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SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

A reviews of literature pertaining to different facets of material management revealed that majority of studies focussed on various general issues, but throw every little light on the practical aspects of material management in general and materials management in cement industry in particular. Further, there is a limited empirical research on material management which reveals that a very few comprehensive research studies have been conducted in highly capital intensive industry like shipping, steel, Auto mobile etc. Although there is some literature, available on cement industry relating to material pricing, material costing, pollution control etc, there is no evidence of research oriented study on material management in cement industry in general and material management in ACC Ltd, in particular. It is needless to say that there is no evidence of comprehensive research on the polices and strategies of material management in ACC cement works, Wadi.

In the view of the above factors, the present study was undertaken to analyse the growth and development of cement industry, to present a conceptual and functional frame work of materials management and to evaluate the materials management practices in cement industries and for the purpose, a case study of ACC cement works, wadi, was undertaken.

The objectives of the study were set as follows:
The major objective of the present Study is to look into the Materials Management Mechanism in Cement Industry with special reference to ACC Ltd, wadi. However, the specific objectives are:
6) To examine the present practice of Materials Management in ACC in the background of the concept of Materials Management.

7) To evaluate the importance of Materials Management in improving the profitability of ACC.

8) To analyze the supply pattern of various raw materials in ACC.

9) To identify the major problems of Materials Management in ACC.

10) To make concrete suggestions for improving the Materials Management system and practices in ACC, in the light of the findings of the study.

With the above objectives in view, the researcher formulated some hypotheses for the empirical verification. The present study is, therefore descriptive, analytical and explorative. The data needed to active the objectives of the study and test the hypotheses set, was collected both from primary and secondary sources. The secondary data was collected from different sources like, annual reports of the company, journals, magazines, library net works, websites etc. The primary data were collected from the employees working in the ACC cement works, wadi, who were, categorized, for the purpose of study, as workers and executives. The primary data was collected by administering questionnaires to these categories of employees. Stratified sampling technique was used for selecting sample respondents from among the employees of ACC cement works, wadi. Steps have been taken to give proper representation to all the departments / sections engaged in materials management in ACC cement works, wadi. 400 workers and 125 executive were administered questionnaires for collection of primary data. But 300 workers and 100 executives returned duly filled up questionnaires. The survey was conducted during the year 2011. The data has been analyzed and interpreted using simple statistical tools and hypotheses have been tested applying inferential and descriptive statistical techniques.
The objective of this chapter is to present a synoptic account of the findings of the study and to offer suitable suggestions to company to improve its efficiency and effectiveness in formulating the policies and strategies of materials management and to come out with higher level of performance.

**LAYOUT OF THE STUDY:**
The study has been presented in six chapters.
The first chapter is of introductory nature. It presents an introduction to Materials Management and Cement Industries. It also presents the survey of literature, need for the study, hypotheses formulated, and the scope of study, the methodology adopted for the study comprising methods of data collection, sample design, data analysis etc, and limitations of the study.

The second chapter presents the conceptual and functional framework of materials management, comprising definition and meaning of materials management, its objectives, its scope and functions, Integrated Materials Management and details regarding major activities of materials management.

In the third chapter, history of cement and growth and development of cement industry in the world, in India and in Karnataka have been presented.

In the fourth chapter, the profile of Gulbarga Districts and the profile of ACC Ltd, with special reference to ACC cement works, wadi, have been presented. This chapter focuses on details of Gulbarga district, growth and development of Acc Ltd, its organization structure and its performance.

The fifth chapter presents the analysis and interpretation of primary data collected from workers and executives of ACC cement works, wadi. This chapter also provides the details of testing of hypotheses and conclusions drawn.
In the sixth and the concluding chapter, the summary of survey findings has been presented. Besides, in the light of finding of the study, suggestions have been made for the improvement of materials management practices adopted by ACC cement works, wadi, followed by formal conclusion:

MAJOR FINDINGS OF THE STUDY

In what follows, is the summary of findings of the study:

1. Conceptual and functional frame work of materials management

Materials management is a total concept involving an organizational structure unifying into a single responsibility, the systematic flow and control of material from identification of the need through customer delivery. This definition of materials management given above has been accepted by the International Federation of Purchasing and Materials Management. Included within this concept are the material functions of planning, scheduling, buying, storing, moving and distributing. These are logically represented by disciplines of production and inventory control, purchasing and physical distribution. The objective of materials management is to contribute to increased profitability by coordinated achievement of least materials cost. This is done through optimizing capital investment, capacity and personnel, consistent with the appropriate customer service level.

In the annals of Material Management, very richly it has been described as Last Goldmine. The success of an organization actually rests in the way it manages the inputs. The substantial amount of project cost and time can be managed only by adopting the sound principles of Material Management. Over the years, industry and business have seen innovators; some conceived radically new ideas in the manufacturing technology, in finance and marketing while others concentrated on the use of human resources in the industrial environment. Material Management is one of the recent additions to the glossary of Management and its
objective is to contain materials costs on all fronts and to optimize the overall end results.

While the field of materials management covers all aspects of material costs, supply and utilization, opinion is divided as to what functions should be included under the unified working of materials manager. In the opinion of experts on materials management, the following eleven functions may come under the headship of materials manager: Materials planning and sourcing, Purchasing, Stores keeping, Inventory planning, Receiving, warehousing and transportation, Value analysis and pre-design value analysis, Standardization and variety reduction, Production planning and production control, Vendor development, Material handling, Disposal of scrap and surplus.

2. Integrated Materials Managements
Having recognized the importance of the materials management function, let us now see why an integrated approach is necessary. Various functions served by materials management include the materials planning, purchasing, receiving, stores, inventory control, scrap and surplus disposal. If some of these functions are separately handled, there is a chance of a conflict of interests. Purchasing department, if allowed to operate independently, may take decisions which result in sub-optimization. For example, under a separate set-up, the purchase department may treat discount as a very important factor and buy large quantities to avail of the discount without taking into account its impact on the warehousing and carrying costs. In other words, we need to achieve optimum results for the organization as a whole. An expansion, for example, will require planning for the increased requirements, developing new sources, revision in inventory levels, apart from the increased load in receipt of material, inspection and storing.
In an integrated set-up, the materials manager who is responsible for all such inter-related functions, is in a position to exercise control and coordinate with an overview that ensures proper balance of the conflicting objectives of the individual functions. Integration also helps in the rapid transfer of data through effective and informal communication channels. This is crucial as the materials management function usually involves handling a vast amount of data. Therefore, integrating the various functions ensures that message channels are shortened and the various functions identify themselves to a common materials management department, which, in turn, results in greater coordination and better control.

3. Growth and development of a Cement Industry in the World, in India and in Karnataka

Cement is one of the core industries which plays a vital role in the growth and expansion of a nation. It is basically a mixture of compounds, consisting mainly of silicates and aluminates of calcium, formed out of calcium oxide, silica, aluminium oxide and iron oxide. The demand for cement, being a derived one, depends primarily on the pace of activities in the business, financial, real estate and infrastructure sectors of the economy. Cement is considered preferred building material and is used worldwide for all construction works such as housing and industrial construction, as well as for creation of infrastructures like ports, roads, power plants, etc. Thus, it can said to be a significant contributor to the Government's revenue collection and a pillar of overall planned development of an economy. Cement production worldwide keeps growing. In the 1990's it increased by about 50%. In 2003, 1940 million tonnes of cement were manufactured worldwide. Such a quick growth from the dynamic development of cement industry in Asia. However it has increased to 3300 million tonnes in 2010 and 3400 million tones in 2011. The major producers of cement at present are China, Japan, India, Turkey, Brazil, Vietnam, are producing more 3/4 th of world’s
The major global players are: LAFARGE, HOLCIM, HEIDELBERG, and CEMEX.

The history of the cement industry in India dates back to the 1889 when a Kolkata-based company started manufacturing cement from Argillaceous. But the industry started getting the organized shape in the early 1900s. In 1914, India Cement Company Ltd was established in Porbandar with a capacity of 10,000 tons and production of 1000 installed. The World War I gave the first initial thrust to the cement industry in India and the industry started growing at a fast rate in terms of production, manufacturing units, and installed capacity. This stage was referred to as the Nascent Stage of Indian Cement Company. In 1927, Concrete Association of India was set up to create public awareness on the utility of cement as well as to propagate cement consumption. India, being the second largest cement producer in the world after China with a total capacity of 151.2 Million Tones (MT), has got huge Cement Company. With the government of India giving boost to various infrastructure projects, housing facilities and road networks, the cement industry in India is currently growing at an enviable pace. More growth in the Indian cement industry is expected in the coming years. It is also predicted that the cement production in India would rise to 236.16 MT in FY11. It's also expected to rise to 262.61 MT in FY12. The cement industry in India is dominated by around 20 companies, which account for almost 70% of the total cement production in India. In the present year, the Indian cement companies have produced 11 MT cement during April-September 2009. It took the total cement production in FY09 to 231 MT. The cement industry in India is dominated by around 20 companies, which account for almost 70% of the total cement production in India. In the present year, the Indian cement companies have produced 11 MT cement during April-September 2009. It took the total cement production in FY09 to 231 MT.

Karnataka ranks 7th in terms of production of cement in the country. There are 16 Cement industries in Karnataka producing around 11 million tons per annum of cement.
cement (which is around 6.51% of India’s production. The export of cement from Karnataka was 0.01 Million Tons. The State has limestone deposits of about 17,253 million tons out of India’s total reserves of 76,464 million tons (22.56%) of India’s reserve. 126 companies have been granted leases for mining limestone in an area of 7991 hectares of land and these companies are annually extracting 16.29 million tons of limestone. 19 cement projects are approved in the State by the State High Level Clearance Committee in the last 3 years with a total capacity of 44 million tons per annum. The state government expects to add at least 20 million tones of cement by the end of 2011. The booming demand for cement, both in India and abroad, has attracted global majors to the state. These include Lafarge from Switzerland, Heidelberg from Germany and others.

4. ACC Ltd – General Profile:
ACC (ACC Limited) is India's foremost manufacturer of cement and concrete. ACC's operations are spread throughout the country with 16 modern cement factories, more than 40 Ready mix concrete plants, 20 sales offices, and several zonal offices. It has a workforce of about 9,000 persons and a countrywide distribution network of over 9,000 dealers. Since inception in 1936, the company has been a trendsetter and important benchmark for the cement industry in many areas of cement and concrete technology. ACC has a unique track record of innovative research, product development and specialized consultancy services. The company's various manufacturing units are backed by a central technology support services centre - the only one of its kind in the Indian cement industry. ACC has rich experience in mining, being the largest user of limestone. As the largest cement producer in India, it is one of the biggest customers of the domestic coal industry, of Indian Railways, and a considerable user of the country’s road transport network services for inward and outward movement of materials and products.
5. ACC Cement works, wadi:

ACC first set up a cement plant at Wadi in 1968. Then in 1978 the plant introduced the use of the energy efficient pre-calcinator technology from Mitsubishi for the first time in India. It made news again in 1982 when it inducted India's first one million tonnes per annum kiln. A new plant was established in 2001 close to the old one. It came to be called New Wadi Plant. Comprising of one cement kiln with a capacity of about 5500 tonnes per day or 2 million tonnes per annum, it was again the largest kiln in India. All operations at Wadi are now mammoth in scale and setting new trends and benchmarks ACC the largest limestone mining operations, the largest captive power plant in the industry, largest inward and outbound logistics and the largest in bulk cement operations. The project reinforces ACC's commitment to environment conservation in more ways than one. The plant incorporates sophisticated environment management systems and equipment that are designed to maintain very high levels of emission control. The two satellite grinding units manufacture environment-friendly blended cements using hazardous industrial waste by-products such as fly ash from thermal power plants and slag from steel plants. In addition Wadi promotes the use of alternate fuels through the co-processing of wastes. "This has been a major milestone not only for ACC but also for the entire cement industry to see the successful commissioning and stabilization of clinker production from the World’s largest kiln at Wadi”. Wadi works directly or indirectly provides livelihood to 10000 people. It employees about 1600 people as permanent employees and 600 as contract. In addition there are people working as Transporter, Drivers, and Cooks etc. Apart from these there are a large number of businesses flourishing on account of ACC-these are as drivers as Tailoring to pan shops to STD booths, etc.
6. Analysis of data collected from workers

The data collected from worker respondents of ACC cement works, wadi, with regard to materials management practices followed by the works has been analyzed and interpreted. In what follows is the summary of observations made on such analysis.

1) **Age Composition of the workers:** The Study reveals that 38 percent of the workers are in the age group of 30-35 years and 36.7 percent of the workers are in the age group of less than 30 years. It is revealed by the Study that 19.7 percent of the respondents are in the age group of 35-40 years and 5.6 percent are above 40 years. Thus, it is evident that ACC, wadi, is dominated by the young workers because almost 75 percent of the workers are less than 35 years of age. The success of ACC, wadi, is more in the young workers that it has managed to maintain successfully.

2) **Education Level of the workers:** It is found by the Study that 35.3 percent of the workers have the education less than graduation and 33.7 percent of workers are graduates. It is also found that 14 percent of post graduates and 17 percent have other types of education like ITI, Diploma etc., A close observation reveals the fact that almost half of the workers of ACC, wadi, are graduates and post graduates. The graduates and post graduates occupy the positions to govern and control whereas, the remaining serve the ACC, wadi, in various departments.

3) **Nature of Work:** It is found that 71.3 percent of the workers is performing actual Implementation level work and 28.7 percent are the supervisor. The actual Implementation level workers include all those who are working in various departments who are both technical and non-technical. Even the support workers like helpers, supervisors, the workers in packing department, transportation and the like. Thus, it is evident that the actual implementation level workers of ACC are in majority.
4) **Experience of the workers:** The Study reveals that 42.3 percent of the workers of ACC Wadi have the experience of 5-10 years and 34.3 percent have the experience less than 5 years. It is revealed by the Study that 18.1 percent have the experience of 10-15 years and 5.3 percent have the experience of more than 15 years. It is evident from the above that the staff in the range of 5-10 years of experience are in majority in ACC. It is interesting to know that even 34.3 per cent are quite less experienced. Almost one third of the staff of ACC have the experience of more than 10 years indicates the stability of the workers. Due to expansion and renovation at ACC, Wadi, the opportunities for the workers appear to be quite nascent.

5) **Salary Details:** It came to know that 54 percent of the respondents get salary less than Rs.10,000 and the of 37.3 percent are in the salary range of Rs.10,000 to 20,000 per month. The researcher found the 5.7 percent are in the salary range of Rs 20,000 to 30,000 per month and 3 percent of the workers get the salary more than Rs.30,000 per month. The reason behind such varied information is that the cement plants normally required more implementation level workers than the supervisory workers. Researcher when enquired with the support workers about their perception on salary they expressed that it is as per the rule they are getting the salary and not because of any merciful considerations.

6) **Principles of Materials Management:** It is found that the response of 95.3 percent of the workers is that the company is following the principles of materials management. A very negligible 4.7 percent reveals that the company is not following the principles of materials management. This negligible opinion may be from the sample of the helpers, transporters and those who are not directly involved with the concerned department. Thus, there is unanimity of opinion among the workers that the company is following the principles of materials management in its functioning.
7) **Planning of Materials:** It is found by the Study that 62.3 percent of the respondents opined that planning of materials is well made in ACC and 37.7 percent opined that the organization lacks it. It is obvious that close to two thirds response is that the organization practices planning of materials. The reasons behind the one third of the workers response may be due to the fact that they may not be directly related to the concerned department which plans materials. The researcher during the survey interacted with the workers and many of the workers responded that the planning for materials is made independently for each department. But it is obvious that the planning of materials is well made by ACC.

8) **Budgeting of Materials:** The Study reveals that 65 percent of the respondents have opined that the budgeting of materials is made in ACC, wadi, and 35 percent inferred that it is not. Thus, the opinion of the respondents by two thirds is that the budgeting of the materials is well made in ACC.

9) **Inventory Forecasting:** The researcher found that 80.3 per cent of the respondents opined that inventory forecasting is practiced in ACC and 19.7 percent expressed their opinion that the system of inventory forecasting is not made. It can be inferred very conveniently that inventory forecasting is practiced by ACC Wadi

10) **Order Scheduling:** The Study reveals that 70.7 percent of the respondents opined that order scheduling is practiced by all the departments of ACC and 29.3 percent opined that the order scheduling is not in practice. Order scheduling is more a technical job which will be well understood more by the executors than the support workers. Thus, order scheduling in ACC is well practiced by all the department.
11) **Inventory Control:** The study reveals that 88.3 percent of the respondents opined that inventory control is well practiced and 11.7 per cent expressed that it is not in practice. It is a established fact that the inventory control is highly practiced by ACC. The success of ACC, wadi, is more depending upon its control over inventory and input supply.

12) **Safety of Stock:** It is found by the study that 70 percent of the respondents expressed that safety of stock is ensured in ACC. But 30 percent revealed that it is not. The reasons behind such response may be due to the fact that those who are in administrative and technical positions may have the view that safety of stock is assured but those who are working temporarily and with lesser education may have such suspicions like lesser safety of stock.

13) **Terms of Purchase:** It is revealed that 44.3 percent of the respondents agree that terms of purchase are appropriate and 40.7 percent revealed that they highly agree with the question on the terms of purchase. Thus, it is evident that ACC has a standard practice of contracting agreements relating to the terms of purchase.

14) **Follow-up procedure:** It is found that 42 percent of the respondents expressed that they highly agree with the follow-up procedure and 33 percent opined that they agree. This clearly shows that the follow-up procedure system in ACC is systematic. The opinion of 19 percent of the respondents is that they disagree with the proposition of follow-up procedure.

15) **Supply of Quality Materials:** The study reveals that 39.7 percent of the respondents expressed the opinion that they highly agree with the statement that ACC gets qualitative materials and 27.3 percent also opined that they agree. 27 percent disagree that quality of materials supplied is not perfect. Thus, supply of quality of materials is ensured for ACC.
16) **Transportation System:** It is revealed by the study that 31.7 percent of the respondents expressed that they disagree with the contemporary transport system but the opinion of 30.3 percent is that they agree and 21.7 percent opined that they highly agree with the present system of transport by ACC. Cement industry requires optimum transport support that too it requires railway transport to a great extent for longer distances. Mixed reactions are possible because of too many modes requirement and also shifting involves cumbersome movements. ACC has to take measures to improve the transportation system.

17) **Effective Functioning of Stores Department:** It is found that 87 percent of the respondents opined that the stores department is functioning effectively and 13 percent expressed that functioning is not effective. The majority opinion is enough to show that the stores department is effective in its functioning in ACC.

18) **Preservation System:** The study reveals that 57.3 percent of the workers opined that the preservation system is perfect in ACC. The opinion of 31 percent is that they highly agree with the fact that the preservation system is perfect. Thus, it is evident that ACC maintains state of the art preservation system.

19) **Handling Materials:** It is found that 50.3 percent of the workers expressed that they highly agree with the proposition of handling materials is accurate and 33.7 percent also expressed that they agree for the proposition. Thus, almost 84 percent of the respondents opine that handling of materials is well practiced in ACC.

20) **Waste Disposal:** The study revealed that 32.3 percent of the respondents disagreed with the waste disposal mechanism and 29.7 percent expressed that they agree with it. The opinion of 26 percent of the workers towards waste disposal is highly agree indicating their acceptance of the company
policy towards waste disposal. Thus, waste disposal in ACC has mixed reaction from the workers.

21) Labour Problem: It is evident from the study that 79.3 percent of the respondents opined that ACC is confronted with labour problems and 20.7 percent expressed that no such problem has crept in for the company. The majority opinion clearly shows that labour problems are haunting the company.

22) Staff Co-ordination: It is revealed that 72 percent of the respondents opined that they agree towards the workers co-ordination and 19 percent expressed that they highly agree with it. Thus, 91 percent of the respondents are in favor of the proposal that there is perfect co-ordination among the workers in ACC.

23) State of Technology: It is evident from the study that 61.3 per cent of the respondents expressed that they highly agree with the modern technology adopted in ACC. 26 per cent of the respondents opined that they agree and 10 per cent of the respondents expressed that they disagree. Thus it is evident that in ACC modern technology is ensured.

24) Power Problems: The study reveals that 41 percent of the respondents opined that power problems are not affecting ACC and 29.3 percent of the respondents expressed that they highly agree with it that the company is not caught with the problem of power. Since the firm has established its own thermal plant with 125 Megawatt capacity. It has not struggled with power problems. Thus, it is evident that ACC has evolved a suitable strategy to manage and solve the problem of power.

25) Packing Mechanism: It is revealed by the study that 30.7 percent of the respondents expressed that packing mechanism is perfect and 31 percent opined that they agree with the opinion of packing mechanism. But it is the view of about 27.7 respondents that they disagree with the proposition and
packing mechanism is not perfect. This clears the fact that the company can better the mechanism of packing.

26) Government Policies: The study reveals that 35.3 percent of the respondents disagreed with the statement but 24.3 percent highly agreed for the same. The opinion of 18 percent of the respondents was that they were unable to infer on impact of government policies.

7. Analysis of data collected from executives respondents of ACC wadi.

The data collected from executive respondents of ACC wadi, has been analyzed and interpreted. In what follows is the summary of observations made on such analysis:

1) Age of the Executives. The Study reveals that 57 per cent of the executives are in the age group of 30-40 years and 33 per cent of the executives are in the age group of less than 40-50 years. It is revealed by the Study that 10 per cent of the respondents are in the age group of 20-30 years. Thus, it is evident that ACC is dominated by the experienced executives because almost 90 per cent of the executives with ability, functioning knowledge and have understood the firm very well. The success of ACC is more due to these experienced executives who have managed ACC successfully.

2) Level of Education: It is found by the Study that 27 per cent of the executives have the education less than graduation and 53 per cent opined that they are graduates. It is the opinion of the respondents that 10 per cent of post graduates and 10 per cent have other types of education like ITI, Diploma etc., A close observation reveals the fact that more than half of the executives of ACC are graduates and post graduates. The graduates and post graduates occupy the positions to govern and control whereas, the remaining serve the ACC in various departments.
3) **Experience of the Executives**: The Study reveals that 58 per cent of the executives of ACC, Wadi, have the experience of 10-15 years and 26 percent have the experience less than 5 years. It is revealed by the Study that 14 per cent have the experience of 15-20 years and 2 percent have the experience of more than 20 years. It is evident from the above that the executives in the range of 10-15 years of experience are in majority in ACC. It is interesting to know that even 26 percent are quite less experienced. More than half of the executives of ACC have the experience of more than 10-15 years indicates the stability of the executives. Due to expansion and renovation at ACC, Wadi, the opportunities for the executives appear to be quite nascent.

4) **Nature of Work**: It is found by the Study that 86 percent of the executives are performing technical tasks in various departments and 14 percent are from administration. The non-administrative executives include all those who are working in various departments, who are managing the day to day functioning of the company. Thus, it is evident that technical executives are in majority.

5) **Salary of the Executives**: The Study reveals that 41 percent of the respondents get their salary in the range of Rs. 25000 to 35000 and 31 percent was that they are in the salary less than Rs. 25000 per month. The researcher found the 22 percent are drawing the salary above Rs.45000 and about 6 percent of the executives are getting in between Rs.35000 to Rs.45000 per month. It is evident from the above that the executives drawing Rs.25000 to 35000 are in majority, and 31 percent are drawing less than Rs.25000 occupies the second position relating to salary. Researcher when enquired with the executives about their perception on salary they
expressed that it is as per the rule they are getting the salary and not because of any merciful considerations.

6) **Principles of Materials Management:** The researcher found that the response of 90 percent of the executives is that the company is following the principles of materials management. A very negligible 10 percent reveals that the company is not following the principles of materials management. This negligible opinion may be from the sample of the executives heading helpers, transporters and those who are not directly involved with the concerned department. Thus, there is unanimity of opinion among the executives for the company following the principles of materials management in its functioning.

7) **Materials Planning:** In the study it is found that that 63 percent of the respondents opined that planning of materials is well made in ACC and 37 percent opined that the organization lacks it. It is obvious that close to two thirds response is that the organization practices planning of materials. The reasons behind the one third of the executive’s response may be due to the fact that they may not be directly related to the concerned department which plans materials. The researcher during the survey interacted with the executives and many of the executives responded that the planning for materials is made independently for each department. But it is obvious that the planning of materials is systematically followed in ACC.

8) **Material Budgeting:** It is revealed by the study 59 percent of the respondents have opined that the budgeting of materials is made in ACC and 41 percent inferred that it is not. Thus, the opinion of the respondents by two thirds is that the budgeting of the materials is well made in ACC.
9) **Inventory Forecasting:** It is revealed by the study 36 percent of the respondents disagreed with the inventory forecasting mechanism practiced in ACC and 34 percent of the executives expressed their opinion that the system of inventory forecasting is made. 28 percent of the respondents opined that they highly agree with the existing practice of inventory forecasting. It can be inferred very conveniently that inventory forecasting is implemented by executives in ACC, Wadi.

10) **Scheduling Orders:** In the study it is found that 47 percent of the respondents opined that order scheduling is not practiced by all the departments of ACC and 31 percent opined that the order scheduling is in practice. Order scheduling is more a technical job which will be well understood more by the executors than the support workers. Thus, order scheduling in ACC is not well practiced by all the departments.

11) **Monitoring Production and sales:** It is revealed by the study 37 percent of the respondents opined that the system of monitoring production is not efficient and contrastingly 27 percent viewed that it is efficient. Even the opinion of the 20 percent of the respondents is that it is efficient. It is thus evident that respondents are equally divided over the system of monitoring production.

12) **Safety of Stock:** The researcher found that 83 per cent of the respondents expressed that safety of stock is ensured in ACC. But 17 percent revealed that it is not. The reasons behind such response is because of the perfect safety mechanism adopted by ACC. Computerization has solved the earlier conventional human centric system which led to lapses at many levels.

13) **Selection of Input Suppliers:** The study reveals that 83 percent of the executives agreed with the proposition that in ACC the selection of input
suppliers is systematic and 15 percent also expressed their opinion that they highly agree with the question of selection of input suppliers. Thus, Wadi plant of ACC succeeded in the selection of input suppliers.

14) Terms of Purchase: In the study it is found that 59 percent of the respondents expressed their opinion that terms of purchase are contracted by ACC and 30 percent revealed that they agree with the question on the terms of purchase. Thus, it is evident that ACC has a standard practice of contracting agreements relating to the terms of purchase.

15) Systematic Follow-up Procedure: It is revealed by the study 37 per cent of the respondents expressed that they agree with the follow-up procedure and 30 per cent opined that they highly agree. This clearly shows that the follow-up procedure system in ACC is systematic. The opinion of 29 per cent of the respondents is that they disagree with the proposition of follow-up procedure.

16) Quality of Materials: It is revealed by the study 45 per cent of the respondents expressed the opinion that they disagree with the proposition that ACC gets qualitative materials but contrastingly 35 per cent also opined that they highly agree with the quality of materials. Even 18 percent agreed with that of the supply of quality materials. Thus, it is the opinion of the 53 percent of the executives that supply of quality of materials is ensured for ACC.

17) Materials Supplied on Time: The study reveals that 42 percent of the executives inferred that they disagree to the question of material supply on time who are in majority. But it is interesting to note that 28 percent of the respondents viewed that they agree with the proposition of timely supply of
materials. Even 20 percent of the executives also added their voice that at ACC, Wadi, and timely supply of materials is taking place.

18) **Transportation System:** The researcher found that 28 percent of the respondents expressed that they disagree with the contemporary transport system but the opinion of 25 percent is that they agree and 18 percent opined that they highly agree with the present system of transport by ACC. Cement industry requires optimum transport support that too it requires railway transport to a great extent for longer distances. Mixed reactions are possible because of too many modes requirement and also shifting involves cumbersome movements. ACC has to take measures to improve the transportation system.

19) **Effective Functioning of Stores Department:** In the study it is found that 97 percent of the respondents opined that the stores department is functioning effectively and it is 3 percent expressed that functioning is not effective. The majority opinion is enough to show that the stores department is effective in its functioning in ACC.

20) **Preservation System:** It is revealed by the study 92 percent of the respondents opined that the preservation system is perfect in ACC. The opinion of 6 percent is that they highly agree with the fact that the preservation system is perfect. Thus, it is evident that ACC maintains state of the art preservation system.

21) **Materials Handling:** The researcher found that 69 percent of the executives expressed that they highly agree with the proposition of handling materials is accurate and 27 percent also expressed that they agree for the proposition. Thus, almost 96 percent of the respondents opine that handling of materials is well practiced in ACC.
22) **Waste Disposal:** The researcher found that 49 percent of the respondents opined that waste disposal mechanism followed in ACC is perfect. 21 percent of the respondents opined that they agree. But 26 percent of the respondents expressed that they disagree with the waste disposal mechanism. Thus, 70 percent of the respondents opined that waste disposal mechanism is well practiced in ACC but there is always a scope for improvement.

23) **Stores Records:** The study reveals that 45 percent of the respondents disagreed with the stores records at ACC, Wadi. The opinion of the 29 percent of the executives is that they highly agree with the stores records and 26 percent also expressed that they agree for the proposition of stores records are satisfactory. Thus, there is need for the stores department to better record at ACC, Wadi.

24) **Workers Co-ordination:** In the study it is found that 81 percent of the respondents opined that they agree towards the workers co-ordination and 17 percent expressed that they highly agree with it. Thus, 98 percent of the respondents are in favor of the proposal that there is perfect co-ordination among the workers in ACC.

25) **Technology Adopted:** It is revealed by the study 49 percent of the respondents expressed that they highly agree with the modern technology adopted in ACC. 38 percent of the respondents opined that they agree and 9 percent of the respondents expressed that they disagree. Thus it is evident that in ACC modern technology is ensured.

26) **Power Problems:** The researcher found that 32 percent of the respondents opined that power problems are not affecting ACC and 29 percent of the
respondents expressed that they agree with it that the company is not caught with the problem of power. Thus, it is evident that ACC has evolved a suitable strategy to manage and solve the problem of power.

27) Packing Mechanism: The study reveals that 25 percent of the respondents expressed that packing mechanism is perfect and 22 percent opined that they highly agree with the opinion of packing mechanism. But it is the view of about 23 respondents that they disagree with the proposition and packing mechanism is not perfect. This clears the fact that the company can better the mechanism of packing.

28) Government Policies: In the study it is found that 32 percent of the respondents agreed with the statement but 30 percent disagreed for the same. The opinion of 26 percent of the respondents highly agreed but the opinion of 8 percent of the respondents was that they were unable to infer on impact of government policies.

SUGGESATIONS
The opinions in respect of materials management practices have been collected from workers and the executives of ACC cement works, wadi. The data so collected have been separately analyzed and interpreted. The hypotheses have also been tested and conclusions have been drawn. Majority of the opinions of respondents reveal that almost all the materials management practices of ACC, wadi, are systematic, effective and appropriate. It does not confront the problems of raw materials, power etc. All these factors do not mean do not mean that there is no need for further improvement. Negative opinions of certain percentage of respondents and mixed opinions of respondents on certain issues of materials management of ACC wadi, clearly show that the company has to take steps for enhancing the effectiveness of its materials management practices.
In this part of the chapter, the researcher tries to present, in the light of the findings of survey, certain suggestions for enhancing effectiveness, efficiency and suitability of materials management’s practices in ACC cement works, Wadi, in particular and cement industry in general.

1. It has been observed during the survey that, materials planning, procurement practices and inventory control are systematically undertaken in ACC cement works, Wadi. But there are certain percentage of workers and executives who have not agreed with this issue. Therefore, it can be inferred that there are some areas of dissatisfaction. Therefore, it is suggested that, the entire procurement and inventory management should be professionalized so that there will be greater efficiency and responsibility with all those concerned for the activities like budgeting of materials, inventory forecasting, order scheduling, receiving of goods etc, being undertaken with utmost care and effectiveness.

2. It is observed during the survey that there is mixed opinion among the respondents about supply of quality materials for the production. Unless it is ensured, there can’t be supply of quality of product to the customers. Therefore, it is suggested that steps should be taken for reorganizing the system of supply of materials.

3. Although the majority of respondents agree that materials handling, provision of safety to the stock, transportation system, preservation system and other functions related to stores control are effectively under taken, there are some negative opinions offered by some respondents with regard to above functions. Therefore, it is necessary for the organization to look into these functions to reduce cost in performing these functions and to come out with greater effectiveness. There is mixed opinion as to proper performing of waste disposal. This should be looked in to with greater caution. This serves not only individual company’s cause but also social cause.
4. It is observed during workers’ survey that ACC Ltd. is confronted with labour problems. Therefore, the company should take measures not only to attract right quality and quantity of human resources, but also to maintain them. Therefore, the company should introduce alternative salary and incentive schemes and take necessary steps for boosting morale of workers.

5. As already discussed, the various functions served by materials management include the materials planning, purchasing, receiving, stores, inventory control, scrap and surplus disposal. If these functions are separately handled, there is a chance of conflict of interest. All these functions are to be properly integrated. The opinions of the respondents show that there is co-ordination among the staff. For achieving higher efficiency and effectiveness in performing materials management activities, greater emphasis should be given for adoption of integrated approach while restructuring the organization.

6. As for monitoring of production in all shifts is concerned, opinions are equally divided as to its effectiveness. Half of the respondents agree that it is effective but other half disagree with the issue. Monitoring of production is highly necessary for maintaining the quality of products. The company should take necessary steps for proper monitoring of production. Maintenance of sectional flow charts and reporting of feedback on daily basis will help in this regard.

7. Manufacturing of cement is associated with health hazardous of employees and environmental concerns. It is observed during the survey that there are some concerns expressed by respondents with regard to this issue. Therefore, health care of the employees must be the priority of the management and the company has to take appropriate steps for releasing effluents and to maintain environment free from pollution.
8. It is observed during the survey that the majority of employees are of the opinion that the Government policies towards functioning of the firm are not encouraging. The intervention of Government officials in the form of checks, quality control is welcome, but they must not cause blocks for functioning. Therefore, it is suggested that Government policies and procedures towards cement industry in particular in industrial development in general need to be rationalized.

9. The study reveals that record maintenance has to be improved at ACC wadi. Further there is greater scope for computerization of store records. Computerization helps in maintenance of up-to-date records and enhances speed and efficiency. Therefore, record maintenance has to be computerized. Management information system has to be reorganized for better decision making. Facility of computerization should be availed of by all departments concerned with materials management.

10. It is necessary that innovative thoughts are encouraged and implemented in materials management for augmenting quality of products and decreasing cost of production for ensuring competitiveness of the product. Therefore, a separate research wing has to be constituted with experts in materials management so as to introduce innovative practices in materials management of the company.

Suggested Areas for Further Research
The present Study is confined to an analysis of Material Management in Cement Industry with Special Reference to Associated Cement Company in Wadi, of Gulbarga District. The Study concentrates only on looking into the perceptions of workers and executives of the company. There are a good number of areas for the scholars to evince interest in the arena of Materials Management. A comparative study of the cement manufacturing firms can be taken up independently to look into the contemporary material management practices adopted by the participating
firms in the cement industry. Further, even public and private sector comparative study also can be taken up by the researchers which will be of greater utility. Even the small and medium scale plants can be the focus of attention for researchers in the arena of materials management with reference to cement industry.

CONCLUSION

ACC ltd is India’s foremost manufacturer of cement and concrete. The company has been trendsetter and important bench mark for cement industry in many areas of cement and concrete technology. It has unique track record of innovative research, product development and specialized consultancy services. ACC cement works, wadi, one of the units of ACC ltd, has two plants with sophisticated technologies. All operations at wadi, are now mammoth in scale and setting in new trends and bench marks. ACC wadi, has the largest lime store mining operations, the largest captive power plant, largest inward and outward logistic and largest in bulk cement operations. The present study reveals that the materials management practices of ACC wadi, are systematic, effective and appropriate. These factors unveil the fact that ACC ltd, in general and ACC cement works, in particular have attained higher level of performance and more particularly higher level of efficiency and effectiveness in materials management. But the company can’t get content with the present condition. The continuous positive change is the symbol of development. ACC ltd, has to keep pace with developments in technology and to elevate its place in global competition. It has to put forth endeavours to increase its competitive efficiency. The study also reveals that there are many areas of materials management of ACC wadi, which require enhancement of efficiency, effectiveness and suitability.

The company, as has been observed, confronts the problems of intervention of Government in its functioning and also confronts labour problems. They can be
tackled effectively by the Government offering free hand to the company to adopt professional approach and company following worker-friendly approach in human resource management. There are a number of global competitors for ACC cement. This requires ACC to achieve higher competitive efficiency with enhanced quality of the product and reduced cost of production. Reforms in materials management will help the company in this regard. Adoption of cost effective measures in procurement of materials, increasing effectiveness in inventory control, proper monitoring of production, effective maintence of stocks, computerization of record maintences and other practices of materials management are sure to help the company to supply quality cement and to elevate its position in global scenario.

The suggestions given above, if implemented effectively, will go a long way in helping the company to augment its effectiveness in materials management, to enhance its competitive efficiency and to achieve higher levels of performance.