

# A Study on Growth and Development of Road Construction Projects in India

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## Abstract

The main aim of this research is to study on growth and development of road construction projects in India. The construction segment is a key driver for Indian economy. It is second biggest economic activity in India. The Indian construction industry in overall has been growing rapidly year after year owing to rises in national and global production capacity and industrial development over the past few years. The decision of central Govt. of India to agree hundred percent foreign direct investment in infrastructure segments has encouraged construction all over the country. The industry is critical to India's overall growth and benefits from the government's strong focus on implementing measures that will guarantee the country's superior infrastructure is built on schedule. The research concluded that worldwide Construction Futures, a significant analysis of the worldwide construction and engineering sector produced by a team of constructions researchers at Oxford Economics, predicts a promising future. Over the next 15 years, worldwide building output will increase from US\$4.2 trillion in 2022 to US\$9.7 trillion in 2022 and US\$13.9 trillion in 2037. China, the United States, and India will be responsible for half of all work done in the global engineering and building sector by 2037, supporting the future growth economies of three nations that account for more than a third of humanity's population and revenue.

**Keywords:** Road construction industry, Indian economy, growth and development of highway in India, problem and issues etc.

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## Introduction

Oxford Economics (<https://www.oxfordeconomics.com>) predicted that worldwide construction spending will exceed USD 15 trillion in 2025, up 70% from 2012. Since the real estate problems have had a negative impact on the Chinese economy, its growth rate has slowed. Also, efforts to revive the US economy are taking impact, and the rate of GDP growth in the nation is gradually increasing. As a result, investment capital flow is expected to shift from developing to developed countries in the short term. However, in the long run, if the Chinese sector recovers and India makes significant progress, it is conceivable that India would outperform China. Development spending in developing nations may account for more than 60% of global spending (Setting up Sector Report 2015).

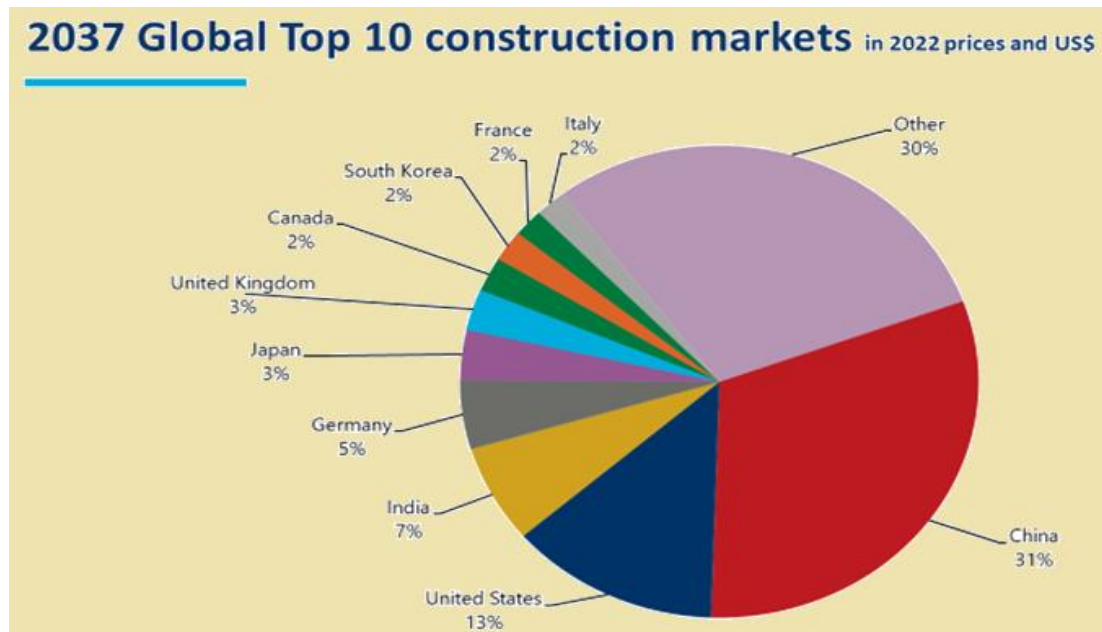
In 2018, the global revenue of construction businesses is predicted to expand by +3.2% year on year, up from +2.4% year on year growth in 2017. The building sector has increased dramatically in recent years. It will increase from \$15192.71 billion in 2023 to \$15971.45 billion in 2024, with an average yearly growth rate (CAGR) of 5.1%. Growing improvements to infrastructure, expanded rehabilitation operations, rapid expansion in the older population, and greater domestic production are all factors contributing to the historical growth. The building sector is likely to increase significantly during the next several years. It will increase at a compound annual growth rate (CAGR) of 5.6% to \$19856.65 billion by 2028. The expansion throughout the projection period may be due to expanding populations, urbanization, increased government assistance, industrialization in order to and smart city growth. The key trends over the forecast time frame include automated building materials, building-related vehicles, development of high-performance devices, integration of online platforms and innovative solutions, the adoption of artificially intelligent (AI) and machine learning, cooperation and partnerships, launch of innovation networks, the implementation of fully electric development equipment, technological advancements, and development of new lots in subu.

The good news is that worldwide Construction Futures, a significant analysis of the worldwide construction and engineering sector produced by a team of constructions researchers at Oxford Economics, predicts a promising future. Over the next 15 years, worldwide building output will increase from US\$4.2 trillion in 2022 to US\$9.7 trillion in 2022 and US\$13.9 trillion in 2037.



**Figure 1: Constructionmarket Report 2024**

China, the United States, and India will be responsible for half of all work done in the global engineering and building sector by 2037, supporting the future growth economies of three nations that account for more than a third of humanity's population and revenue.



Source: oxfordeconomic/haveranalytics

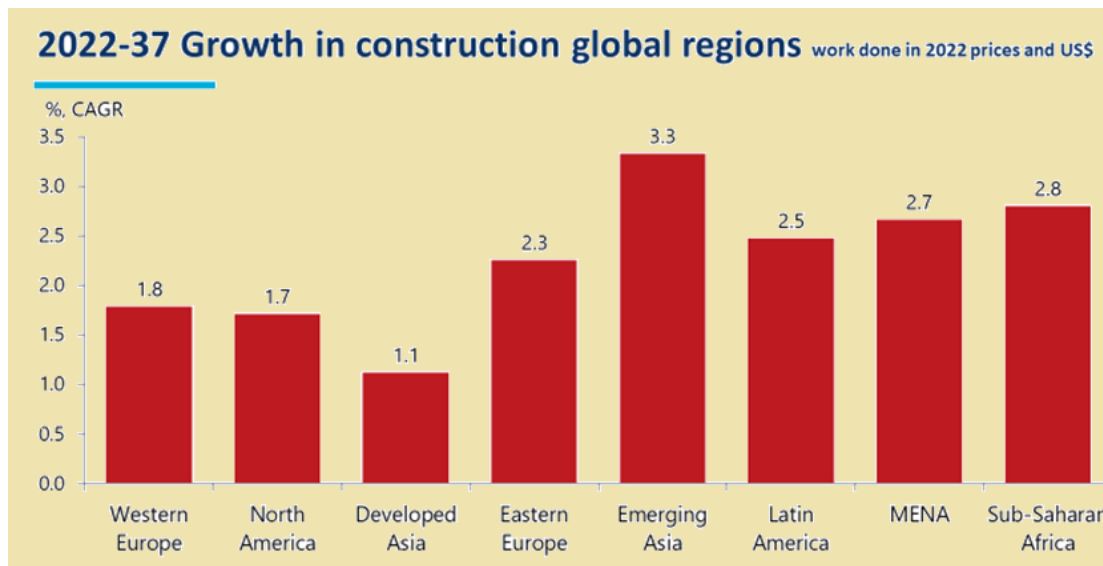
**Figure 2: Global Top 10 Construction Market**

By 2037, the top 10 global construction sectors will account for 70% of all construction employment, representing a market value more than US\$9.7 trillion, which is almost similar to all worldwide construction jobs conducted today. The ASEAN Tiger economies (Hong Kong, Singapore, South Korea, and Taiwan), as well as India and Bangladesh, will drive the majority of growth until 2037. We predict India's growth will outpace that of the United States over the next 15 years, as the nation with the greatest population worldwide transforms into a roughly \$1 trillion global building powerhouse.

Construction employment growth in China will decelerate over the next 15 years as the country's population continues to shrink. A considerably aging profile will result in fewer workers and an increased reliance on funds to sustain retirement. Despite these unfavourable reasons, we predict that housing job growth to reach US\$500 billion over the next fifteen years.

The building sector will experience more persistent growth following the decline in output witnessed in recent years due to COVID-19 and consequent warmth. We project that building work in the United States will expand by around 30% over the next 15 years, reaching US\$1.8 trillion by 2037, an increase of almost \$400 billion. The Inflation Mitigation Act would provide around US\$370 billion in funding for clean energy and climate policy, making it a major engine of development in the United States and projected to attract considerable amounts of private money. Following COVID-19, policymakers have prioritized infrastructure to foster economic growth. With rising interest rates expected to weigh severely on the market for new housing, the recent trend in US building will reverse in the short term, with infrastructure construction performing the best. On the other hand, we expect the UK to have the greatest growth rate in Western Europe as big infrastructure projects like

HS2 rail and new nuclear power plants, as well as the green transition, drive ongoing and large-scale expansion in energy power generation and distribution infrastructures.



Source: oxfordeconomic/haveranalytics

**Figure 3: Growth In Construction In Global**

Large construction tasks will fuel the region's transition to net zero emission levels during the next five years. Money has already begun to flow from the €800 billion (US\$863 billion) EU The Next Generation Fund, which mostly benefits Spain and Italy.

The EU Rehabilitation Wave is a second significant initiative that will have an influence on construction activity. It intends to double the pace of renovation of both commercial and non-residential buildings, with the goal of lowering the release of greenhouse gases by 60% by 2030

The last 10 years represented a lost decade of building for Eastern Europe, with no more work completed in 2022 than in 2012. However, the drive for more near-term sectors, along with geopolitical uncertainty and a pandemic-induced tendency toward supply chain flexibility, has already begun to improve its prospects. We predict the Eastern European building industry to exceed US\$180 billion (US\$194 billion) by 2037, a 40% increase over 2022.

External financial help will be critical in sustaining Ukraine's precarious economy. We are pleased by the united efforts of the US, the EU, and the rest of the G7, which offer steady inflows of roughly US\$3 billion per month - the minimum required to fund Ukraine's budget deficit. The new IMF program will accelerate the recovery.

### Review Of Literature

Chong et al. (2011) propose using realistic production rates to design and generate a realistic construction timeline for highway projects. The inability to immediately pick a probability distribution function (PDF) has hindered the use of simulation in many projects.

Kyei, Philip Kwasi, and colleagues (2014) used a quantitative method in their investigation, with a survey questionnaire serving as the primary data gathering tool. This generated a 74% response rate. The raw data was packaged using SPSS, allowing for statistical analysis with tools such as the chi square and descriptive metrics such as mean, standard deviation, and indexes. The study's findings include recommendations for collaboration in the road construction industry's SCM, such as strategic purchasing, handling supplies, long-term collaboration, supplier selection, and provider engagement. The study discovered that SCM in road construction delivers benefits such as information sharing, risk sharing, resource allocation, long-term partnerships, greater service dependability, lower operating costs, happier clients, and increased advantage over rivals.

Anand Prakash and R.P. Mohanty et al.'s (2015) research attempts to provide some critical viewpoints on the construction supply chain for road projects. It outlines a strategy for integrating several viewpoints on supply chain management in road building projects, which will be tested using a qualitative triangulation approach that includes foundational research and soft systems methodology. Road projects require good management of supply chains for construction to fulfill the increasing demand for passengers and freight traffic; but, they are believed to have inadequate space, resulting in schedule and cost overruns, related disputes, and poor quality. To improve the road project's supply chain efficacy, the investment climate should be strengthened for operational challenges, pre-construction activities, the administration of contracts, dispute resolution, and road agency organization.

Purnima Bajpa et al. (2016) evaluate the hazards to supply chain leadership in road infrastructure projects. Supply chain management identifies bottlenecks in the road construction process and helps to reconfigure and re-engineer the supply chain. Methodology: A thorough literature review was conducted to identify the key factors generating delays in the completion of road projects. After analyzing the literature, anonymous survey was designed. The acquired data was analyzed, and the top ten risk factors with the highest Risk Priority Number (RPN) were identified using the Failure Mode and Effect Analysis (FMEA) method. The relationship between the various risk factors was discovered using interpretive structural modelling (ISM). The study's findings show that there are various hazards that cause a difference between the projected and actual completion times of road construction.

Christian A. Rudolf et al. (2018) provide a systematic and prioritized perspective of supply chain risk portfolio in this industry. First, authors identified & classified important supply chain risks in recent research. The authors then conducted a study of large-scale project managers from various sectors, with a focus on supply chain management & project management. Finally, authors present a contextualized risk taxonomy for EPC projects.

Sandip Chakrabarti (2018) provides first empirical evidence suggesting that India's national highway development efforts have produced positive employment benefits in the past. In addition to contributing to transportation planning scholarship, the findings are expected to inform policy-makers in India as they develop future highway investment plans aimed, in part, at economic development. As India's central government continues to increase budget

allocations for national highway projects in anticipation of generating more jobs, this study empirically investigates whether past investments can be linked to employment growth. I analyze changes in non-agricultural private sector employment over a 10-year period (2003–2012) across 25 states in response to changes in the density (lane-km per unit area) of national highways, controlling for other factors affecting employment. Using a series of static (pooled ordinary least squares, random-effects and fixed-effects) and dynamic (random- and fixed-effects with first-order autoregressive or AR(1) disturbances, and system GMM or generalized method of moments) panel regressions, I find that 10% increase in national highway density in India is associated with 1–6% (depending on model specification and estimation approach) increase in private sector employment, all else equal.

S. Hasim et al. (2020) review existing research in the field of materials purchase for SC, contrasting SC concepts and traditional management with supply chain management (SCM). Debates about the history of SCM have also been included to highlight how SC is defined and practised now, with the purpose of discovering new opportunities to improve the performance of materials SCM. This study proved that SCM has advanced from ultra-functional like chain insights to intervention, even across organizations. The SCM concept is now widely used in business for corporate interests in the SC (from raw material extracting businesses to end users). The core concept of SCM is integration. However, SCM is not well understood in the building industry.

Jamal El Baz et al. (2021) investigate the role of supply chain risk management (SCRM) in reducing the impact of disruptions on supply chain resilience and durability during the COVID-19 pandemic. Using the modelling of structural equations on survey data from 470 French businesses, the findings verify the essential concepts of the resource-based viewpoint and organizational processing of information theories on the integration of dynamical resources to deal with disruptive uncertainty. Furthermore, the statistics demonstrate that SCRM techniques have an important impact in increasing supply chain resilience and robustness. Overall, by providing an empirical assessment of a comprehensive SCRM paradigm, this study contributes to the current literature and suggests new research avenues.

Walter Pupoo et al. (2021) intend to give a comprehensive overview of existing research on the factors underlying SCM in construction sector. It undertakes a thorough literature review of over two decades of publications and uses a comprehensive SCM framework to present the findings. The findings indicated a collection of 19 key features consolidated into five issue categories (i.e., 'strategic management', 'logistics', 'relationships', 'best procedures', and 'organizational behaviour') that play a vital role in creating SCM. Each key constituent was extensively investigated, and the results were interpreted in light of new information. This study gave the first comprehensive picture of the current state of knowledge, contributing significantly to better understanding and use of SCM in the building and construction sector.

Dunya Sabah Jarallah et al. (2022) employed a concrete bridge in their investigation. According to the data, altering the source and amount of supplies can reduce costs by around 28.2%. Infrastructure projects are time-consuming, complicated, interdisciplinary, require a variety of materials and products, and carry a significant level of risk. These characteristics

have an influence on the materials supply chain. The current paper analyzes the prospect of improving supply chain procedures and lowering costs by identifying the factors that impact them. These components are used as variables in the mathematical model, which functions in uncertain scenarios when material consumption rates fluctuate. The data for this model is derived via Building Information Modelling ( BIM ) and GIS ( Geographical Information System) techniques, and the genetic algorithm is used to determine the optimum provider and supply quantities for various items.

The study by Ms. Rupali M. Suryawanshi et al. (2022) compares the cost and time before and after the outbreak. The COVID-19 outbreak has resulted in major detainments and cost overruns in construction systems. The goal of this study is to collect information and identify the key factors that influence SCM, productivity, and their relationship at Moshi Point in Pune. So, a questionnaire check is performed and delivered to the attesters who operate at that location. It is also gathered and processed using SPSS software and the RII system, with the impacted factors being connected and rated. The current findings will assist design directors in the building industry understand the issues of the pandemic and develop effective measures to prevent the Covid-19 outbreak and future extremes. Thus, the Covid-19 outbreak has a substantial impact on critical parameters influencing the oversight of the supply chain.

O. C. Oloke et al.'s (2022) study advances knowledge of supply chain management by examining a few key areas of the concept with the goal of increasing consciousness and comprehension among professionals and assisting in the design of a supplychain management strategy appropriate for the buildingdevelopment process. A literature search including key terms and themes relating to the current study's issue yielded relevant publications for evaluation. The talk will centre on the buildings industry forecast, the building process of creation, and the ideas and components of construct logistical oversight. Understanding the fundamental concepts and elements of supply chain management is critical for implementing, modifying, creating, and deploying the strategy in the construction sector, which was the study's aim and focus.

Achmad Fauz et al. (2023) seek to assess the efficacy of the management of supply chains for rebar and concrete materials, which account for 3.251% of project delays. The study comprised 25 contractors who understood and took part in the method for managing supply chains for rebar and concrete supplies. This is a descriptive causal study that uses quantitative methods and analytical tools such as SCOR and AHP. The results show that the supply chain administration's rating for rebar and concrete elements is 64.36 out of 100. This implies that the supply chain oversight in toll road construction projects is average. This performance is highly influenced by material shortages from suppliers at specific times, as well as the design process, which coincides with the construction period, resulting in long wait times for orders and revisions. The AHP revealed that the most prominent factors were Plan and Source. As a result, we may conclude that the rebar and concrete supply chain influences the performance of deferred toll road construction projects. Corrective efforts for toll highway construction with design and build contracts must focus on Plan and Source in order to enhance performance and reduce inflated costs for service providers.

The findings of Gangesh Kumar Joshi et al. (2023) reveal that while both public & private stakeholders agree on significance of appropriate oversight of supply chains in construction sector, their perspectives differ on the variables that contribute to and profit from an efficient supply chain. Likewise, public and private entities disagree on the most crucial challenges affecting supply chain management, such as efficiency and material control. The public were less worried with material quality and delivery delays than private stakeholders were with cost and efficiency. In terms of handling supply chain systems and processes, both the public and private sectors agree that more communication among the supply chain and the project site is essential for maintaining a trustworthy and effective supply chain.

Shrouk Awaad et al.'s (2024) research develops a material supply chain (MSC) structure to oversee best practices in road construction projects at all stages. This ensures that contractors receive the commodities they demand at the optimal time, in the appropriate quantities, and at the lowest possible cost. Builders may boost production, save money, and remain competitive. An online survey was created to evaluate existing MSC practices, identify the most common obstacles that contractors faced throughout the project phases, and identify the most important contributors to supply chain integration in development. The created structure was then evaluated by road construction experts, with 90% agreeing that it promotes project participants to share information and data. 80% of respondents agree that the framework improves project completion with the desired quality and promotes issue solving before it occurs.

Adam Hayes et al. (2024) define a supply chain as a network of people and organizations involved in the manufacture and distribution of a product to a client. The chain starts with the raw material producers and concludes with the vehicle that transports the finished product to the user. Supply chain management is an important activity because a well-organized supply network saves money and increases production efficiency. Companies seek to enhance their supply chain in order to reduce costs and remain competitive.

According to Bengü Güngör et al. (2024), supply chains in buildings have a number of information & working together system requirements, including system affordability & adaptability. Supply chains in the development industry are distinguished by the presence of multiple companies from various industries, which necessitates partnership as well as confidence in exchange of information and system integration. Many efforts are underway in the manufacturing industry to develop equipment, technologies, and plans that will enable supply chain actors to communicate and interact. However, in the construction industry, establishing a solid foundation for inventory and data management is more challenging. The Web and computer technology are currently being used in the build industry to facilitate inter-organizational relations.

Singh, Lavakush & Sabooni, Ameena. (2024) stated that the road infrastructure and economic growth are synonymous. Since 1951, the length of road has increased 12 times. The financing affects the road construction. International institutions and fuel taxes are the key sources of funding these projects. But current system of infrastructure financing is not sufficient to deal with future investment and hence we need to explore new model to attract private capital and

augment the fiscal base of central and sub-national government.. The private sector will be interested in road development only when we strengthen regulatory frameworks and deepen and broaden domestic financial markets. But due to having majority of road under public good characteristics in our country, most of the funding for road construction and maintenance come from the establishment of road related charges.

### **Problems And Key Challenges**

Universally, the construction business stand facing difficulties and challenges. However according to (Ofori, 1998), in the developing countries, these problems and challenges are existing together with a universal condition of socio-economic strain, regular shortage of resources, institutional weaknesses and failure to deal with the vital issues”.

Alarcon (1997) specifies that there are many problems, which surround the incapability of clients in construction industry to attain their business objectives apart from lack of understanding of structure and features of organisation and inadequate specification of value proposed by clients. The construction projects are most of the time in remote locations. Aligning various manufacturers, distributors and dealers to the project in remote location is complex in nature. Also, the demand in construction industry is driven by the project schedule which suffering all the natural calamities at times. Hence from major manufacturers to smaller firms would have problems in their upstream supplies. The following are the major problems and key challenges before the global construction industry:

#### ***LOW RATES OF PRODUCTIVITY***

Deficiency of appropriate attention to detail in buildable design, regular change inclient necessities, ineffective procurementsystem, poor sitemanagement & inadequate mechanisation are the prime reasons for less productivity in the construction industry.

#### ***COST INEFFICIENCY***

Cost inefficiency occurred due to unexpected costs increase in various areas. It may occur dueto the technical features like imperfectforecasting technique, inadequate data,unforeseen factors like increase of scope & targets, and political-economic factors.

#### ***WASTE***

waste is one more problem in the construction business. Generation of huge waste leads the construction organisation to low profit and poor margin.

#### ***TIME OVERRUNS***

Shortage ofmaterials, shortage of labour & shortage of capital are the main reasons which increase the project delivery period.

#### ***QUALITY DEFECTS***

Defects in raw material, inadequate design specifications, defects in buildable design and other quality related defects in project site are the key reasons for poor performance of construction industry.

## **Construction Industry In India**

The construction segment is a key driver for Indian economy. It is second biggest economic activity in India. The Indian construction industry in overall has been growing rapidly year after year owing to rises in national and global production capacity and industrial development over the past few years. (EC Harris Research, 2011), Says that the decision of central Govt of India to agree hundred percent foreign direct investment in infrastructure segments has encouraged construction all over the country.

The industry is critical to India's overall growth and benefits from the government's strong focus on implementing measures that will guarantee the country's superior infrastructure is built on schedule.

Since 1970, the governing body has taken an active role in the growth of the building industry. The National Industrial Development Corporation (NIDC) was founded in 1954 as the first specialist public-sector consulting firm. Following that, several design-build firms were established in the public sector, including National Buildings Construction Corporation (NBCC), Indian Railways Construction Limited (IRCON), Rail India Technical Services (RITES), Engineering India Limited (EIL), and many private companies, such as M N Dastur and Co., Hindustan Construction Company (HCC), Larsen & Toubro Limited, among others.

### ***INFRASTRUCTURE***

Due to the focus of the existing Govt of India and active participation of the private players, the infrastructure development is bound to rise rapidly. Greater attention is paid to power sector both in coal based and gas based. Roads, Railways, Airports, Sea ports and Urban development with smart cities is going to attract enormous investments in the coming years from the private and public sectors.

The current government has given a major inspiration for evolving the urban infrastructure with the declaration to promote development of "Modern Cities" named as "Smart Cities". This initiation would result greater opportunities for construction industry by way of employment and infrastructure development. The Govt should also lay emphasis on the emerging and prevailing infrastructure knocking motivation on justifiable infrastructure development. Various smart cities will function as a hub for various developments and creativity, which can bring frequent business opportunity for the Indian construction industry.

### ***TRANSPORTATION***

India is continuously developing their national highways, state highways and inter connecting roads to various cities, towns and villages for movement of men and materials. There are more than 450 airports in India, which are meeting the need of commercial requirements. Indian Railways is one of the largest public sector managed organization providing maximum service for supply chain needs. India privileges of a lengthy coastline of 8000 km approx. and there are countless chances for natural ports. The long Indian coastline provides ample

opportunity for sea transport by shipments and they are well connected by sea ports. Thus, we can see the massive potential of the transportation segment.

### ***REAL ESTATE***

Urban development in India had resulted in growth of real estate sector. The construction industry supplements their growth in development of new projects in different parts of the country. Large projects by bigger real estate developers have brought in certain complex projects where many problems and challenges are faced by the construction industry. The need for cost effective solutions have resulted in innovative ideas, adopting new technologies and construction methods.

### ***INDUSTRY STRUCTURE***

Infrastructure, Industrial, and Real Estate are recognised as the three-prime market section of the Indian construction industry. Infrastructure includes roads, both sea ports and airports, irrigation, railway, and power projects etc. In the Indian perspective, it is projected that one percent (1%) progress in infrastructure yields a cascading effect of 2.5% growth of Gross Domestic Product. (Mulla Aneesa et al., 2015). There is an enormous investment flow into the infrastructural development in India and other Asian countries. The construction company of India contains 200 firms approximately in corporate segment. In addition to these firms, there are several classes of a contractor listed with several Govt. construction bodies.

### ***COST STRUCTURE***

The direct costs of construction include raw material costs, employee costs, other production consumable costs, and power and fuel expenses. The quality raw material and its availability is an important factor governing profitable operations of construction. The major players in India today have procured key raw material like steel and cement from the Steel Authority of India Limited, Rastriya Ispat Nigam limited, Tata Steel Limited, Jindal Steel & Power Ltd. (JSPL), ACC Cement, Ambuja Cement, Ultratech Cement and many other private players. The other activities related to construction may be classified into primary and support activities. The primary activities include inspection, civil, maintenance and safety, and commercial functions like logistics and inventory. The support functions in the value chain comprise Human Resources Management, Finance, Corporate Affairs and Supply Chain Management and Information Technology.

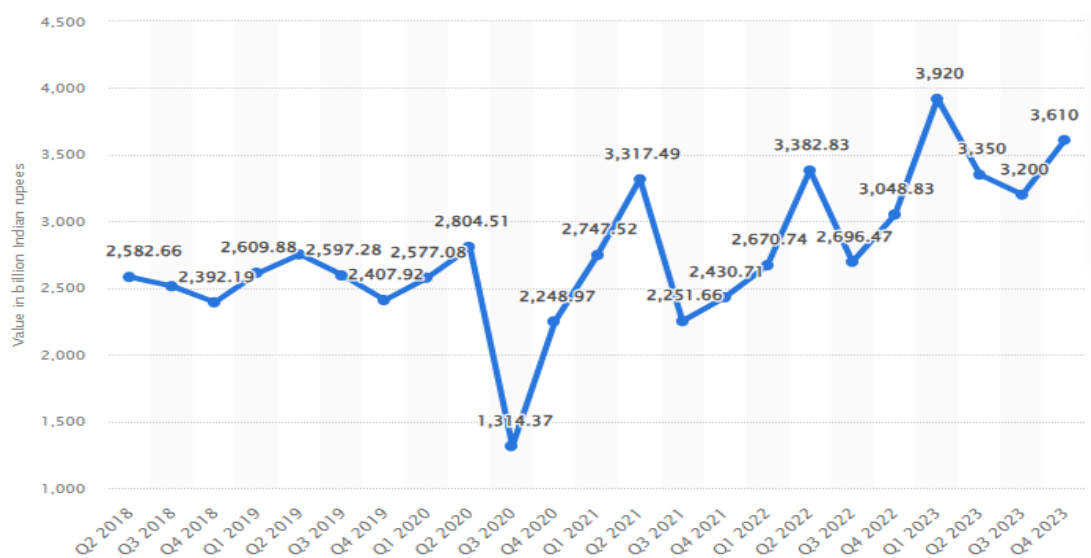
### ***OPERATING MARGIN AND LEVERAGE***

The construction industry has not shown a healthy growth in both capacity utilization and profitability in the past few years. Profit margins are reduced year after year. Failures have emerged in the construction company not only in the developed nations but across the globe. Failure of construction business are not only very disruptive to the organisation but it may create a warning to the country's economy. Construction industry is exposed to insolvency owing to uncertainties in the construction capacity, fragmented nature of the company, falling the value of money and rising the price level, top competition, ambiguity and involvement of risk. However, the direct cost proportionate to quantities can be economised by value

engineering and the indirect cost proportionate to time lines can be economised by timely completion of projects.

### **INDIA GDP FROM CONSTRUCTION**

Trading Economics.com reports that "the GDP from developing in India improved to 2379.51 INR A trillion dollars in the last three weeks of 2017 from 2198.68 INR Billion in the third month of 2017 and the GDP from building in India amounts 2088.92 INR Billion from 2011 until 2017, carrying out a historic high of 2379.51 INR Billion in the fourth quarter of 2017 and an all time low of 1855.78 INR the size of the billionaire in the third quarterly period of 2012". India's building industry was worth more than 3.5 trillion Indian rupees in the fourth quarter of 2023. This was a notable gain over prior years, when the value fell owing to the coronavirus (COVID-19) epidemic.



**Figure 4: Value Of construction To India's gdp Q2 2018-Q4 2023**

In the fourth quarter of 2023, the Indian construction sector was valued at more than 3.5 trillion Indian rupees. This was a large gain over prior years, when the value had declined owing to the coronavirus (COVID-19) pandemic. The country's constructions and industrial industries were among the most severely affected at the time. However, the sector rebounded rapidly and returned to its pre-crisis levels. The coronavirus (COVID-19) epidemic and a national shutdown from March to May 2020 had various affects on the Indian economy's producing sectors. Manufacturing, along with sectors like the building industry, is projected to have decreased in the second period of 2020.

Even though employment numbers grew as migrant workers returned home, there was no substantial shift in the agriculture sector. The utilities business saw shifting values, peaking in the fourth quarter of 2021. Infrastructure building has been key to India's economic progress in recent years. Between fiscal years 2016 and 2020, the manufacturing industry received the largest investment. FDI inflows into engineering industries have varied over the last five years, totaling roughly US\$8 billion in FY21.

## **Problems In Indian Construction Industry**

Construction industry has become the basic source of socio-economic development of India. It contributes significantly to the GDP. However, nowadays the Indian construction industry is suffering from many problems, i.e. low profit margin, low productivity, delays & budget overruns. In addition to this, introduction of some new policies by the Govt. of India like demonetization, GST implementation, pressure from international community, environmental issue and the lack of public awareness on certain infrastructure sectors are also responsible for hampering the progress of the construction business in India.

According to Sreepuram and Rao (2006), "in spite of its advancement across the globe, official project administration in the Indian construction industry is rarely evident." KPMG Worldwide, (2010) states that "modern-day India is starting to adopt collaboration tactics such as build-own-operate-transfer, buildown-operate, public-private collaboration, etc." Inefficiencies are huge in India. This might be due to the under-developed workforce and establishments, inappropriate planning, and the negative attitude of contractors. Practically each project in India undergoes time and cost overruns. According to (McKinsey, 2009), some of the probable reasons of inefficiencies recommended are:

- Poor in engineering design and planning.
- Unsuitable contracts in practice
- Centralised and slow in Pre-tendering approval process.
- Difficulties in land acquisition
- Weak practices in dispute resolution
- Weak performance management system.
- Shortage of skilled, semi-skilled and high skilled workers.
- Lack of risk management skill.
- Absence of good supply chain management practice.

Construction industry is suffering with low margins & profit levels. The relationship with different stake holders are also purely based on commercial merits. Delay in execution of construction projects are primarily due to engineering delay, delayed supplies, unproductive construction works and inappropriate resource management. In totality, the major concerns for the construction industry are cost, quality, time and safety. Increase in input cost and freight decrease the margin of the construction industry. The following are major problems in the Indian construction industry.

### ***LOW PRODUCTIVITY***

The main reasons for low productivity include a lack of attention to detail in the constructed design, frequent changes in client needs, an ineffective procuring system, bad site administration, and insufficient mechanization.

### ***TIME OVERRUNS***

Time overruns occur when a project is not finished within the time frame set in the project plan. Time overruns can occur due to a lack of resources, manpower, or funding.

### ***COST OVERRUNS***

A cost overrun, also known as a spending plan overrun, is a cost rise caused by unforeseen expenditures that exceed projected quantities.

### ***HIGH VOLUME OF CONSTRUCTION WASTE***

Frequent generation of waste resulting from new construction, remodelling, or the demolition of a structure causes poor performance of the construction industry

### ***HEALTH & SAFETY***

Employee health & safety always become a serious concern in construction business. The number of workplace injuries and illnesses has remained constant for years

### **Conclusions**

Construction industry in India is a second largest industry deploying maximum number of skilled, semiskilled, unskilled and highly skilled workforces. India being a developing country have heavily invested on infrastructure, industrialization, urbanization, and real estate for better quality of living. Heavy investments and long term plans are made for infrastructure projects such as roads, railway, airports, power plants & Sea ports etc. Cost of Indian construction industry is influenced by fluctuation in raw material & labor cost. The raw material consumed by the construction organization in India mostly includes cement and steel. The unparalleled increase in prices of steel and cement has a direct influence on the project cost. The construction industry in India is playing the vital role in the overall economic progress of the nation. Today, the Indian sub-continent is second fastest rising economy in world. Infrastructure consisting urban development, transportation, utilities and real estate consisting residential and commercial are the key contributor for growth & development of Indian construction industry. The research concluded that worldwide Construction Futures, a significant analysis of the worldwide construction and engineering sector produced by a team of constructions researchers at Oxford Economics, predicts a promising future. Over the next 15 years, worldwide building output will increase from US\$4.2 trillion in 2022 to US\$9.7 trillion in 2022 and US\$13.9 trillion in 2037. China, the United States, and India will be responsible for half of all work done in the global engineering and building sector by 2037, supporting the future growth economies of three nations that account for more than a third of humanity's population and revenue.

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