International Journal of Commerce and Management Research
www.managejournal.com
ISSN: 2455-1627
Received: 24-10-2025, Accepted: 23-11-2025, Published: 08-12-2025
Volume 11, Issue 12, 2025, Page No. 59-62

Low productivity due to the shortage of skilled labour, causing delays in the completion of Building Projects in Indian Metro Cities a review of literature

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Abstract
Skilled manpower shortage in construction is a major problem the construction industry is facing across the country. Shortage of skilled construction workers slows progress due to reduced productivity, resulting in delays in the completion of projects. Several studies have proven that productivity in construction is linked to the deployment of skilled manpower. If the skill level of construction labours are low, productivity will also be low, and that will cause a delay in meeting the project's timeline. Construction projects in India face similar problems of project delay due to low productivity caused by the shortage of skilled construction labour. This literature review aims to study previous research that identifies the role of skill shortage on productivity and its impact on a project's schedule. Literature review is also trying to find out whether any specific study has been done on the same issue for construction projects in India, specifically for building projects in metro cities. The study also seeks to understand the impact of government initiatives to increase the skill level of construction workers and suggest further measures to overcome the skill labour shortage in Construction projects in India.

Keywords: Skilled manpower shortage, construction productivity, project delay in india

Introduction

Shortage of skilled manpower is a challenge for several industries in India. The construction industry, which plays a significant role in India's development, is facing a severe shortage of skilled construction workers. The shortage has serious implications for infrastructure development and economic growth.

The construction industry is heavily dependent on skilled/unskilled manpower due to its nature of work. The construction boom in the country has created a very high demand for skilled construction workers. Rural development in the country provided job opportunities to labours near their homeland. This has further aggravated the shortage of labours as they prefer to work near their native places instead of travelling far and working in metro cities. High demand and low availability of construction workers created a situation where construction companies are compelled to deploy unskilled or semiskilled labours in place of skilled labours. Output from these semi-skilled or unskilled construction labours are lower than what it should be. This creates the situation when particular work gets delayed, resulting delay in the overall project timeline.

The four main metro cities- Delhi, Mumbai, Kolkata and Chennai are the major economic, cultural hubs and growth engines of our country. A growing population puts pressure on the city's infrastructure. The government launch several projects to improve the infrastructure in cities. Due to the growing population in these metro cities, demand for residential and commercial projects is always high.

Real estate developers launch new residential projects in these cities every year, as demand for residential units is always high. Additionally, state-level organisations or development authorities in their jurisdictions launch new residential projects every year to provide the residents with quality homes at affordable prices. These organisations include CIDCO (City and Industrial Development Corporation Ltd) and MHADA (Maharashtra Housing and Area Development Authority) in Mumbai, Delhi Development Authority (DDA) in Delhi, West Bengal Housing Board (WBHB) in Kolkata, Tamil Nadu Housing Board (TNHB) & Tamil Nadu Urban Habitat Development Board (TNUHDB) in Chennai. Pradhan Mantri Awaas Yojana (PMAY) also launch mass housing projects in LIG & EWS categories in the suburban areas of these cities. Commercial development in these cities adds the construction of commercial and office buildings too.

The shortage of skilled manpower in the country affects the completion schedule of building projects in these metro cities, as deployed manpower has low productivity, which pushes the project timeline beyond the completion date. This delay causes a negative impact not only on buyers but contractors and developers too. This is a challenge for the construction industry. Industry & government are trying to overcome by adopting several measures like skill development program, on-site training, and by adopting new tools/ technologies that require less skilled manpower and give more output etc.

Literature Review

Several studies and research papers have been published to highlight the shortage of skilled labours, resulting in low productivity and delays in the completion of projects.

Patel *et al*., (2011) [1] in their article on Labour Productivity in Building Construction in IJCRCE, explained that productivity is the ratio of output to all or some of the resources used to produce that output. In construction, productivity is usually taken to be average labour productivity, that is, units of work produced per man-hour. Another way we can say productivity is the ratio of output to labour cost or output to work man-hour.

Kadu *et al*. (2020) [2] in their conference paper Construction labour productivity in IJERT identified shortage of experienced labour is one of the key reasons that affect productivity.

Malik & Kumar (2024) [3] in their publication "Factors Affecting Construction Delay in Residences" in IJMH described low productivity, and delays may be caused by ineffective labour management, including inefficient labour allocation, a lack of monitoring, or insufficient training.

Saxena & Tomar (2018) [4] in their article "Causes and Effects of Delays in Indian Construction Projects" have identified that the Shortage of skilled labour is one of the 15 most important causes of delay in construction projects.

Yusoff *et al*. (2021) [5] in their article "The Relationship of Skilled Labour Shortages and Project Performance in Construction Industry: A Conceptual Framework" in Journal of Project Management Practice have described that the completion schedule is one of the three important criteria (the other two criteria are budget & quality) to measure the project performance. Their study supports the conclusion that skilled human resources are important factors in ensuring the success of construction projects.

Mistri *et al*. (2019) in their article "Causes, effects and impacts of skills shortage for sustainable construction" published in JETIR have highlighted the shortage of skilled labour, causing a negative impact on sustainable construction. They divided the cause of the shortage into three categories: Contractor-related factors, personal factors & other factors.

Hasan & Riyaz (2025) [7] in their article "Analysis of skilled labour shortage in the construction industry of developing countries" published in Building Engineering, highlighted that globally and regionally, the construction industry faces persistent productivity challenges, exacerbated by skilled labour shortages. Skilled labour is more productive due to specialised knowledge that helps them to perform tasks more efficiently and effectively. It was found that low productivity increases in the duration of projects, and errors/defects and rectification of defects during construction are the top effects of the skilled labour shortage.

Kaja & Jauswal (2023) [8] explain that there are many factors that influence labour productivity. These factors of productivity are grouped according to the literature study conducted into four major categories. These categories are (i) human factors, (ii) site conditions, (iii) availability of resources, and (iv) project planning and Management. As per their analysis and relative importance index, out of the top 10 factors, skilled & unskilled labour are identified as 2nd highest factor affecting labour productivity.

Nasirzadeh *et al*. (2020) [9] in their article in "International Journal of Construction Management" analysed key factors affecting labour productivity in Australian multi-storey building construction projects. Result of DEMATEL analysis of 26 key factors indicates "Level of skill and Experience" has the highest priority ranking, followed by communication problems with foreign workers.

Darwin & Shanmukhapriya (2017) [10], published a research paper in STM Journal titled "Ranking of Relative Importance of Productivity Factors in Indian Construction Projects". Research elucidates that among six influencing factors, Lack of Labour Experience ranks second, which affects productivity in residential projects.

Dixit *et al*.(2017) [11] in their research found that there is a significant relationship between skill development and construction productivity. Although, National Development Skill Council (NSDC) is involved in skilling workers and the number of people being trained is increasing substantially year by year, there is an earnest need to consider skills improvement within the setting of development organisations to achieve improvement in productivity performance.

Mahamid (2022) [12], in his research article "Relationship between delay and productivity in construction projects" published in the journal International Journal of Advanced and Applied Sciences, elaborated that although there are many factors that cause delay, poor labour productivity ranks number one among all factors that cause delay in construction projects.

Jian at el. (2025) [13], findings of a research article published in "Buildings" indicated that out of the total 66 critical factors categorised into 12 groups, which influence construction productivity, "workers' experience and skills" ranks first.

Thorat at el. (2015), in their empirical study published in IJSER about the cause of delay in residential projects in India, explain that out of 41 factors categorised into 7 groups, unavailability of skilled manpower and labour ranks first.

Desai & Purohit (2022) [15] in their published research paper on the cause of delay in residential projects identified five categories of delay of five categories: Manpower related, equipment related, material related, design related & authority related. Shortage of skilled labour, low productivity, and unqualified force was highest highest-ranked causes for delay in RII ranking.

Desai & Bhatt (2013) [16], conducted a case study in the central Gujarat region and published a research paper, "Critical Causes of Delay in Residential Construction Projects". In their study, they used a relative importance index to rank various causes of delay. Out of the top five recurring causes of delay, shortage of labour & low productivity are two key factors that contributed to the delay in projects.

Ali at el. (2025) [17], in their research article "Delay in construction projects in India", they published their research findings. They found that out of the total 63 causes for delay that were further categorised into 14 key causes, shortage of labour and Low productivity of labour stood rank 2 and rank 5 respectively. This indicates that although there are several factors that cause delay in projects but skilled labour shortage and low productivity are among the top five causes for delay.

Construction Skill Development Council of India (2022), published the domestic skill gap report CSDC2022- "Skilling India: Construction sector demand and Supply". The report highlights various aspects of the skill gap that exists in the construction industry, the demand for skilled workers state-wise, and current measures taken by the government to bridge the gap in demand and supply. The report clearly indicates that, looking at the growth in the construction sector in India, current measures are insufficient and states that where skilled workers' demand is high, need to establish more skill development centres.

Ministry of Skill Development & Entrepreneurship Report 23-24, elaborated in their report that the government has recognised the need to provide facilities & create an environment for skill development programs in our country. Under the Ministry of Skill Development & Entrepreneurship (MSDE) Various schemes were launched to impart the skills and provide job opportunities. Scheme includes

- Pradhan Mantri Kaushal Vikas Yojana (PMKVY)
- Pradhan Mantri Kaushal Kendra (PMKK)
- National Skill Development Corporation (NSDC) National Council for Vocational Education and Training (NCVET)
- Jan Shikshan Sansthan (JSS)
- National Institute for Entrepreneurship & Small Business Development (NIESBUD)
- Indian Institute of Entrepreneurship (IIE)
- Directorate General of Training (DGT)

Under the Skill India Mission, MSDE is implementing various skill development programmes/schemes through training centres across the country. The training program includes training for jobs that enable participants to find suitable job opportunities in the building sector in India & abroad. Training is provided in various trades, such as Assistant Mason, Assistant Bar Bender & Steel Fixer, and Assistant Shuttering Carpenter, etc. Trained workers have better productivity in comparison to untrained workers.

Ghosh & Paul (2024) [20], published a detailed report on progress and problems of skill development in India. The research paper highlighted the current status of skill development in India and the challenges that it faces. Unfortunately, Skill India faces several issues, including inadequate seating capacities, poor quality of training programs, a deficiency in exposure to industry etc. In terms of their quality, 66.55% of Indian educational training institutions are below the grade of 1.5. There is a need to improve the mission that includes more spending, enhanced seating capacity, advance training mechanisms and industry-exposed training programs.

Gap Identified

A lot of research has been done to identify factors that influence labour productivity. After review of all above mentioned literature, it becomes clear that the experience, skill and training of labours influence productivity. Since there are shortage of skilled, trained construction labours, construction projects suffer, and projects get delayed. This is a global phenomenon. However, research papers/literature do not quantify the impact of this factor with respect to all other factors that cause delay in project completion.

Also, there is a lack of specific studies of building projects in Indian metro cities that are delayed due to skilled manpower shortage. Projects in these cities face some specific issues like space constraints, traffic problems, lack of labour accommodation space, delay in project approvals etc. Therefore, the impact of skilled labour shortage on projects in these metro cities will certainly be different than construction projects in other cities and towns. Hence, metro metro-specific study will shed light on the impact of skilled labour shortage on the delay in the completion of projects.

Also, existing literatures do not suggest measures that can be implemented to overcome the skill labour shortage issue in construction, which needs to be explored in new research.

Conclusion

Construction projects are affected by a wide range of factors. The loss of labour productivity is usually attributed to various factors. The shortage of skilled labours or deployment of inexperienced, untrained, semi-skilled construction workers in construction projects is one of the high-ranked factors that affects productivity. Numerous studies in their empirical study have proven this fact. Recognising the need to fill the gap of skill demand & supply, the Government of India has taken several initiatives under its flagship program “Skill India Mission”. However, the study shows that the outcome of this mission has not achieved its goal and skill demand outpaced the supply.

The conclusion drawn about productivity affected by the shortage of skilled manpower is applicable to construction projects in Indian metro cities too. However, a specific study for construction projects in four metro cities needs to be taken separately, which can quantify the impact in terms of the percentage of total delay attributable to the shortage of skilled manpower.

References

1. Patel B, Bhavsar JJ, Pitroda J. A Critical Literature Review of Labour Productivity in Building Construction. International Journal of Constructive Research in Civil Engineering (IJCRCE), 2011.
2. Kadu N, Ganiga S, Mistry J, Chourasia G, Yadav P. Construction Labour Productivity - A Review. International Journal of Engineering Research Technology (IJERT), 2020. ISSN: 2278-0181
3. Malik MS, Kumar MK. Factors Affecting Construction Delay in Residences, International Journal of Management and Humanities (IJMH), 2024. ISSN: 2394-0913
4. Saxena H, Tomar PS. Causes and Effects of Delays in Indian Construction Projects. Journal of Advances and Scholarly Researches in Allied Education, 2018. ISSN 2230-7540
5. Yusoff NS, Rahim FA, Chuing LS. The Relationship of Skilled Labour Shortages and Project Performance in Construction Industry: A Conceptual Framework. Journal of Project Management Practice,2021:1(1):1-21
6. Mistry A, Patel CG, Pitroda JR. “Causes, effects and impacts of skills shortage for sustainable construction” JETIR, 2019, 6(4). (ISSN-2349-5162)
7. Hasan A, Riyaz A, Analysis of skilled labour shortage in the construction industry of developing countries, Building Engineering,2025:3(1):2054.
8. Kaja N, Jauswal A. “Assessment of Construction Labour Productivity in India” Zeichen Journal, 2023. ISSN No: 0932-4747
9. Nasirzadeh F, Rostamnezhad M, Carmichael DG, Khosravi A, Aisbett B. Labour productivity in Australian building construction projects: a roadmap for improvement, International Journal of Construction Management, 2020. DOI: 10.1080/15623599.2020.1765286
10. Darwin PJ, Shanmukhapriya S. “Ranking of Relative Importance of Productivity Factors in Indian Construction Projects”, Journal of Construction Engineering, Technology and Management, 2017. ISSN: 2249-4723
11. Dixit S, Mandal SN, Sawhney A, Singh S. “Relationship between skill development and productivity in construction sector”, International Journal of Civil Engineering and Technology (IJCIET), 2017. ISSN Print: 0976-6308 and ISSN Online: 0976-6316
12. Mahamid I. “Relationship between delay and productivity in construction projects”, International Journal of Advanced and Applied Sciences, 2022. DOI: 10.21833/ijaas.2022.02.018

13. Jian F, Liu Q, Feng C, Hu Q, Yu Q, Guo Q, *et al*. "Critical Factors Affecting Construction Labour Productivity: A Systematic Review and Meta-Analysis". Buildings,2025:15:2463. https://doi.org/10.3390/ buildings15142463
14. Thorat S, Khandare MA, Kanase AK. "Empirical Study on Causes and Effects of Delay in Residential Projects in India", International Journal of Scientific Engineering and Research (IJSER) ISSN (Online): 2347-3878
15. Desai S, Purohit R. "Investigation on causes of delays in residential building construction project", International Research Journal of Engineering and Technology (IRJET), 2022. e-ISSN: 2395-0056
16. Desai M, Bhatt R. "Critical Causes of Delay in Residential Construction Projects: Case Study of Central Gujarat Region of India", International Journal of Engineering Trends and Technology (IJETT), 2013, 4(4). ISSN: 2231-5381
17. Ali B, Kushwaha P, Rana M, "Delay in Construction Project in India", International Journal of Scientific Research and Engineering Development, 2025, 8(1). ISSN : 2581-7175
18. CSDCI. Skilling India: Construction Sector Demand and Supply, Domestic-Skill-Gap-Report -CSDC, 2022.
19. Ministry of Skill Development Entrepreneurship, Annual Report 23-25**,** Government of India Skill Development Entrepreneurship and Skill India - Publication
20. Ghosh PK, Paul B. "Progress and Problems of Skill Development In India", 2024. www.researchgate.net/publication/384811513