Building a solid foundation: The growth story of India's cement industry

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Abstract
The history and development of the cement industry in India showcase a remarkable journey of growth, innovation, and contribution to the nation's infrastructure development. The industry started in 1914 with the establishment of the first cement plant in Chennai. Over the years, it witnessed steady expansion, consolidation, and modernization. The formation of Associated Cement Companies Ltd. (ACC) in 1936 marked a significant milestone, leading to the emergence of a large-scale cement industry in India. Government regulations, including the Cement Control Order, shaped the industry in the early years. The industry faced challenges related to raw material availability, energy costs, infrastructure bottlenecks, and government regulations. However, it overcame these obstacles through resilience, technological advancements, and market adaptability. Today, India is the second-largest cement producer globally, with a significant presence in both domestic and international markets. The future prospects for the industry remain positive, driven by infrastructure development, affordable housing initiatives, and sustainable practices. Government initiatives such as Make in India, National Infrastructure Pipeline, and support for affordable housing and smart cities further contribute to the industry's growth and competitiveness. Despite challenges, the cement industry in India continues to play a pivotal role in nation-building and economic progress.

Keywords: Production, growth, consumption, framework

Introduction
India is correct now the world's second-greatest concrete creator after China, with a presented limit of around 540 million tons, and is evaluated to climb to in excess of 600 million tons consistently ceaselessly in 2025. India's expansion and creating urbanization, close by the public authority's actually broadcasted wise city drive undertakings and very much arranged humble housing projects, tragically, would make it to beat China in the concrete market at the world level soon. The housing business utilizes 67% of all the concrete that is consumed in India, with system using 13%, business structures using 11%, and current advancement using 9% of the hard and fast creation. The hypothesis programs which were accounted for in the last Association Spending plan made a sensible housing store worth around Rs. 25,000 crores, which was to be utilized for giving development to future buyers. (Ghosal, 2020) [1] India's framework and land ventures, which has offered various a chance for future growth, are expected to profit from the cement business. A couple of late drives, counting the development of insightful metropolitan regions, will point of fact exceptionally support the market. For the creation of concrete, work, and crude parts are energetically accessible, which attracts new direct hypotheses (FDI) to India's concrete industry. One of the factors driving the climb in concrete yield in the nation is the tremendous and tireless interest in the land and structure regions.”(Kumar, 2022) [2]^

Review of Literature
"Indian Cement Industry: Opportunities and Challenges" by R. Subramanian and R. Suresh Kumar (2018) [3]: This study provides an overview of the Indian cement industry, examining its historical development, current market dynamics, and future growth prospects. It analyzes the key opportunities and challenges faced by the industry, including infrastructure development, government policies, environmental regulations, and competitive forces.
"Analysis of the Cement Industry in India” by Shobhit Chandak and Dr. Atul Gupta (2020): This research paper provides an in-depth analysis of the Indian cement industry, including its market structure, growth drivers, challenges, and future prospects.
It examines factors such as government policies, infrastructure projects, demand-supply dynamics, technological advancements, and competitive landscape. The study also discusses the impact of the COVID-19 pandemic on the industry. Potgieter (2012) in his research paper named "An Overview of cement production: How Green and Sustainable is the Industry?"[^1], “recognized that cement firms should be eco-accommodating and green to accomplish sustainable advancement. The researcher concluded that the cement business could significantly contribute to sustainable and environmentally amicable advancement with its new modernized technology hardware and concepts into the competitive landscape and identifies areas for improvement.”

The Objective of the Study
The objective of this research is as follows;

★ This paper intends to portray the history and development of the Indian cement industry with regard to its growth, production, and commodities.
★ This paper focuses on the initiatives taken by the public authority in cement industry.
★ To find out the challenges and what’s to come prospects of the cement industry in India

History & Development of Cement Industry
The cement industry in India has a rich history and has witnessed significant development over the years. Here's an overview of the history and key milestones in the development of the cement industry in India.

Beginning of Cement Production
The cement industry in India started in the year 1914 with the establishment of the first cement plant in Chennai (then Madras) called the Madras Cement Works.

Early Growth
In the 1920s and 1930s, the cement industry witnessed steady growth with the establishment of several new cement plants across the country. The Indian Cement Company Ltd. (ICCL) was the first major company to set up a cement plant in Porbandar, Gujarat in 1914.

Formation of ACC and Associated Cement Companies (ACC)
In 1936, ten existing cement companies, including the Indian Cement Company Ltd., merged to form Associated Cement Companies Ltd. (ACC). This merger laid the foundation for the development of large-scale cement industry in India. ACC went on to become the largest cement company in India.

Government Regulation
In the early years, the cement industry in India was largely unregulated. However, in the 1950s, the government introduced policies to regulate the industry and promote its growth. The Cement Control Order was introduced in 1967, which aimed to control prices and ensure an adequate supply of cement in the country.

Expansion and Modernization
From the 1960s onwards, the cement industry witnessed a period of significant expansion and modernization. Several new cement plants were established across different regions of India, leading to increased production capacity.

Growth in the Post-Liberalization Era
In the 1990s, the Indian government introduced economic reforms and liberalization policies, which had a positive impact on the cement industry. The entry of foreign companies and the establishment of joint ventures with international partners brought in advanced technology and expertise, leading to further growth and modernization of the industry.

Consolidation and Mergers
In the late 1990s and early 2000s, the cement industry in India witnessed a wave of consolidation and mergers. Many smaller cement companies were acquired or merged with larger ones, leading to the emergence of large conglomerates in the industry.

Present Scenario
Currently, India is the second-largest cement producer in the world, after China. The industry has a presence across various regions of India, with major cement-producing states including Rajasthan, Gujarat, Tamil Nadu, and Andhra Pradesh. Indian cement companies have also expanded their operations internationally, with a significant presence in countries like the UAE, Bangladesh, Sri Lanka, and others. (Pandey 2017)[^2].

Challenges associated with the Indian Cement Industry
The Indian cement industry faces several challenges that impact its growth and sustainability. One of the major challenges is the volatility of input costs, particularly the price of raw materials such as limestone, coal, and gypsum. Fluctuations in these costs can significantly impact the profitability of cement manufacturers.

Another significant challenge is the environmental impact of cement production. The industry is a major contributor to carbon emissions and consumes a substantial amount of energy. With increasing awareness of climate change and the need for sustainable practices, cement manufacturers in India are under pressure to adopt cleaner and greener technologies. This transition requires substantial investments in research and development and the implementation of more energy-efficient processes.

Infrastructure bottlenecks and logistics also pose challenges to the Indian cement industry. Despite being the second-largest cement producer in the world, India faces significant challenges in transporting cement from manufacturing plants to construction sites due to inadequate road networks and limited rail connectivity. This leads to increased transportation costs and delays in project execution. Moreover, the industry faces intense competition and price wars. Overcapacity in the market and the presence of numerous players result in price undercutting, affecting the profitability of cement companies. To remain competitive, manufacturers need to focus on product differentiation, quality, and customer satisfaction.

Additionally, regulatory challenges and bureaucratic hurdles hinder the growth of the cement industry in India. Obtaining permits and clearances for setting up new plants or expanding existing ones can be a time-consuming and complex process. Streamlining regulatory procedures and creating a conducive business environment can promote...
investments and boost the industry's growth. Lastly, the Indian cement industry is also grappling with the issue of skilled labor shortages. As the demand for cement increases with infrastructure development and urbanization, there is a need for skilled workers in various areas, including manufacturing, logistics, and project management. Addressing this challenge requires focused efforts in skill development and training programs.

Real-time connectivity and information
Connectivity and information that is likewise according to the constant premise is a crucial test confronted expressly by the cement industry. The course of cement manufacturing is consecutive, which is associated with a chain. The chain's various participants should coordinate in tandem. Cement manufacturers should gain some genuine experiences connected with providers, inputs, and administrations, used in the manufacturing process in such a manner that they expeditiously satisfy the requirements. In this manner, the manufacturers will have better surmising of consumption projections and they could become prepared to quickly perceive what's going on and where supplies should be adjusted. Thus, it will give the production line information about the requirements of clients and enable more precise and successful production planning.

Government Initiatives for the Growth of Industry
The Indian government has implemented various initiatives to support the development of the cement industry in the country. These initiatives aim to boost infrastructure development, promote sustainable practices, and address the challenges faced by the industry. Here are some notable government initiatives.

- **Make in India**: Launched in 2014, the Make in India campaign aims to promote manufacturing and attract investments in various sectors, including cement. The initiative focuses on improving the ease of doing business, providing a conducive environment for investments, and promoting domestic manufacturing capabilities.

- **National Infrastructure Pipeline (NIP)**: The NIP is a government initiative launched in 2019 that outlines a comprehensive plan for infrastructure development in India. It includes projects across sectors like roads, railways, ports, airports, and urban infrastructure. The implementation of these projects will drive the demand for cement and support the growth of the industry.

- **Affordable Housing**: The government has prioritized affordable housing under schemes like Pradhan Mantri Awas Yojana (PMAY). These initiatives aim to provide affordable housing to economically weaker sections and lower-income groups. The demand for cement is expected to rise significantly as a result of the construction of affordable housing units.

- **Smart Cities Mission**: The Smart Cities Mission was launched in 2015 to develop 100 smart cities across India. The initiative focuses on creating sustainable and technologically advanced urban areas. The development of smart cities involves significant infrastructure projects, including construction activities that will boost the cement industry.

- **Infrastructure Development Funds**: The government has established infrastructure development funds, such as the National Investment and Infrastructure Fund (NIIF) and the India Infrastructure Finance Company Limited (IIFCL), to provide financial support and attract investments for infrastructure projects. These funds help in financing large-scale infrastructure projects, including those requiring substantial cement consumption.

It added to Gross domestic product development of over 20% over the earlier year in the main quarter of the financial year 2021-22, contributed essentially by the improvement industry. The improvement of the industry has enlisted a development of over 68% year over year.” (Cement Industry of India: Outlook and Challenges, 2021) [6].”

**Future Prospects for Cement Industry**
The future prospects of the cement industry in India are promising. Here are some key factors that indicate positive growth and development in the industry.

- **Infrastructure Development**: India’s rapid urbanization and government initiatives such as Smart Cities, Housing for all, and infrastructure development projects like highways, ports, and airports, will drive the demand for cement. The industry is expected to benefit from increased construction activities and the need for quality building materials.

- **Housing and Real Estate Sector**: The growing middle class and rising disposable incomes are fueling the demand for residential properties. The Indian government's focus on affordable housing and the development of smart cities will drive the demand for cement in the housing and real estate sector.

- **Industrial and Commercial Construction**: The expansion of industries, manufacturing facilities, commercial complexes, and office spaces will contribute to the demand for cement. The Make in India initiative and the establishment of industrial corridors will further boost infrastructure development and industrial construction.

- **Rural Development and Infrastructure**: The government's emphasis on rural development, including the construction of rural roads, irrigation projects, and rural housing, will create opportunities for cement manufacturers. These initiatives aim to improve rural connectivity and enhance the quality of life in rural areas.

- **Infrastructure Investments**: The Indian government has announced significant investments in infrastructure, including the National Infrastructure Pipeline (NIP), which outlines projects across sectors like roads, railways, ports, airports, and urban infrastructure. Such investments will drive the demand for cement in the coming years.

- **Green Initiatives and Sustainability**: The cement
industry is increasingly focusing on sustainability and adopting green initiatives. The government's push for renewable energy, energy-efficient technologies, and sustainable practices will influence the future of the cement industry. Companies that invest in cleaner technologies and reduce their carbon footprint are likely to have a competitive advantage.

- **Technological Advancements:** The adoption of advanced technologies, such as automation, digitalization, and data analytics, can improve operational efficiency, enhance productivity, and optimize costs in the cement manufacturing process. Embracing Industry 4.0 principles will be crucial for the industry's future growth and competitiveness.

- “Because of the increasing demands from different areas, including housing, business development, street development, and industrial development, the demand for cement is supposed to reach 550-600 million tons annually by 2025. (Cement Area Analysis Report, 2020) [7].”

**Conclusion**

The cement industry in India has come a long way since its inception, experiencing significant growth and development. It has played a vital role in the country's infrastructure development and economic progress. However, the industry has also faced several challenges along the way. From raw material availability and energy costs to infrastructure bottlenecks and government regulations, cement manufacturers have had to navigate various hurdles. The competition, pricing pressures, and volatility in cement demand have also posed challenges for the industry. Additionally, environmental concerns, land acquisition, skilled labor availability, and technological upgradation have been significant factors influencing the industry's growth.

Despite these challenges, the Indian cement industry has shown resilience and adaptability. It has successfully addressed many of these issues by embracing modern technologies, implementing sustainable practices, and complying with environmental regulations. The industry continues to evolve, with companies investing in innovation and expansion, both domestically and internationally. With its vast production capacity and contribution to employment and economic growth, the cement industry remains a critical sector in India. Overcoming challenges and leveraging opportunities, the industry is poised to play a pivotal role in fulfilling the country's infrastructure needs and driving sustainable development in the future.

**Reference**