ghosh and Maji\(^9\) in this paper made an attempt to examine the efficiency of working capital management of the Indian cement companies during 1992 – 1993 to 2001 – 2002. For measuring the efficiency of working capital management, performance, utilization, and overall efficiency indices were calculated instead of using some common working capital management ratios. Setting industry norms as target-efficiency levels of the individual firms, this paper also tested the speed of achieving that target level of efficiency by an individual firm during the period of study. Findings of the study indicated that the Indian Cement Industry as a whole did not perform remarkably well during this period.

Panda\(^{10}\) studied the problems of working capital in 26 selected small manufacturing companies in the state of Orissa. The study covered the problems of adequacy, the choice, sources and problems of raising working capital.

Kamta Prasad Sing et. al’s\(^{11}\) study analyzed the effectiveness with which the working capital has been utilized in Indian industries in general and the Fertilizer Industry in particular. This study has analyzed the different aspects of working capital management in the Fertiliser Corporation of India and its daughter units and compared them with that of Gujarat State Fertiliser Company Limited during the period from 1978-79 to 1982-83.

Panda and Statapathy’s\(^{12}\) study relates to the analysis of the structure of working capital in ten selected private sector cement companies which are listed in different stock exchanges in India. This study was mainly based on the data obtained from the Stock Exchange Official Directory during 1969 to 1985. This study covered only broader aspects of working capital but failed to study intensively each component of working capital.

Jain\(^{13}\) studied the current practices in the management of working capital in ten selected State Enterprises of Rajasthan and examined the management
performance in this sphere. It also studied the possible remedial measures that could be used efficiently and effectively during 1980-84. It offered various suggestions for the improvement of working capital management enabling State Enterprises reduce their dependence on outside funds.

Mukharjee\textsuperscript{14} studied the performance of management of working capital and its components in twenty Central Industrial and Manufacturing Understandings which are engaged in the production of non-homogeneous items. This study covered a period of five years from 1974-75 to 1978-79.

Verma’s\textsuperscript{15} study on working capital management covered selected units both in public sector and the integrated steel plants in private sector in the country. He made a detailed comparative study of the management of various components of working capital between the selected public and private sector units during the period from 1978-79 to 1985-86.

Rao\textsuperscript{16} in his study analyzed the performance of working capital management in five public enterprises engaged in manufacturing activity and which are owned and managed by the Andhra Pradesh Government during decade 1969-70 to 1978-79. This study analyzed inventory, receivables and cash management and the financing pattern of the working capital. Apart from these aspects, impact of inflation on working capital management had also been analyzed in this study.

Jain\textsuperscript{17} studied the performance of working capital management in selected units of Paper Industry during 1981-82 to 1987-88. He made a comparison between two public sector and five private sector paper mills. This study also analyzed the performance of payables management, apart from the usual area, such as inventory, receivables, cash management and financing pattern of working capital during the study period.

Bairathi\textsuperscript{18} studied the performance of working capital management in selected units of Non-ferrous Metal Industries in Public Sector during 1981-82 to 1985-86. This study analyzed the liquidity and financing aspects of working capital apart from a thorough analysis of inventory, receivables and cash management.
Assam: An enquiry into its problems”, Naik’s study on management of working capital in Sugar Industry”, Gupta’s study on “credit planning and working capital management of Bicycle Industry in India”, are some of the studies conducted in the area of working capital management.

In addition to the above detailed studies on working capital management, several other studies also attempted to analyze the overall efficiency of working capital as a part of their financial analysis. Among these studies the studies of Agarwal, Verma, Nigam, Khan, Gupta, Rao and Madhavilatha, Krishna Reddy and Ramachandra Reddy are important.


All the above studies provide us a solid base and give us idea regarding working capital management and its components. They also give us the results and conclusions of those researches already conducted on the same area for different countries and environment from different aspects. On basis of these researches done in different countries, we have developed our own methodology for research.

This discussion of the importance of working capital management, its different components and its effects on profitability leads us to the problem statement which we analyze.

STATEMENT OF THE PROBLEM

As observed, capital is scarce but is the most important resource for any business, being second only to the entrepreneur himself.

The capital is required for two broad types of assets viz., fixed assets and current assets. While some businesses require more capital for their fixed assets and relatively lower capital for current assets, some other businesses require less capital for their fixed assets and relatively more capital for their current assets.

It is self explanatory that a manufacturing organization requires more capital for its fixed assets and less capital for its current assets. Correspondingly, a service organization requires less capital for its fixed assets and more capital for its current assets. Therefore, it is not illogical to infer that in a manufacturing concern, the
percentage of current assets to total assets should be lower than the percentage of fixed assets to total assets.

Ideally, the capital invested or locked up for a manufacturing concern in its current assets ideally ought not to be more than that invested or locked up in its fixed assets.

Consequently, the logic supports to state that a manufacturing organization is observed as well run so long as it is financially profitable and its percentage of current assets to total assets is lower and in no case is higher than the percentage of fixed assets to total assets.

Therefore, by its intrinsic nature, a study of fixed and current assets to total assets serves as a measure to assess whether an organization is well run or not. A study of proportion of fixed and current assets along with analysis of other financial parameters is certainly a critical angle which cannot be ignored. Considering that there are no studies made in this direction, this research aims at studying the working capital management in cement industry represented by a set of select cement manufacturing organizations.

The problem statement to be analyzed in this study is:

“Management of Working Capital in Select Cement Companies of Andhra Pradesh”

To analyze this problem statement, we have developed objectives of our research, which will hopefully contribute towards a very important aspect of financial management known as working capital management. It is almost untouched in Andhra Pradesh or very little research has been done in this area.

OBJECTIVES OF THE STUDY

The present study aims at

1. examining the structure of working capital in the select cement companies;
2. assessing the effectiveness of inventory management in select cement companies;
3. studying the credit policies in select cement companies;
4. investigating into the utilization of cash resources in select cement companies;
5. probing into the pattern of financing working capital needs in select cement companies; and

6. suggesting appropriate measures for the efficient management of working capital in select cement companies.

**SCOPE AND PERIOD OF THE STUDY**

The present study is restricted to evaluate the efficiency of overall management of working capital and its components, such as inventory, receivables and cash in selected units of cement industry in Andhra Pradesh. This study is confined to the period from 2003-04 to 2012-13.

**RESEARCH METHODOLOGY**

The detailed research methodology is narrated in the following paragraphs:

**Data Base:**

The study is mainly based on secondary data and primary data are collected as per requirements of the study through questionnaire and discussion with concerned company’s finance and accounts executives.

Secondary data is taken from CMIE, Prowess Database and published annual reports of the cement companies. In addition to that, financial literature and published articles on the related aspects are also considered. The secondary data is basically for financial analysis purpose. Various publications of “Cement Manufacturers’ Association”, National Council for Cement and Building Material, World Cement and Stock Exchange Official Directory are used for this purpose. Other information related to the industry are collected from the Economic Times, Financial Express, Business Standard, RBI Bulletin, other periodicals, journals and other various documents of the companies.

**RESEARCH APPROACH AND TOOLS OF ANALYSIS**

The research approach is descriptive observational research. The observed secondary data is used for financial analysis purpose. In the course of analysis, use of various accounting and statistical techniques have been made. Accounting techniques include ratio analysis, trend analysis and common size statements while among
statistical techniques the arithmetical mean, standard deviation, coefficient of variation, maximum, minimum, simple and average growth rates, correlation coefficient, coefficient of determination and linear regression equations have been applied. The use of all these techniques at different places has been made in the light of nature and suitability of data available and requirements of analysis.

**Universe of study:**

The universe consists of all the limited cement companies working in Andhra Pradesh.

**Sampling Plan:**

Sample planning or sample design is the most important aspect for any research study as in most of the cases the entire population cannot be studied and where sample is chosen, unless the sample is representative, the study would not be meaningful nor would it serve any purpose. Further, the very merit of research is to study the population through a selected sample only.

Therefore, a sample should certainly be chosen rather than studying the entire population and such a sample should be a reasonable representative of the population. Considering the above important merits, for the purpose of this study entitled ‘Management of Working Capital in Cement Industry in Andhra Pradesh’ sample has been deduced by way of a deductive method applying the following parameters:

1. Companies manufacturing cement in Andhra Pradesh region comprised of Andhra Pradesh and Telangana
2. Companies undertaking activity of producing cement as their main activity
3. Companies listed on any stock exchange in India
4. Companies that have been in existence for at least 10 years
5. Companies whose financial data is available for the study period i.e., 2003-04 to 2012-13.
Select Sample:

As on March 31, 2013, there are 19 cement manufacturing companies in Andhra Pradesh. Having scrutinized them through the above parameters, the following cement companies emerged as the sample for the study and the same is found to be a true representative:

1. Anjani Portland Cement Limited (APCL)
2. Bheema Cements Limited (BCL)
3. Deccan Cements Limited (DCL)
4. NCL Industries Limited (NCL)
5. Panyam Cements & Mineral Industries Limited (PCNIL)
6. Sagar Cements Limited (SCL)

LIMITATIONS OF THE STUDY

In a research design selected in the study, there is a great chance of personal bias in the selection of sample companies. However, it is attempted to be as objective and impartial to obtain reliable and meaningful results from final analysis. This study is based on secondary data taken from CMIE database as well published annual reports of the said companies and as such its finding depends entirely on the accuracy of such data. Moreover, the data were processed to 12 months on an average basis wherever required. The study is largely based on the financial tool of ratio analysis, which has its own limitations that also applies to this study. Executives, who were interviewed and asked to fill up questionnaire, sometime became very reluctant to share the information on their privacy policy ground. As an alternative, it was possible to collect some relevant information through general discussion with top management finance executives. Hence, the conclusions drawn in the present study should be taken in the light of these deficiencies of data.

SCOPE FOR FURTHER STUDY

Further study on this can be made in the following areas:

- Determine of profitability in Indian cement industry an economic analysis.
- A comparative study of the working capital management of Government and Private cement companies in India.
• A study on the impact of working capital management practices on Indian cement companies.
• International working capital practices in India.

PLAN OF THE STUDY

The present study has been divided into nine chapters.

CHAPTER 1: WORKING CAPITAL MANAGEMENT: A CONCEPTUAL FRAMEWORK

The first chapter covers conceptual framework for working capital management.

CHAPTER-2: RESEARCH DESIGN

The chapter second describes the importance of the study and states the objectives and scope of the study. It also contains brief review of literature and the research methodology.

CHAPTER-3: PROFILE OF SELECT CEMENT COMPANIES FOR THE STUDY

The chapter third deals with a brief profile of select cement companies of Andhra Pradesh for the study.

CHAPTER-4: WORKING CAPITAL MANAGEMENT-OVERALL ANALYSIS

The fourth chapter examines the size, structure, efficiency of working capital in select cement companies of Andhra Pradesh.

CHAPTER – 5: FINANCING OF WORKING CAPITAL

The fifth chapter analyzes the financing pattern of working capital in select cement companies of Andhra Pradesh.
CHAPTER – 2: RESEARCH DESIGN

CHAPTER – 6: INVENTORY MANAGEMENT

The sixth chapter analyzes the efficiency of inventory management by studying the size, composition and adequacy of inventory in select cement companies of Andhra Pradesh.

CHAPTER – 7: RECEIVABLES MANAGEMENT

The seventh chapter evaluates the size, composition, efficiency of receivables management and study the age of receivables in select cement companies of Andhra Pradesh.

CHAPTER – 8: CASH MANAGEMENT

The eighth chapter evaluates the operational adequacy of cash balance by studying the size, composition and funding position in select cement companies of Andhra Pradesh.

CHAPTER- 9: FINDINGS AND SUGGESTIONS

The last chapter summarizes the findings of the study and offers suggestions for efficient management of working capital and its components in select cement companies of Andhra Pradesh.
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