

A Study of Cost Analysis Among ACC Cement, Shree Cement and JK Cement Ltd.

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Abstract:

Constructions have always played a great role in the development of any nation in any culture. Be it the age old Harappa civilization or the wonders of the world, the world still identifies a civilization with its constructions. One of the core element of any such construction is 'Cement'. The role of cement in the field of construction or real estate is essentially important. It is a mixture of compounds and acts as a binding agent which adds to the strength of any construction. All construction works such as building of houses, shopping malls, places of great social, political or economic importance, etc. all need cement as an important ingredient. However, we have seen in the recent times that the fluctuations in the rate of cement has direct effect on the cost of the construction. Controlled cement prices, will not only help industries but also individuals, as it will lead to cheaper constructions. This is especially of great value in countries where affordable housing is still a matter of concern. Cement prices, if controlled, will help greatly in achieving targets of affordable housing. However, in the modern scenario, maximization of profit is not the only objective of any business but also survival and growth in this cutthroat competition has also become equally challenging. These goals can be achieved only by satisfying the customers through supply of better quality goods and services at lower and competitive prices. For this, a company needs to develop an effective control over its activities through an efficient mechanism of cost control. The purpose of this research is to identify the reasons which are responsible for inflated cement costs. The paper tries to focus on the different elements of cost, especially factory overheads, which according to research, play an essential role in the high cement costs.

Keywords Cement, Cement Industry, Cost, Factory Overheads, Administrative overheads, Selling and Distribution Overheads.

Introduction

Cost, in an absolute sense, is a meaningless concept unless it is analyzed and compared with the cost figure of same concern or with the other concerns period to period. The cost controls and cost reduction are known as the main objectives of cost accounting and cost ascertainment is only the first step in achieving the goal of profit maximization and survival in business. This draws the attention of the management to specific areas, where corrective actions are required. To survive and grow, a business has to develop its specific ways for controlling and reducing its cost of

production. It is very much necessary for cement companies to control their cost.

The different elements of costs are as below:

- 1) **Direct Material:** Direct Material involves the material that is considered as a major part of final outcome and can be easily traceable to the units, e.g. wood in furniture, paper in books etc. Direct material is directly related to production, i.e. if production is increased cost of direct material will also be increased.
- 2) **Direct Labour:** - Labour paid for the construction, composition, confirmation or alteration of raw material into finished product, which can be identified and allocated to each cost center or cost unit e.g., wages paid to compositors in a printing press.
- 3) **Direct Expenses/Chargeable Expenses:** - Expenses incurred for a particular job or a process, which can be identified or allocated to each cost center or cost unit, e.g., hiring of a particular tool or equipment for job, depreciation repairs on machine for production of a particular thing.
- 4) **Overheads:** - The aggregate amounts of indirect materials, indirect wages and indirect expenses which cannot be directly allocate, but can be apportioned on some basis, called overheads. This amount is further classified into Factory overheads, Administration overheads and Selling and Distribution overheads according to the nature of an expense.
 - a. **Factory Overheads or factory indirect expenses:** - In a factory, there are so many expenses incurred in the process of manufacturing on items other than the direct material, direct labour or overhead. These indirect expenses are known as factory overheads or factory indirect expenses. Some examples are Expenses of purchasing department, Storekeeping expenses, Wages of indirect labour, Labour welfare expenses & Employee state insurance premium.
 - b. **Administrative overheads or Administrative Indirect Expenses:** - Besides the indirect expenses in the factory, there are many expenditures that have to be incurred on the general administration of the business. These expenses are called administrative overheads or administrative indirect expenses or administrative costs, e.g., salary to staff, printing, postage, stationary, rent of office, etc.
 - c. **Selling and Distribution Overheads or Indirect Expenses:** - There is a separate department, called the Sales department, which manages the sale of items produced in the undertaking. Expenditure incurred in this department are such as advertising, salaries and commission of sales manager & travelling agents, rent of showroom, warehouse expenses.

1. Cement Industry

Cement industry plays a significant role in the overall growth of economy, especially in a developing country like ours. Currently, China is the largest and the Indian cement industry is the

second largest in the world. With a turnover of around `30,000 crore, the industry is the second biggest contributor to the exchequer. The Central Government gets about `4,000 crores from excise duty and various state Governments another `4,000 crores from sales tax yet another `2,000 crore comes from royalties, octroi and cesses.

The Working Group on Cement Industry for the formulation of Eleventh Five Year Plan (Working Groups /Steering Committees / Task Force for the Eleventh Five Year Plan, 2007 - 2012) and other studies on global competitiveness of the Indian cement industry in their findings highlight certain hurdles faced by the cement industry. Some of these are high power costs, high freight costs, infrastructural deficiencies and poor quality of coal. The Indian Cement industry today produces 11 varieties of cement including ordinary Portland cement (71%), Portland Pozzolona cement (18%) and Portland blast furnace slag cement (10%). The balance one per cent is of all special cements.

2. Selected Cement Companies For Research

The companies selected for the research are:

1. Associate Cement Company Limited (Lakheri, Bundi)
2. Shree cement Limited (Beawar)
3. J. K. Cement Limited (Gotan, Nagaur)

a) Associate Cement Company Limited (Lakheri, Bundi)

ACC Limited is India's foremost manufacturer of cement and ready mixed concrete with 17 modern cement factories, more than 50 ready mixed concrete plants, a vast distribution network of over 9,000 dealers and a countrywide spread of sales offices. The company has been a trendsetter and noted benchmark in cement and concrete technology since it was established in 1936. ACC has a unique track record of innovative research, product development and specialized consultancy services. The name ACC is synonymous with cement and enjoys a high level of equity in the Indian market.

In 2005, ACC Limited along with Ambuja Cements Limited became a part of the reputable Holcim group of Switzerland. In 2015 Holcim Limited and Lafarge SA came together in a merger of equals to form LafargeHolcim – the new world leader in the building materials industry. (ACC at a Glance, n.d.)

b) Shree Cement Limited (beawar)

Shree is a rapidly growing Company focused on its core business of Cement & Power. Currently its manufacturing operations are spread over North and Eastern India across six states. It is recognized as one of the most efficient and environment friendly Company in the global cement industry. (Introducing Shree, n.d.) Shree Cement, primarily an Indian cement manufacturer, was

founded in Beawar in the Ajmer district of Rajasthan in the year 1979 and now headquartered in Kolkata, is one of the biggest cement makers in Northern India. It also produces and sells power under the name Shree Power and Shree Mega Power. Turnover of the company for 2012-13 was ₹55.90 billion and net profit was ₹10.39 billion; 2011-12 was ₹34.53 billion and Net profit was ₹2.097 billion; for 2010-11 it was ₹36.34 billion and net profit was ₹6.76 billion. Since 2006, it has more than quadrupled its production capacity both by expanding into new areas and increasing the capacities of the existing plants. Plants are located in Beawar, Ras, Khushkhera, Jobner (Jaipur) and Suratgarh in Rajasthan, Laksar (Roorkee) in Uttarakhand, Panipat in Haryana, Bulandshahar in UP, Raipur in Chattisgarh and Aurangabad in Bihar. (Shree Cement, n.d.)

c) **J. K. Cement Limited (gotan, Nagaur)**

J.K. Cement Ltd is an affiliate of the multi-disciplinary industrial conglomerate J.K. Organization which was founded by Lala Kamlat Singhania. For over four decades, J.K. Cement has partnered India's multi-sectoral infrastructure needs on the strength of its product excellence, customer orientation and technology leadership. The Company has over four decades of experience in cement manufacturing. Our operations commenced with commercial production at our first grey cement plant at Nimbahera in the state of Rajasthan in May 1975.

Backed by state-of-the-art technology, access to the best quality raw materials and highly skilled manpower against the backdrop of India's infrastructural growth in an overdrive, we are upbeat about the future. Superior products and a strong Brand name, an extensive marketing and distribution network and the technical know-how represent the Company's abiding strengths. (The Company, n.d.)

Review Of Literature

A literature review is a body of text with aim to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Literature periodicals do not report any new or original experimental work, as they are mainly from secondary sources. Also, a literature review can be interpreted as a review of an abstract accomplishment.

Boardman (Boardman, Greenberg, Vining, & Weimer, 1996) identifies nine different steps that are important for cost benefit analysis. He expands these steps and discusses different drawbacks and difficulties. The Bank of England's Monetary and Financial Statistics Division (MFS) hosted a workshop on Cost Benefit Analysis (CBA) of statistics, attended by representatives from a range of central banks and statistical institutions. This article reports on the presentations and discussion at the workshop. The ambiguity involving estimates of costs and benefits meant that cost benefit analysis was likely to inform decisions instead of offering a simple decision-making rule. The best strategy, under this analysis, is identified by the ability to achieve an

expected goal at the minimum expenditure. Another analytical consideration important to cost benefit analysis is to identify the latent physical impacts of alternative approaches. In fact, these predicted effects on the costing can be evaluated continuously, over the life time of the product.

Dr. Sanjay Bhayani (Bhayani, 2003) published a book in 2003, “Practical financial statement analysis”. In his study, he covered 16 public limited cement companies in private sector. In his research he discusses several challenges faced by cement industries and suggested possible solutions. He also suggested for the improvement of profitability and techniques of cost control.

Webner (Webner, 1911) provided that material, labor and expenses are the three constituent elements of production costs.

Mikhail Chester and Chris Hendrickson (Chester & Hendrickson, 2005), they have concluded that “construction cost goes up in a project with the seven different mismanagement scenarios, such as (i) delay (ii) Cost cutting (iii) resequencing of work (iv) acceleration (v) change of scope (rework) (vi) defective work (vii) strike”.

Rajiv Bhatt (2006) revealed that “the cost overrun happens due to (i) delayed payment from client or contractor, (ii) delayed supply of materials and decisions, (iii) delayed possession of site, (iv) inflationary increase in material rates, (v) Revised estimate”.

Arora and Sarkar (Arora & Sarkar, 2008) observed that the boom in the real estate and construction industry in India is the reason for the sudden and sharp increase in the price of cement to the extent of price increment as high as 17 per cent in a single month. They attempt to use the theories of collusive behavior to explain this sudden increase.

Jinkens and Yallapragada (Jinkens & Yallapragada, 2010), contributed in field of cost accounting, they found that new approaches to cost accounting, such as the Activity Based Costing (ABC), did not receive widespread adoption.

Barbole and Yuvraj (BARBOLE A.N., June 2013) in their study of “Impact of cost control and cost reduction techniques on manufacturing sector” talked that, the customers are continuously demanding high quality and better performance products/services and at the same time, they want the prices to fall therefore it is necessary for companies how to manage its product/service Cost, quality, and performance. Their study focus on impact of cost control and cost reduction techniques in the present scenario.

The above brief review of studies in foreign and Indian context shows that there have been many researches on cost, its management and few cost control methods but no attempts has been made to analyze and develop new cost control and cost reduction techniques. Second, no recent research has been found in context of cost analysis in cement companies. Third, it is very much necessary to reduce cost of products in the era of cut throat competition, so a deep study on elements of cost is necessary to understand how to reduce cost like material cost, labour cost and

overheads. Fourth, in the current boom of real estate and a country like us, where schemes like the Prime Minister Awas Yojna are the need of the day, and cement being the backbone of the constructions, it requires control on costs. On the basis of previous studies, the present study aims at filling all above gaps and requirements.

Objectives Of The Study

1. To study the trends of cost in sampled units.
2. To make a valuable contribution regarding cost control in sampled cement units with the help of this research.

Scope Of The Study

The present study "A Study of Cost Analysis among ACC Cement, Shree Cement and JK Cement Ltd." analyzes the elements of cost among sampled units in sampled years.

The significance of the study is highlighted by the fact that the reduction and controlling of cost can increase the profits of business. The effective analysis of cost is essential for the success of business. The business concern has therefore, should optimize resources at minimum cost in order to maximize the profit. This analysis will help to increase the profitability of the concern and the company could be able to produce cement at lower cost.

The present study will be helpful to the cost accounting department of company so that they will be able to study fluctuation between factory overheads and selling overheads. It will also enable in analyzing the trend of various overheads, material cost and labour cost in selected cement companies.

Research Methodology:

Null Hypothesis (H₀): Factory overheads, administrative overheads and selling & distribution overheads are not more than material cost and labour cost in sampled cement units.

Sample Size: Population of this study are all cement units. For this research purpose, three Cement companies have been selected by researcher.

Sampling Technique: Judgmental sampling technique was used in selecting companies and collecting data with respect to researcher's area of study.

Data Collection: The current study is majorly based on secondary data collected from the annual reports published by the sampled units on their website.

Period of Study: Period of this research is 3 years from 2010 to 2013 for 3 selected Companies. The researcher took 3 financial years i.e. 2010-2011, 2011-2012, 2012-2013 for the study.

Limitation

The limitations of the present study are as follows:

1. Most of the information, related to accounts were confidential and authorities were reluctant to discuss about them.
2. Strategies to control and reduce the cost were not mentioned in the Annual reports, as the major source of data collection was annual reports.

Data Interpretation And Analysis

Here we are calculating the proportion of different elements of costs with reference to total cost of sales. The data is tabulated using the information collected from the Annual Reports of these companies for the selected years. The total cost of sales for the selected units is given below in

Table 1

Table 1: Total Cost of Sales

	2010 – 2011	2011 - 2012	2012 - 2013	Average
ACC	584577.00	723323.00	864094.00	723998.00
SHREE	373629.37	459523.41	480375.85	437842.88
JK	188766.87	214789.75	246774.26	216776.96
AVERAGE	382324.41	465878.72	530414.70	459539.28

(i) Analysis of Material Cost in Sampled Units

The first element of the cost of the product is material. This is the cost of commodities supplied to an undertaking. Material form an important part of the cost of a product and therefore proper control over materials is necessary.

Table 2, given below illustrates the data related to total material cost of three years of the sampled units. Here, total material cost comprises of raw materials, packing material & material cost. The data is tabulated using the information collected from the Annual Reports of these companies for the selected years.

Table 2: Total Material Cost

Year	2010 - 2011	2011 - 2012	2012 - 2013	Average
ACC	71379.00	81665.00	95620.00	82888.00
Shree	56390.20	66536.35	74238.38	65721.64
JK	37203.01	42303.04	52547.47	44017.84

Table 3, given below, shows proportion of material cost to the total cost of sales (displayed in percentage) of selected company during the period of study. This is calculated as:-

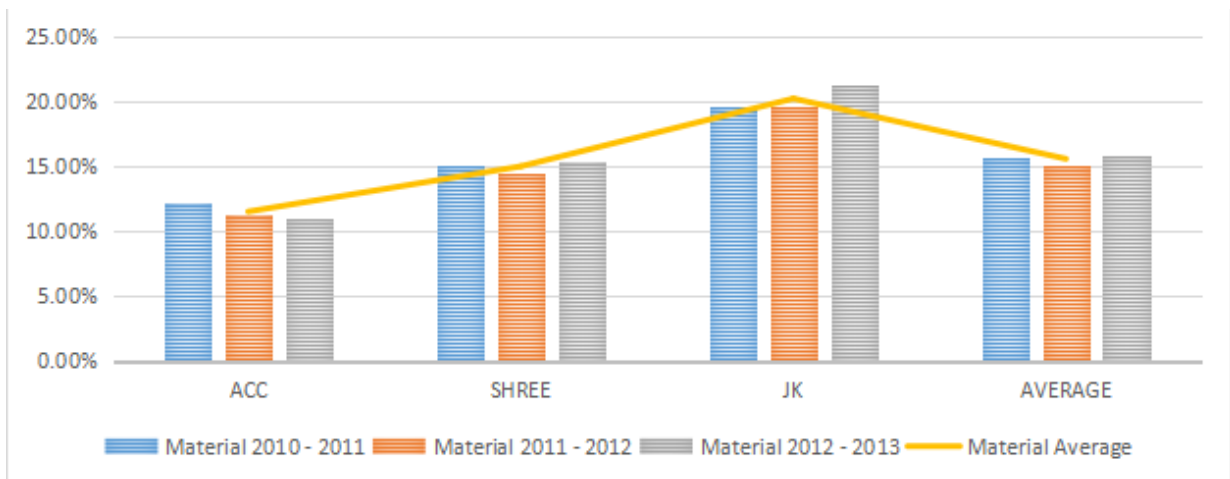
Table 3: Proportion of Material Cost to Total Cost of Sales

Year	2010 – 2011	2011 - 2012	2012 - 2013	Average
ACC	12.21%	11.29%	11.07%	11.52%
SHREE	15.09%	14.48%	15.45%	15.01%
JK	19.71%	19.70%	21.29%	20.23%
AVERAGE	15.67%	15.15%	15.94%	15.59%

Usually, materials form a high proportion of the total cost of production. This proportion generally varies from 30 – 60 percent. In some cases, however, it is as high as 75 percent but it is rarely found below 25 percent in the case of some products.

In sampled units taken under present study, on an average material cost is 15.59% percent of the total cost as shown in above table. The proportion of material cost to the total cost is having more or less the similar trends in all companies. JK Cement showed the highest percentage amongst all and marked an average of 20.23%. On the contrary, the percentage of ACC Cement was as low as 11.52 percent.

From Table 3, it is clear that percentage of the material cost in the total cost becomes submissive and that, this element of cost was under control by sampled units. Savings in the cost of material will directly contribute to the profit.

Graph 1: Proportion of Material Cost to Total Cost of Sales

(ii) Analysis of Labour Cost in Sampled Units

Labour cost forms a second important element of cost and it is true primary cost of production since it will always be required. Table 4, given below, shows the data related to labour cost of three years of the sampled units. The data is tabulated with the help of information collected from the annual reports of these companies for the selected years.

Table 4: Total Labour Cost

	2010 – 2011	2011 - 2012	2012 - 2013	Average
ACC	37564.00	42837.00	49378.00	43259.67
SHREE	15090.84	19747.20	24664.00	19834.01
JK	9516.38	11600.28	12663.60	11260.09
AVERAGE	20723.74	24728.16	28901.87	24784.59

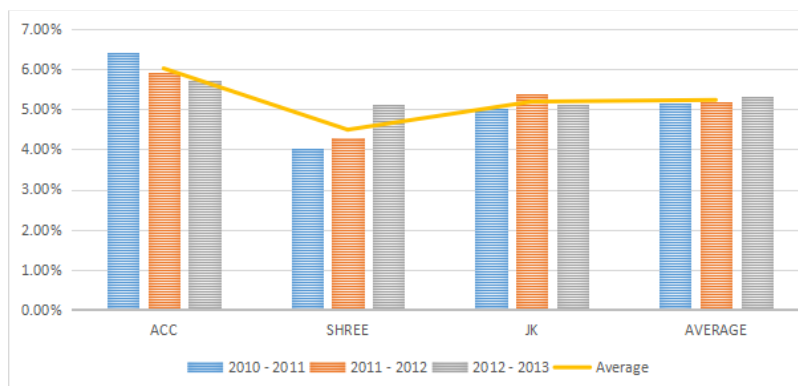
Table 5, given below, shows proportion of labour cost to the total cost of sales (displayed in percentage) of selected company during the period of study. This is calculated as:-

Table 5: Proportion of Labour Cost to Total Cost of Sales

	2010 - 2011	2011 - 2012	2012 - 2013	Average
ACC	6.43%	5.92%	5.71%	6.02%
SHREE	4.04%	4.30%	5.13%	4.49%
JK	5.04%	5.40%	5.13%	5.19%
AVERAGE	5.17%	5.21%	5.33%	5.23%

On the basis of above table 5, on an average labour cost is 5.23% as depicted from the study. So it is obvious that the expenditures incurred on labour in the sampled units is showing an increasing trend during the period of study. Similarly, the proportion of labour cost to total cost is having more or less similar trend in all companies. Yet, ACC Cement was still the highest amongst all and marked an average of 6.02 percent. On the contrary, the percentage of Shree Cement was as low as 4.49 percent.

Here it is worth being mentioned that labour cost includes both direct and indirect labour cost. Thus in this context, labour cost involves salaries, wages, bonuses, gratuity and benefits, contribution to provident funds and other welfare expenses.

Graph 2: Proportion of Labour Cost to Total Cost of Sales

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(iii) Analysis of Factory Overheads in Sampled Units

Factory overheads include all indirect costs incurred by the manufacturing department from the receiving of raw material until the product is finished and placed in a saleable condition.

Table 6, given below, shows the data related to factory overheads of three years of the sampled units. The data is tabulated with the help of information collected from the annual reports of these companies for the selected years.

Table 6: Total Factory Overheads

	2010 – 2011	2011 - 2012	2012 - 2013	Average
ACC	243579.00	307260.00	375150.00	308663.00
SHREE	183453.30	222811.99	220436.00	208900.43
JK	79172.47	90983.83	100521.89	90226.06
AVERAGE	168734.92	207018.61	232035.96	202596.50

Table 7, given below, shows proportion of Factory Overheads to the total cost of sales (displayed in percentage) of each company in the selected years. This is calculated as:-

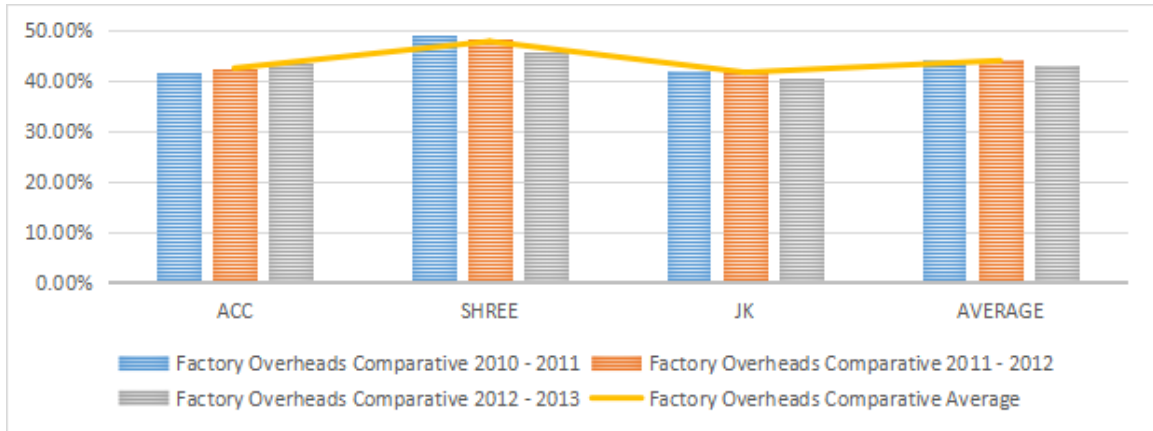
Table 7: Proportion of Factory Overheads to Total Cost of Sales

	2010 - 2011	2011 - 2012	2012 - 2013	Average
ACC	41.67%	42.48%	43.42%	42.52%
SHREE	49.10%	48.49%	45.89%	47.83%
JK	41.94%	42.36%	40.73%	41.68%
AVERAGE	44.24%	44.44%	43.35%	44.01%

On the basis of the above Table 7, it may be concluded, that the factory overheads of ACC among sampled years are maximum in the financial year 2012 – 13, i.e. 43.42 percent and the average being 42.52 percent. The factory overheads of Shree Cement considered during the period of study are maximum in the financial year 2010 – 11, i.e. 49.10 percent and the average being 47.83 percent. The factory overheads of JK Cement among sampled years are maximum in the financial year 2011 – 12, i.e. 42.36 percent and the average being 41.68 percent. The contribution of factory overheads to the total cost of sales is 44.01 percent, which should be a matter of concern.

On further study, it was observed that the percentage of power and fuel overheads was as high as 68.19% for ACC, 55.72% for Shree & 71.43% for JK Cement on an average it is 65.11% to the total factory overheads. This is a matter of concern and needs attention.

Graph 3: Proportion of Factory Cost to Total Cost of Sales



(iv) Analysis of Administrative Overheads in Sampled Units

Administrative overhead is the “cost of formulating the policy, directing the organization and controlling the operation of an undertaking which is not related directly to a production, selling, distribution, research or development activity or function.”

Table 8, given below shows the data of administrative overheads and total cost of sales of three years of the selected companies. The data is tabulated using the information collected from the annual reports of these companies for the selected years.

Table 8: Total Administrative Overheads

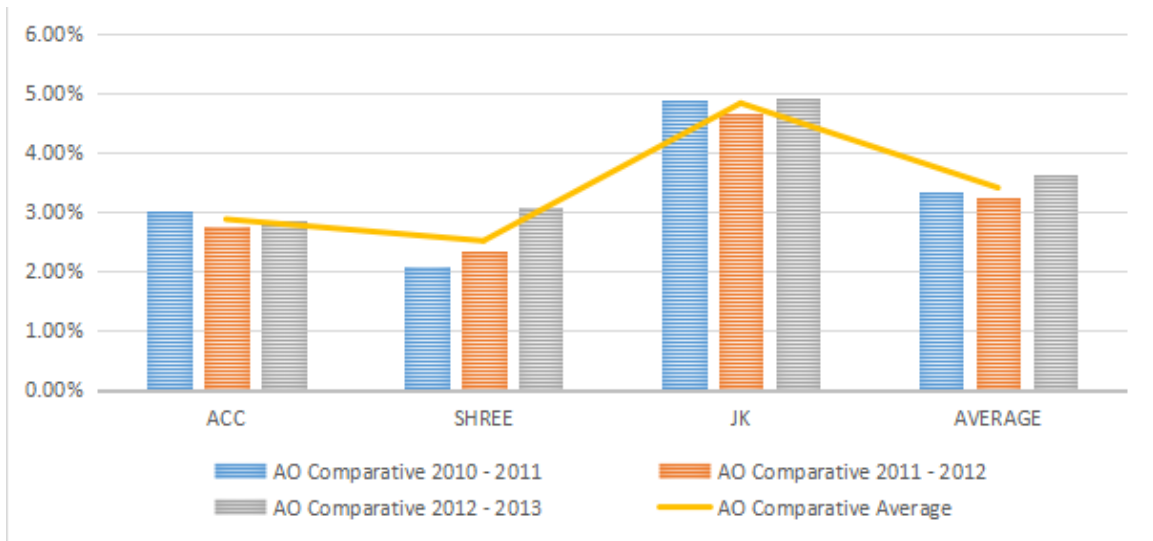
	2010 - 2011	2011 - 2012	2012 - 2013	Average
ACC	17596.00	19869.00	24727.00	20730.67
SHREE	7789.14	10793.57	14854.00	11145.57
JK	9241.41	10048.96	12146.12	10478.83
AVERAGE	11542.18	13570.51	17242.37	14118.36

The table below shows proportion of Administrative Overheads to the total cost of sales (displayed in percentage) of each company in a year. This is calculated as:-

Table 9: Proportion of Administrative Overheads to Total Cost of Sales

	2010 - 2011	2011 - 2012	2012 - 2013	Average
ACC	3.01%	2.75%	2.86%	2.87%
SHREE	2.08%	2.35%	3.09%	2.51%
JK	4.90%	4.68%	4.92%	4.83%
AVERAGE	3.33%	3.26%	3.63%	3.40%

On the basis of proportion of administrative overheads to the total cost it may conclude, that the administrative overheads of ACC among sampled years are maximum in the fiscal year 2010 – 10, i.e. 3.01% and the average being 2.87%. The administrative overheads of Shree during the period of study are maximum in the financial year 2012 – 13, i.e. 3.09% and the average being 2.51%. The administrative overheads of JK Cement years considered for the study are maximum in the financial year 2012 – 13, i.e. 4.92% and the average being 4.83%.

Graph 4: Proportion of Administrative Overheads to Total Cost of Sales

(v) Analysis of Selling and Distribution Overheads in Sampled Units

Selling and Distribution overheads come under the Sales department, which manages the sale of items produced in the undertaking.

Table 8, Given below is the data of selling and distribution Overheads of three years of the selected companies. The data is tabulated using the information composed from the annual reports of these companies for the selected years.

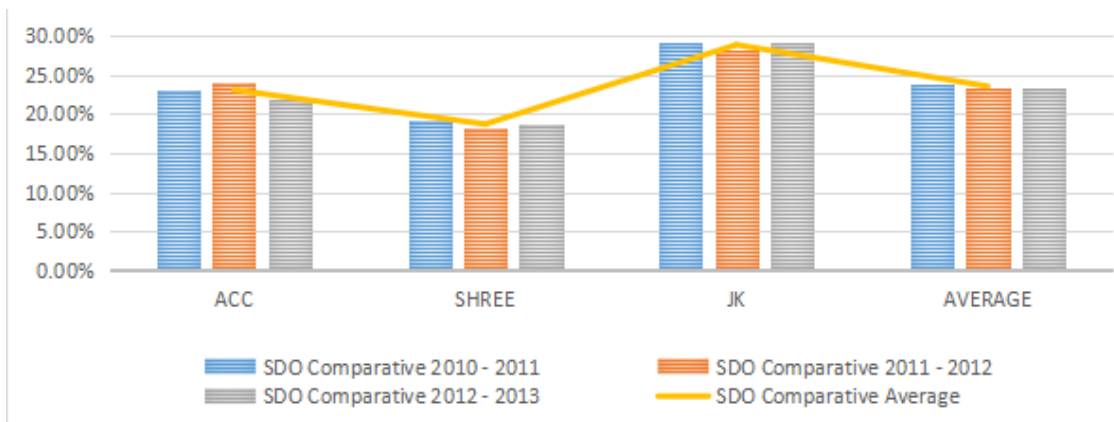
Table 10: Total Selling and Distribution Overheads

	2010 - 2011	2011 - 2012	2012 - 2013	Average
ACC	135479.00	174652.00	189210.00	166447.00
SHREE	71795.14	83425.75	89840.47	81687.12
JK	55127.36	60358.79	72104.14	62530.10
AVERAGE	87467.17	106145.51	117051.54	103554.74

The table shows Selling and Distribution Overheads (displayed in percentage) of each company in a year. This is calculated as :-

Table 11: Proportion of Selling and Distribution Overheads to Total Sales

	2010 - 2011	2011 - 2012	2012 - 2013	Average
ACC	23.18%	24.15%	21.90%	23.07%
SHREE	19.22%	18.15%	18.70%	18.69%
JK	29.20%	28.10%	29.22%	28.84%
AVERAGE	23.87%	23.47%	23.27%	23.53%

Graph 5: Proportion of Selling and Distribution Overheads to Total Cost of Sales

Based on the Table 9, it may conclude, that the selling and distribution overheads of ACC among sampled years are maximum in the financial year 2011 – 12, i.e. 24.15% and the average being 23.07%. The selling and distribution overheads of Shree during the period of study are maximum in the financial year 2010 – 11, i.e. 19.22% and the average being 18.69%. The selling and distribution overheads of JK Cement are maximum in the financial year 2012 – 13, i.e. 29.22% and the average being 28.84%. The contribution of selling and distribution overheads to the total cost of sales is 23.53%.

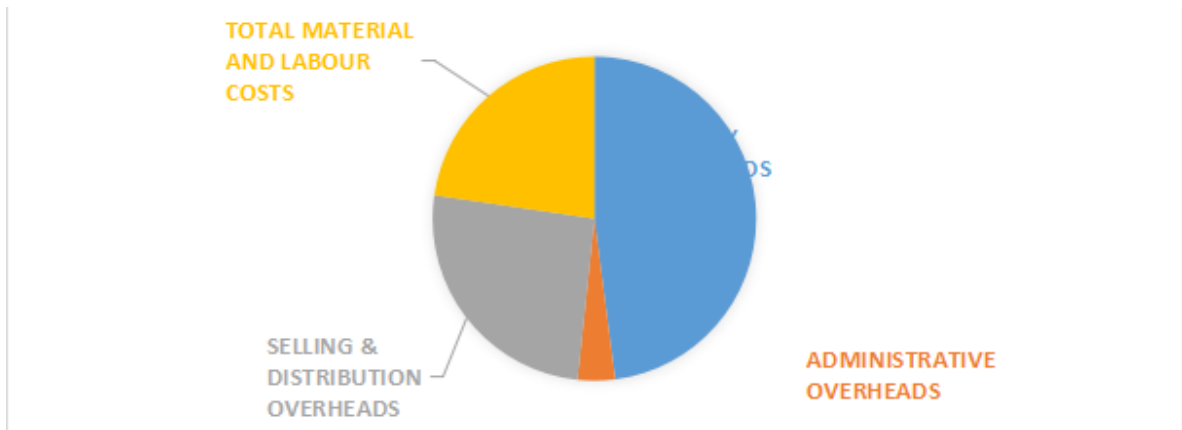
On further study, it was observed that the percentage of freight charges was as high as 80.06% for

ACC, 60.59% for Shree & 84.39% for JK Cement, on an average it is 75.01% to the total selling and distribution overheads. This is a matter of concern and needs attention!

Findings:

From the analysis done, proportion of total material and labour cost to total overheads is depicted as follows:

Graph 6: Proportion of Total Material and Labour Cost with Overheads



It is generally found that materials form a high proportion of the total cost. This proportion generally varies from 30 – 60 percent. In some cases, however, it is as high as 75 percent but it is rarely found below 25 percent in the case of some products. It is depicted from the present study that on an average material cost is 15.59 percent of the total cost.

Labour cost forms a second important element of cost, since it will always be required. It is depicted from the above study that on an average, labour cost is 5.23 percent of the total cost.

Factory overheads include all indirect costs incurred by the manufacturing department. It has a major share in the total cost of sales. On analysis it was found that it was the 44.01 percent of the total cost for the sampled companies during the period of study.

Administrative overhead is the cost of framing the policy, directing the organization and controlling the operation of an activity which is not related directly to a production, selling, distribution, research or development activity or function. It has a share of 3.40 percent of the total cost. This is negligible and poses no problem.

Selling and Distribution overheads come under the Sales department, which manages the sale of items produced in the undertaking. On analysis it was found to be 23.53 percent of the total cost. This becomes the second largest share in the total cost after factory overheads.

From the above finding, the researcher can conclude that the material and labour cost of sampled units is not higher in comparison to factory overheads and selling distribution overheads where as it is higher than administrative overheads.

Thus, null hypothesis is rejected in reference to factory overheads and selling and distribution overheads but it is accepted for administrative overheads.

It is also found that major chunk of factory overheads are coming from power & fuel expenses i.e. on an average 65.11% and a major share of selling & distribution overheads are coming from freight charges i.e. on an average 75.01%.

Suggestions:

On the basis of above findings, the researcher recommends the following suggestions to reduce factory overheads and selling & distribution overhead to the sampled units

1. Using Solar Plants: - In order to reduce power & fuel expenses solar plants can be the best alternative. It will require a one-time cost. Government and other organizations also encourage the usage of solar plants to generate power. In 2014, Rajasthan Solar Energy Policy (Energy Department, 2014) was implemented to encourage the use of non-conventional energy sources, especially solar power, instead of the conventional sources of energy. Ministry of New and Renewable Energy (Ministry of New and Renewable Resources, Government of India, n.d.), Government of India, under the Jawaharlal Nehru National Solar Mission, is advocating the use of solar PV systems. It is well known to us that electricity is becoming very expensive with each passing day. Sampled units can meet their electricity needs by using solar energy and to avoid power cuts and dependence on DG sets.
2. Waste Heat Recovery: -Waste Heat Recovery can be a helpful to sampled units. There is a lot of potential in the industry to recover waste heat. Waste heat recovery system is helpful in drying of materials such as coal, slag, Pozzolona, etc. Hot excess air from clinker cooler is used for this purpose. Waste heat can also help in generation of electrical power Normally, steam produced in waste heat boiler incorporated to recover heat from preheater gases/ cooler exhaust gases is used in a steam turbine to generate electrical energy.
3. Own your Wagon / Lorries: -In order to reduce the freight charges, the researcher recommends to the sampled units to utilize the “own your wagon” (OYW) and, “Build Operate Lease Transfer” (BOLT) schemes of railways. Industries must buy their own wagons and hire the same to railways on lease, which will in turn help them, as the railway gives priority in the allotment of wagons.
4. Lighting: -Though the cement industry uses very less amount of light energy, still, measures must be employed to keep the use of light under control. Use of energy efficient

appliances must be used, especially those that 4 or 5-star rating and necessary government approvals for energy utilizations, will also help. Use of LED lights is recommended. Fluorescent, compact fluorescent lights (CFL) and incandescent lights are typically used for task lighting in offices. The temperature of AC's should be on 27 degrees, which is a standard.

Conclusion

The researcher has made an attempt through the research to study and understand the journey of cement manufacturing from the very inception till today, when cement is an important and a core ingredient in the construction industry. The researcher also made an effort to understand and evaluate the concept of cost and its components and their impact on selected cement companies, during the period of study. A thorough analysis has been done on the various components of cost in order to through further light on them.

The study has highlighted that the material and labour cost of sampled units is not higher in comparison to factory overheads and selling distribution overheads where as it is higher than administrative overheads. It is also highlighted that factory overheads and selling and distribution overheads have a major share in the total cost. This needs to be controlled and new cost reduction techniques should be adopted by sampled cement companies.

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