

CEMENT INDUSTRY IN INDIA- CHALLENGES AND PROSPECTS

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ABSTRACT: An analytical study has been made to critically analyse cement industry's growth in India in terms of production, growth of plants, demand and utilisation in terms of consumption. This paper makes an effort to examine the development and history of the cement business in India. Cement is one of the essential components for building a sound and robust infrastructure, and it is essential for the economic growth of every nation. Started in 1914 with a capacity of 1000 tonnes per year in Porbandar Gujarat, the cement industry now is one of the pioneer industries which is at the base of countries development and progress. In terms of particular energy use, the Indian cement industry is one of the most productive and energy-efficient in the world. If we look from the point view of production and consumption, it is regarded as second in the world ranking. The paper puts light on the challenges the cement industry is facing in contemporary times and future prospectus in the years to come. This paper is descriptive in nature and based on secondary data, collected from various articles, websites, newspapers and research papers. This paper overseas its growth historically and goes up to the present considering the problem it faced. The initiative by government and problems it faced and facing presently with a view to assess its competitive picture in the world.

INTRODUCTION

India is currently the world's second-largest cement producer after China, with an installed capacity of around 540 million tonnes, and is estimated to rise over 600 million tonnes annually by the year 2025. India's expansion and growing urbanisation, along with the government's recently declared smart city initiative programs and poor friendly cheap housing projects, would make it to surpass China in the cement market at the world level soon. The housing industry utilises 67 percent of all the cement that is consumed in India, with infrastructure using 13 percent, commercial buildings using 11 percent, and industrial construction using 9 percent of the total production. The investment programmes which were announced in the last Union Budget, created an affordable housing fund worth around Rs. 25,000 crores, which was to be utilised for giving loan to future buyers. (Ghosal, 2020) India's infrastructure and real estate industries, which has offered a numerous opportunity for future growth, are anticipated to profit from the cement business. Some recent initiatives, including the creation of smart cities, will undoubtedly greatly boost the market. For the production of cement, labour and raw materials are freely accessible, which attracts foreign direct investments (FDI) to India's cement industry. One of the factors driving the rise in cement output in the nation is the enormous and persistent demand in the real estate and infrastructure sectors. (Kumar, 2022)

REVIEW OF LITERATURE

Bhayani (2010) in his article on "Determinants of Probability in Indian Cement Industry: An Economic Analysis", measured the profitability and evaluated the effectiveness of the organisation taking into the size of the organisation, liquidity of management, growth of the organisation, components of cost and inflation rate. He concluded that liquidity ratio of operational profit, interest rate, inflation rate and duration of being in business are the key factors which determine the profitability of the industry.

Mukhopadhyaya et al. (2012) in their work on "An Analytical Study of the Changing Structure in the Cement Industry of India" had given insight on how the deregulation process had affected the organisation of the Indian cement sector. They said that deregulation increased competition, which prompted consolidation. They believed that the consolidation, entry of multinational companies, and changing cement market had opened the door for the cement industry to perform better. **Potgieter (2012)** in his research paper

titled “An overview of cement production: How green and Sustainable is the industry”, identified that the cement firms should be eco-friendly and green to achieve sustainable development. The researcher had concluded that the cement business could significantly contribute to sustainable and environmentally friendly development with its new modernised technology equipment and concepts. **Panigrahi (2013)** in his research work on “Liquidity Management of Indian Cement Companies: A Comparative Study” explored the liquidity positions of the five largest cement businesses and came to the conclusion that a company could not survive or expand without managing its liquidity situation. **Bhandi & Kumnoor (2013)** in their analytical study on “Problems and Prospects of Cement Industry” explored how the government implemented appropriate pricing and distribution which reduced the costs as well as being beneficial to the cement users and producers. They believed that in order to reduce costs, cement producers should relocate close to the market, expand the production of mix cement, take advantage of tax breaks, negotiate preferential power rates and set up captive power plants. According to them, all of these would contribute to cutting production costs, which would help to achieve self-sufficiency or even surplus quantity for exports. **Kumar et al. (2015)** in their article on “Profitability Analysis of Selected Cement Companies in India” they identified the profitability position of the cement industry and primarily focused on analysing the profitability of an Indian cement companies between the year of 2005 and 2014. Using different techniques like mean, standard deviation, coefficient of variation, and compound annual growth rate. They stated that in order to achieve positive and beneficial growth and profitability, all cement companies should implement cutting-edge manufacturing methods and different marketing techniques.

OBJECTIVE OF THE STUDY

This study has been undertaken to contribute towards the following broad objectives:

- This paper intends to describe the history and development of Indian cement industry in terms of its growth, production and exports.
- This paper focuses on the initiatives taken by the government in cement industry.
- To find out the challenges and the future prospects of the cement industry in India.

HISTORY AND DEVELOPMENT OF CEMENT INDUSTRY

Though the first Indian cement factory was setup in Porbandar Gujarat in 1904, yet the credit goes to South Indian industries Ltd. Madras now Chennai for pioneering the production of Cement in India in the same year. Between the year 1912 to 1913 three cement factories were setup in Porbandar Gujarat, Katni Madhya Pradesh and Bundi Rajasthan. The south India industries Ltd., a small factory rolled out first in the market which was manufactured on the lines of the type developed by British Standard Committee known as “Artificial Portland Cement”. The company made publicly in the big cities of India including Karachi and Madras (Chennai). The venture was financially successful by profit standards. Some incidental reasons such as an expansion of domestic demand, decrease in supply from abroad (caused by war), raw material, cheap labour etc. made it a prominent sector in India in a short period of time. **(Ravi & Nallanavar, 2022)** In 1926, the manufacturers set up an association known as Indian Cement Producers Association, with the aim of protecting their interests, keeping an eye on the production and sales, visa-vis profits. In 1936, 10 major cement companies came together to form Associated Cement Companies Limited (ACC). It was a merger of 10 companies which is regarded as first major merger even at a time when the term mergers and acquisitions did not come into being. This combination was challenged by cement factories of Dalmia group having an installed capacity up to 5.7 lakh tonnes per year. **(Pandey, 2017)** There were 23 cement production facilities with a combined annual capacity of 2.2 million tonnes when the country was partitioned in 1947. Five of the factories were under Pakistan control, while the other 18 remained in India and had a combined annual production capacity of 1.5 million tonnes. By 1950 to 1951, when the nation entered its planning era, the capacity to produce cement had risen to 3.28 million tonnes. The cement sector has shown consistent

expansion during the planning period and at the end of the seventh plan, India began exporting cement in addition to becoming self-sufficient.

Since it began in 1914, the Indian cement industry has experienced a roller coaster of ups and downs that has defined its existence for the past 100 years. **(Pareek & Pincha, 2015)** There are many cement businesses in operation today, with 210 large cement industries with a combined capacity of around 410 million tonnes, whereas 350 tiny, miniature cement plants, with a capacity of around 11.10 million tonnes. The states of Andhra Pradesh, Rajasthan, and Tamil Nadu are having the largest 77 of the 210 big cement plants in India.

Importance of Cement Industry

- **Infrastructure Development:**

Cement is a fundamental component in all construction, from basic housing to complex dams, bridges, and transport networks, enabling the creation of stable, long-lasting infrastructure.

- **Economic Growth:**

It's a core industry, boosting GDP through manufacturing and sales, and its demand fuels other sectors like real estate, transport, and energy.

- **Employment Generation:**

The industry creates numerous direct and indirect jobs, supporting livelihoods and regional economic fabric, particularly in semi-rural areas.

- **Versatility:**

Beyond concrete, cement is used to make bricks, tiles, blocks, and precast elements, showcasing its adaptability in construction.

- **Urbanization:**

It supports the growth of cities by providing the materials needed for residential, commercial, and public infrastructure as populations grow.

- **Technological Advancement:**

The industry invests in innovation, adopting best available technologies to improve energy efficiency and exploring sustainable practices to reduce its environmental footprint, crucial for future low-carbon economies.

CHALLENGES RELATED TO CEMENT INDUSTRY

The traditional cement industry has undergone a number of changes since the industrial advancement. The cement industry in India has come to its present stage with such a systematic and gradual advancement that it cannot be witnessed in terms of a revolution like situation. However, it has become imperative to implement reforms that will reshape the cement sector as a result of new business models. The leading force behind this is the requirement for sustainable production, which opens the door for technological innovation and digitalisation. Cement is one of the most important building materials, but it also contributes significantly to climate change, accounting for 6 to 9% of all CO₂ emissions worldwide. The goal of the 2016 Paris Agreement was to limit the rise in global temperature to 2°C or less. For this, by 2050, CO₂ emissions must decrease by 80 to 90 percent in order to accomplish this goal. As a result, pressure is mounting on the cement sector, but they have already begun to meet this challenge **(Rodriguez, 2021)**. There are several challenges faced in current scenario of cement industry.

Decreasing CO₂ emissions:

High levels of CO₂ emissions are related to the cement manufacturing process. In compliance to global understanding in this regard the cement companies of India have started deliberations. The most important step must be taken is to switch to the carbon-neutral model. "An example of the Spanish cement industry's roadmap is to be considered seriously which involves five inter-related industries clinker, concrete, cement, re-carbonation and construction has made an aim to become climate neutral by 2050". Hydrogen, electrification, and the utilisation of biomass fuels can minimise this problem to a great extent.

Clean energy usage in logistics:

This is the most discussed and relevant challenge which is encountered in the industrial arena, world over. For cement industries sustainable alternatives are to be adopted for inland transportation which will help in achieving the goal of reducing carbon emissions. Internal neutral transportation that are powered by electricity or hydrogen are a good alternative which will help not only the cement but other industries also. Beyond production, the objective is to reduce non-fossil fuel usage.

Traceability and use of digital identity:

When cement is used as a by-product, so it has no longer its original form. The ability to recognise cement's digital identification must be improved in order to assurance the product's traceability as well as its environmental performance and freight. This makes it possible for adequate, agent-free and at the time tracking at any point in the chain.

Production automation and digitalization of product:

The transformation to smart cement manufacturing industry was brought up by “*Siemens and the Association of Cement Manufacturers of Spain*”. The use of sensors, remote diagnostics, and big data analysis including artificial intelligence analysis of unstructured data like images and videos, virtual facilities, and advanced control systems, all will contribute to increase in production fulfilling the norms of global emission requirements. This enables system optimization and higher production efficiency benefits.

Enhanced information security:

Artificial intelligence is being used in remote-operated facilities and digitised production, which leads to greater system vulnerability and exposes the business to online threats, enhanced data security standards and procedures will be needed.

Real-time connectivity and information:

Connectivity and information and that is also according to real time basis is very important challenge faced specifically by cement industry. The process of cement manufacturing is sequential, which is connected like a chain. The chain's various participants must work together, and in tandem. Cement manufacturers should have a real-time link with suppliers, inputs and services, used in manufacturing process in such a manner that they promptly fulfil the requirements. By this way the manufacturers will have better inference to consumption projections and they may become able to quickly identify the situation where supplies need to be altered. In turn, it will give the factory knowledge about the needs of clients and enable more precise and effective production planning

GOVERNMENT INITIATIVES ;

The contribution of construction or building industry to nation's GDP accounts for about 8%, in the year 2021-22, which is a substantial increase of about 5% over the previous year. The government is continuously strengthening the infrastructure, which has resulted in increase in employment opportunities in this sector and in related areas. In the “union budget of 2021-22”, the emphasis is given on government's focus on infrastructure development. It contributed to GDP growth of more than 20% over the previous year in the first quarter of financial year 2021-22, contributed primarily by the construction industry. The construction industry has registered a growth of more than 68 percent year over year (**Cement Industry of India: Outlook and Challenges, 2021**).

Following points depict the effect of government initiatives in this regard.

The cement sector has contributed largely in the government initiatives of “make in India”, smart cities project, metro rails, construction of concrete cement roads, rural electrification, and the most popular “*cheap mass housing projects and Pradhan Mantri Awas Yojana*”.

The demand for cement is continually stimulated by government investments in infrastructure projects, “*Pradhan Mantri Awas Yojana (PMAY), and inexpensive mass housing*”. The “*IHB (individual home*

builder)” sector has also displayed optimistic developments. *“Corporate cash reserves are also at an all-time high, and it is just a matter of time before this eventuates and starts the capex cycle”.*

The *“Urban Rejuvenation Mission, which includes the AMRUT, Smart Cities Missions and the Swachh Bharat Mission”*, received funding from the Union Budget of Rs. 13,750 crore (US\$ 1.88 billion) and Rs. 12,294 crore (US\$ 1.68 billion). **(IBEF, 2022)**

When compared with the world’s 500 kg. per person usage of cement, India's figure is 235 kg. usage per person, which is quite encouraging. It is indicative of brighter possibilities in the journey of the country from a developing to a developed economy.

In the Union Budget for 2022-2023, the allocation for upgradation of rail network is around Rs. 1,40,367 crores, towards construction of roads and bridges is around 64,573 crores and towards *“Pradhan Mantri Awas Yojana”* is around Rs. 48000 crores. This is a huge allocation totalling to approximately around Rs. 2,52,940 crores. It will have a direct impact on the demand for cement in the year 2022-23. Demand for cement is projected to be around 382 million tonnes in year 2022-23, it is a significant increase of approximately 8% over the previous year.

The 600 million tonnes target of expected demand by 2025 can easily be surpassed by cement industry if the current trend continues. The National Infrastructure Pipeline (NIP), according to Invest India, increased from 7,400 projects to 9,305 projects. **(IBEF, 2022)**

FUTURE PROSPECTS OF CEMENT INDUSTRY .

Demand for the cement industry is closely related to the overall economic expansion, particularly with regard to housing and infrastructure growth. The demand for cement is anticipated to increase manifold in the coming years and the central government is placing great emphasis on housing, express way and infrastructure construction etc. The drop in the price of crude oil and other commodities on the global market could aid in bringing expenses under control and enhancing industry profitability. The future of the cement industry is projected to be bright because of increased government spending on infrastructure, strong development in rural housing, and rising per capita earnings. Some of the points which are indicative of the reasons for its growth are given as follows: **(Birla, 2021)**

Due to the increasing demands from various sectors, including housing, commercial development, road construction and industrial construction, the demand for cement is expected to reach 550-600 million tonnes annually by 2025. **(Cement Sector Analysis Report, 2020)**

Areas of east and central India are identified specifically to be in the forefront of the country's growth Which is expected to be driven mostly by the Construction of affordable housing, laying of rural road network, expansion of urban road network, speedy construction of express ways and infrastructure development, are the factors due to which the cement industry is expected to gain the most. The creation of smart cities is one of the primary efforts that is anticipated to have a significant impact on the cement sector.

“Housing for All” and various other government programmes for poverty alleviation will increase the demand of the industry. The *“Pradhan Mantri Awas Yojana (PMAY)”*, projects for affordable housing are expected to gain the most due to increase in budgetary allocation of 9% over previous figures. By 2022, PMAY-Urban hopes to build 11.2 million homes, of which 10.3 million have received approval as of January 2020. This is indicative of incremental growth of cement industry in the years to come. The entire goal for PMAY-Rural is 19.5 million units, of which around 9 million have been constructed as of December 2019. **(Cement Sector Analysis Report, 2020)**

The rapid demand from north, east and central India will make a manufacturer of Odisha, West Bengal, Bihar and Uttar Pradesh to raise their production from the present production of 6.7 million tonnes per annum. Construction of shopping malls by big business houses in small cities will also cause the increase in

the demand for cement in the coming years. Efficient and economical labour availability coupled by building of rural infrastructure including affordable housing is also the reason for increase in demand in rural India. UltraTech cement, with a combined capacity of 117.95 million tonnes per annum of grey cement is leading the market, after that Shree cement with a capacity of 44.4 million tonnes per year, Ambuja cement, ACC cement and Dalmia Bharat, During the financial year 2022 and financial year 2023, commercial production from this capacity is anticipated to start up gradually. According to an estimated, up to the year 2024 the government plans to update 125,000 km of road length throughout the country. Ports and dedicated freight corridor projects are also in progress. The construction of metro rail projects is also under way in many of major cities of India.

CONCLUSION

The story of growth of cement industry in India is sagacious. Started in 1904 with a small plant in Tamil Nadu, India has become second largest manufacturer of cement, having production capacity of 545 million tonnes. Currently India is at the second position among the cement manufacturing countries after China, manufacturing around 298 million tonnes per annum. The government's support of several infrastructure initiatives, the railways, the road system, and housing facilities would likely lead to an increase in cement usage in the upcoming years. Cement producers are quickly building new units to keep up with the rising demand. In the above analytical study, certain indicators have clearly pointed out the challenges and promising future prospects of the cement companies in India. In spite of all the positive points, there is still a scope for betterment in some aspects. The Indian cement companies have to achieve higher share of sales in the market for which multi products like ready mix concrete, green cements and new building materials etc. should be produced. Though the above study is conclusive of the facts that the position of the Indian cement industry in the world ranking is much better than many of developed countries, yet there is still a scope for achieving the mile stone of becoming the largest manufacturer of cement in the world. The initiatives and announcements by government and consequent activity of related sectors including private sector will contribute towards India becoming a five trillion economy soon and cement industry will be a big contributor.

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