Impact of Distribution & Logistics Management on Price & Cost with Reference to Indian Cement Industries

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Abstract - The cement industries are playing vital role in the economic and social development of the countries. The Indian cement industry chosen for this study is the biggest cement industries in the country. It is India's foremost manufacturer of cement and concrete. Its operations are spread throughout the country with more than 15 modern cement factories, more than 50+ Ready mix concrete plants, 21 sales offices, 66 area offices and several zonal offices. It has a workforce of about 10,000 persons and a countrywide distribution network of over 10,000 dealers. Transportation plays an important role in both moving purchased goods from suppliers to the buying organization, and moving finished goods to the customers. More so, due to the important role that it plays in the supply chain. It is an obvious fact that products are rarely produced and consumed in the same location, as such; transportation is a significant component of the costs that most supply chains incur. Transport is typically regarded as a non-value adding activity in the supply chain, although the challenges make the assumption that it plays an essential role in the supply chain; and if managed accordingly, it can allow supply chains to work more effectively and efficiently. Basically, there are different modes of transportation; but this research focuses on the major transport modes used in transporting materials to the required sites for use, namely: road, air, water, pipeline, and rail. Road transport system is the most realistic and very common means of transportation in the cement industry in India. However, the road transportation in India is characterised with a lot of delays which results from heavy traffic, accidents and breakdowns on the way. An efficient and effective transportation system is needed for commerce to function in any industrialized society. Meanwhile, the products purchased by the customer have little value for them until they are moved to the customer's point of consumption . Therefore, a more efficient system is desirable in India.

I. INTRODUCTION

Cement is a binder which sets and hardens independently, and can bind other materials together. The word "cement" traces to the Romans, who used the term "opus caementicium" to describe masonry which resembled concrete and was made from crushed rock with burnt lime as binder. Cement is an essential component of infrastructure development and most important input of construction industry, particularly in the government's infrastructure and housing programs, which are necessary for the country's socioeconomic growth and development.
Its depends upon:-Low cost, high performance Binder with almost any hard material Building block Gain strength progressively with ageing Substitutes with steel, polyester, epoxy-resin, plasticizers

1.2. Evolution of the Indian Cement Industry:

The story of the evolution of the Indian cement industry is rather long, where it has seen many ups and downs, but finally has arrived in its maturity stage as it is beginning to gather the benefits of its decontrol by the government in 1989-90.

1.2.1. Invention of Cement

Ever since civilizations first started to build, the world has sought a man made bonding material that would bind stones into a solid, formed mass. During the Paleolithic Age, men used to enjoy adequate shelter provided by nature. The Bronze Age witnessed the use of building materials from a clay based mixture and air hardening lime. The

Egyptians advanced to the discovery of lime and gypsum mortar as a binding agent for building such structures as the Pyramids. The Greeks made further improvements and finally the Romans developed cement that produced structures of remarkable durability (Cement Association of Canada 2006).

1.2.2. The Beginning of Indian Cement Industry

The attempt to produce cement in India dates back to 1889 when a Calcutta firm attempted to produce cement from Argillaceous (kankar). But the first organized effort on mass scale to manufacture Portland cement commenced in Madras (Washermanpet), in 1904, by South India Industries Limited (Cement Manufacturers Association 1964; Gadhok 2000). The factory could not succeed hence it failed. However, it was in 1914 that the first commissioned cement-manufacturing unit in India was set up by India Cement Company Limited at Porbandar, Gujarat, with an installed capacity of 10,000 tonnes and production of 1000 tonnes. Subsequently two plants; one at Katni (M.P.) and another at Lakheri (Rajasthan) were set up. The First World War gave positive stimulus to the infant industry.

1.2.3. Control Period (1969-1982)

The Indian cement sector had been under strict government control for almost the whole of the period. Government intervention took place both directly and indirectly. Direct intervention happened in the form of government control over production, capacity and distribution of cement, while indirect intervention took the form of price control. During this period, many companies and their plants started off but still growth was not seen at the desired rate. In 1977, higher prices were allowed for cement produced by new plants or major expansions of existing plants. Due to maintained slow development, the uniform price imposed by the government, was substituted by a three-tier price system in 1979.

II. FORECAST MODEL :FY(11) TO FY(14)

Table 3: Forecast cement demand supply model

(m tonnes)	FY11	FY12	FY13	FY14
Year-end installed capacity	224	250	287	300
Actual effective capacity	207	231	257	283
(-) Mothballed capacity	4.9	4.9	4.9	4.9
Effective installed capacity	202	226	252	278
Domestic consumption	178	187	205	226
Export (cement + clinker)	6.1	5	8	9
Domestic consumption + export	184	192	213	235
Surplus / (deficit)	18	35	38	43
% surplus (wrt effective capacity)	9%	15%	15%	15%
Actual utilisation	91%	85%	85%	85%
Average prices	239	240	240	240
Change in average price	3%	0%	0%	0%

Capacity growth	16%	12%	11%	10%
Domestic demand growth	8%	5%	10%	10%

The above model is a forecast model for the growing cement sector from
FY11 to FY14 the contributing factor's taken to consideration are Export , Domestic Consumption, Average Prices ,Capacity Growth and Domestic Demand Growth
Demography of the Respondents

A wide hierarchy of organizational structure of supply chain management covering almost all the stakeholder departments affecting the SCM operations viz procurement, logistics and distribution, project implementation group, central dispatch section, inventory, environment, etc has been contacted and interviewed either personally or telephonically. Then their replies have been received and further clarification and supplementary information considered to be necessary has been secured. The designations of the respondents are Chief Manager, Manager, Dy Manager, Assistant Manager, Sr. Executive, and Executives. The work experience of the respondents is ranging from 02 to 28 years. Overall, 14 respondents were contacted to gather the primary data.

III. SAMPLE SIZE

Sample size will be around 250 Transporters, Stockist, Dealers, Distributors and Retailers using questionnaire based market survey.

IV. DATA COLLECTION

The data to be used in the study will be of both type i.e. primary and secondary data. Secondary data will be collected from the records of the company data, Industry profile and the company profile will be collected from various sites on the internet. In this research work questionnaire method will be used to collect the primary data.

V. STATISTICAL ANALYSIS

The various tools will be used for the analysis of data such as Bar graphs, percentage method, Tabulation of Data etc. A descriptive research method was adopted in this research by using a well-structured questionnaire for data collection. It was designed to find the solution to the existing problems in the aspect of logistics and supply chain in the cement manufacturing industry in India.
The questionnaire consisted of four sections:
 Section 1: provided the demographic details about the respondents.
 Section 2: addressed the organisational information of the cement manufacturing industries.
 Section 3: is focused on questions about the collaborative work in the cement manufacturing industry with regard to logistics and supply chain management.
 Section 4: addressed the effectiveness, performance and information distribution in the logistics environment.
The collected data was analysed using statistical analysis software package (SPSS) and also, Microsoft Excel Ranking function was used to compute the rank of mean scores of responses. This was based on the percentage responses to
the 5-point Likert-type scale. The ranking enabled the importance of individual statements, problems, parameters and key performance indicators to be evaluated relative to each other.

VI. RESULTS AND DISCUSSION

A response rate of 25% was achieved in this study. The results showed that most of the respondents were highly educated; 6.7% held a diploma, 60% held a bachelor's degree and 33.3% had postgraduate qualifications. The

responses from different departments were impressive, and those who had knowledge about the logistics issue answered the questionnaires. It was found that the respondents were
26 years and above in age. Women participated well in answering the questionnaires. At least 73.3% were married people, and the remaining 26.7% were single and divorced.
Permanent staff played an active role in answering the questionnaires, 80% of them responded. Finally, 73.3% preferred to speak or communicate in Hindi rather than the local languages. In this situation, 46.7% of the respondents were J.P cement workers while 26.7% came from Lafarge Cement factory, West Bengal.

VII. OBJECTIVE OF THE STUDY

Study of the various distribution networks and logistics of Cement companies in India for the distribution of their brands.
Study of the various distribution channels for the distribution of products.
Study of the impact of distribution & logistic practices followed by the various cement company on price, cost and service element.
Analysis of other suitable distribution channels for the company's products so that all the factors like price, cost and services will be optimized.
Identification of requirements of changes if any in the current distribution practices followed by the cement companies and suggestions & recommendations if required.

This research was descriptive in nature. The major objective of a descriptive research is the descriptions of something say a problem or topic of study. In this type of research the topic of the research is defined and suitable solutions to the problem are found. In this type of research the magnitude of knowledge, perception, beliefs, preferences and satisfaction level of the respondents are measured related to the company and its products. This process includes a market survey in the third phase of the research. This thesis highlights supply chain management practices in an Indian cement industry.I have conducted a study in this cement manufacturing firm and covered its manufacturing units, sales units, marketing offices, warehousing, logistics, procurement, finance, inventory and environment in order to know the SCM practices. This study focuses on how an Indian cement industry has implemented supply chain systems; strategy and technology to effectively manage its supply chain operation.The objective of the
present work includes the study and analysis the supply chain management Practices in an Indian cement industry. A SWOT Analysis has been conducted to find out strength and weaknesses of the cement industry.

VIII. RESULT & ANALYSIS

SWOT Analysis of the Data Collected

SWOT analysis is commonly used to assist in identifying strategic direction for an organization or practice. It encompasses both internal (strength and weaknesses) and external (opportunities and threats) environment. A SWOT analysis generates information that is helpful in matching an organization or a group goal, programmed, and capacities to the social environment in which they operate. It is preferred for the present work as it yields useful information about the viability of the considered system.The SWOT analysis was used to analysis the data collected in the present study. This SWOT analysis brings out some of peculiar features of the practices of supply chain management in the cement industry. Following are the captured points:
 Strength

- Having largest network in India.
- Own railway wagons to transport and its own siding which connects to the railway junction.
- Production of cement has been increasing year by year hence thrust is being given to strengthen its supply chain.
- Technology sharing in the area of supply chain management with its partner company which is a giant cement manufacturing firm in the world.
- This cement industry is operating its distribution and logistics operations through new version enterprise resource and planning tool ERP 6.0. {Sales and Distribution module (SD) Module}.
- It is one among the few manufacturing firms working with all the modules of SAP thereby managing the chain real-time with inter functional collaboration.

- Its operations like manufacturing, environment, health and safety is certified by leading agencies e.g. ISO-9001, ISO-14001 and ISO-18001.
- It is using managing its supply chain using RFID for its bulk loading operations and concrete divisions.
- Dedicated and experienced team of sales, distribution and logistics.

Weaknesses

- However there is a central procurement organization for the cement industry under study there are issues procurement function particularly in supplier selection and segmentation hence lacking smooth operations of procurement functions.
- Lacking a system in place for eco-friendly distribution (dispatches) and logistics particularly reverse logistics management.
- Quality is an area of concern in cement supply chain. The quality aspect can be better adhered using innovative practices.
- The operating expenses of the company are comparatively high which may affects in its profit earning capacity thereby directly affecting the SCM.
- Employees are reluctant towards adoption of latest innovations and technology due to a traditional work culture.
- Little Information sharing in the area of Supply Chain.
- Very few training programs for improving its supply chain functions and employee development.

Opportunities

- The company has opportunity to expand its market share by introducing new products with reasonable price for which SCM can play vital role.
- It has opportunity to increase its production & distribution by improving its distribution management as it came out as one of the improvement area during interviews.
- People are opting for more stable structures and intensive use of cement is taking place, even government is spending heavily on infrastructure projects. Thus, this is the right time to fully tap
these markets. Supply chain management strategies may be advantageous in grabbing this opportunity.
- Foreign direct investment in infrastructure sector going to increase in coming years, which will increase the demand of cement.
- Since market is expanding improved procurement strategies may be sought and there is an opportunity to manage its supply chain green and clean.

Threats

- Large number of players in cement industry makes it more competitive for the cement industry to carefully price its product and at the same time satisfy its dealers and customers.
- Lacking know how of latest supply chain management may pull company back in competition.
- Other emerging players in the Indian cement markets are the threats to company and they are eating up considerable market share.
- Due to India's exponential growth many new international cement companies are expected in coming years which will bring a tide of change in the area of concern i.e. supply and distribution management.
- The emergence of small players in this market may increase the competition and start the malpractices, and heavy discounts to retailers.

Content of result with interpretation

Industry average score of competitiveness index has been calculated at 45.45, which is used to analyse the competitive performance of firms above and below it. It is hence used to benchmark the firms' competitive standings in the industry. Eight firms from the sample of seventeen firms i.e. 47% of the total sample size, show performance above industry average and remaining nine (53%) are below this average. The competitive scenario thus reflected here suggests that the difference between top ranking players and lower ranking players is immense which has pulled
down the industry average score for competitiveness of firms. The main firms above industry average score out of the eight are Grasim Industries Ltd., ACC Ltd., Ambuja Cements Ltd., and Ultratech Cement Ltd. Others in this group are India Cements Ltd., Prism Cement Ltd., Madras Cements Ltd. and Birla Corporation Ltd. the remaining firms in the sample are below this average.

IX. CONCLUSIONS

It can be concluded that given the sustained growth in the housing sector, the government's emphasis on infrastructure (both at the national and the state level) and increased global demand, the prospect for India's cement industry is exceedingly promising. The dynamics of Indian cement industry is undergoing a gradual shift.

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