

Effective Strategies to Reduce the Impact of Skilled Labour Shortage in Construction Industry in Pune Region (India).

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Abstract - In India, the construction industry plays a major role in economic and physical development. The construction industry has been heavily dependent on the adequate supply of skilled labour, and as a result of the skilled labour shortage in India has received considerable attention in recent years. This problem has been identified and surveyed by various researchers and found to be one of the important and ever-increasing problems in the construction industry. There are existing initiatives to reduce the impact of skilled worker shortages, but most of the research has focused on increasing the skill levels of the existing workforce through training. Research exploring the impact of the possible changes during the design phase has been limited. Since the focus of this thesis is aimed to explore the reasons for the skilled labour shortage, the consequences of the skilled labour shortage, mitigation measures to overcome the shortage and to find the extent of the skilled labour shortage in the 'Pune region India'.

Key Words: Construction Industry, Workforce, skilled Labor, shortage, Mitigation measures.

1. INTRODUCTION

The construction industry is a global industry known for its generation of jobs with different skills and professionals. In terms of the value of output, the global market is reported to be around \$1.5 Trillion as of today. But only a small portion of it is distributed among its workers. In the world labour market, construction workers are said to be over 100 million, constituting 6-7 % of the world labour force. India is well accepted to have reached the stage of rapid economic growth, but 'not rapid social development'. Poverty, unemployment and inequality constitute the major problems that India faces, especially from equity and social development points of view. India's labour force is predominantly unorganized, unskilled, poorly paid, of low productivity and unprotected. Among the various sections of unorganized labour, the labour in the construction industry is a large section that suffers from poor working conditions and adverse terms of work. Since there is a huge shortage of skilled labour in the Indian construction industry. The research methodology mainly deals with the study of the Present scenario of skilled labour shortage through extensive literature review and then after in the research part, A questionnaire/interview survey is to be carried out

within both private and public construction organizations to analyse the views of professionals' as well as labours'.

The main objective of this thesis is to study and analyse the surveyed data and propose suitable strategies/mitigation methods to overcome the impact of the shortage of skilled labour.

1.1 Indian Construction Industry

The construction industry is one of the most booming industries in the 21st century and remains so with the continuation of the development process, especially in developing countries. India is expected to become the third-largest construction market globally by 2022. In India, the construction industry plays a major role in economic and physical development. Further, it is the second-highest sector in the Indian economy after agriculture in economic activity and employs more than 51 million people out of which 90% are involved in on-site construction with the other 10% busily painting, plumbing and wiring the finished product. Nearly 9% contribution to India's GDP.

The industry is highly labour intensive, was helping in dealing with the national problem of unemployment. However, now technological improvements and innovations have begun to transform this industry into a high tech one, even in the housing sector, suited to build skyscrapers and towers. This has made the industry quite profit-oriented, yet with high risk and with poor prospects for labour, especially to the unskilled and semi-skilled workers in the industry. While the availability of an unskilled workforce will be growing, the lack of high-quality skills in the labour market is becoming even more acute. And the problem of skilled labour shortage becomes nation's heavier one.

1.2 Labour

Labour is an important resource in construction because it is the one that combines all the other resources namely materials, equipment, and finance to produce the various construction products. Labour is the one resource that affects all the other resources and it is most vulnerable to improvement. Specifications, control material, costs, profit and overhead are generally controlled by the competition. The labour left as the one resource open to improvement. BLS says construction workers perform a wide range of

physically demanding tasks at the site. Construction work is a physically demanding one.

While Construction labour work at enormous heights. Most labour work more hours per week and may have to work weekends, holidays and nights. Construction work may stop due to weather; workers aren't usually paid if the weather stops work. Labour work with dangerous equipment, at heights, and with hazardous materials.

2. PROJECTED WORKFORCE

The industry, till recently highly labour intensive, was helping in dealing with the national problem of unemployment. As a country endowed with labour, India's situation is at best ironic. On the one hand, domestic economic growth has created huge employment demand and job opportunities, while on the other, a shortage of skills is making more people unemployable. According to the Economic Survey 2017-2018, real estate and construction together is the second largest employment provider in the country, next to agriculture and is likely to create more than 15 million jobs over the next five years, that's three million every year. Based on the growth expected in the Infrastructure and Real Estate sectors, it is expected that about 83 million persons would be employed in the Construction sector by 2022. The incremental human resource requirement between 2008 and 2022 is expected to be about 47 million. The sector-wise composition will be as follows:

Table -1: Incremental human resource requirement across the workforce (including skilled workforce) between 2008 and 2022 (in '000s)

Profile of people	Incremental Requirement
Project Managers and Engineers	473
Supervisors	473
Foremen	946
Crane operators	7
Electricians	473
Welders	473
Bar Benders	1,419
Masons	1,419
Plumbers	1,183
Carpenters	1,892
Surveyors	47

Others (including Quality, Glazing workers, painters, equipment operators)	459
Minimally Educated	38,038
Total	47,302

(Source: NSDC Report by 2022)

Table -2: Projected human resource requirement between 2008 and 2022 (in '000s)

	2008	2022	Incremental
Infrastructure			
7	25,17	58,289	33,111
Real Estate			
0	10,79	24,981	14,191
Total			
8	35,96	83,270	47,302

(Source: NSDC Report by 2022)

There is excess demand in the job categories like Crane operators, Electricians, Welders, Masons, Plumbers, Carpenters and elementary occupations. Hence, it is clear that there is a huge shortage of skilled workforce in the Indian construction industry.

3. LITERATURE REVIEW

This problem of skilled labour shortage has been identified and surveyed by various researchers and found to be one of the important and ever-increasing problems in the construction industry and has received considerable attention in recent years. The present chapter deal with the work carried out by several types of research to overcome the problem of skilled labour shortage in the construction industry. The review is presented by referring to the National and International Scenario as regards the same. A few papers, reports, are reviewed as explained below.

Siddesh K Pai, Satya Dheeraj,(2013) this research is based on the problem that industry confronts is the acute shortage of skilled and trained manpower and they were only concentrated on low-level workforce such as labours/workers. According to this paper, At present, there is about a 40% deficit of skilled manpower in India and getting a skilled and trained workforce these days has

become an uphill task. Shazwani Zaki, Sarajul Mohamed, (2012) explores on construction skilled shortage issue in Malaysia and how serious it is. Discussion of the paper will be on initiatives taken to overcome this issue by introduced technical and vocational skills training and education in Malaysia. D. Prasanna Kumar, A. Satish, SS. Asadi (2018), tried to identify the issues involved in human resources management in construction projects and data collection through questionnaire survey from different construction companies. And further analyzing the data with a technique or software and recommend solutions for the issues involved in resources management in construction projects.

Basnayake, Premathilake, Dissanayake (2015), studied the problem of skilled labour shortage by previous literature review and find out the consequent causes and effects due to the shortage of skilled labour. Finally, they have concluded that the lack of supply of training institutes is the main reason for the shortage of skilled labour in the construction industry. Ruchi Hajela (2012). This paper concern with the Shortage of Skilled Workers and they say that By 2025, it is estimated that 70 per cent of Indians will be of working age. This paper aimed to explain why India faces a shortage of skilled workers despite multiple ongoing skill-building initiatives. The main reason behind the lack of a sufficient number of skilled workers in the absence of training for casual workers, who dominate the Indian workforce.

4. OBJECTIVES OF THE STUDY

- To study the present scenario of the skilled labour shortage in India.
- To investigate root causes for the shortage of skilled labour in construction industry particularly in Pune region (India).
- To find out the consequent impacts due to the shortage of skilled labour.
- To propose suitable strategies/mitigation methods to overcome the shortage of skilled labour.

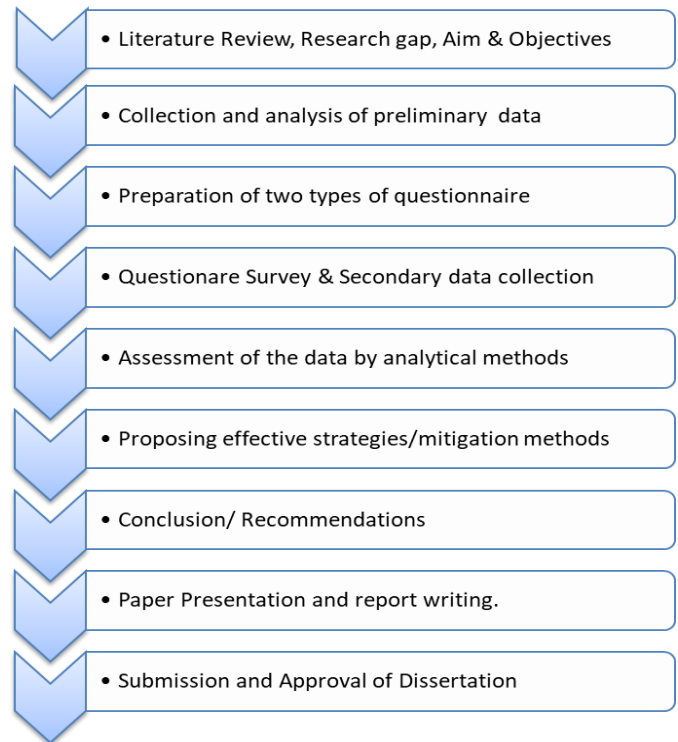
5. METHODOLOGY

The following methodology will be adopted:

- Collection and analysis of preliminary data to know the present scenario of skilled labour shortage through literature review.
- Preparation of two types of questionnaire one targeting the administrative and professional level and the other one targeting the labour.
- Collection of data through semi-structured interview survey based upon the questionnaire.
- Assessment of the data by analytical methods and defining the causes of skilled labour shortage and their impact on the construction industry.
- Proposing effective strategies/mitigation methods to overcome the problem.
- Giving overall conclusion and recommendation from the methodology.

6. STUDY PROCESS

This study involves mainly the following process.



7. DATA COLLECTION

The data collection process used in this research had the option of two basic methods: questionnaires and personal interviews. A questionnaire was preferred as the best effective and suitable data-collection technique for the study. It was concluded that the questionnaire was described as a self-administered tool with web-design questions, an appropriate response. A questionnaire in a web survey format comparatively requires less duration and saves cost for the researcher while permits respondents to respond to the questionnaire at their ease. However, for this approach, the reply rate is usually lower as compared to face-to-face interviews. Data was collected from literature reviews from books, journals, articles, seminar conferences, and websites that emphasize, 'Effective strategies to reduce the impact of skilled labour shortage in construction industry in Pune (India).' A survey was given to employees from different positions involved in the construction industry.

8. ORGANIZATION OF THE QUESTIONNAIRE

One of the biggest concerns of the research study was the number of responses with complete information. Recognition of respondents about the benefits and uses of this research study was also of great concern. The following criteria were used to begin the questionnaire design process:

Questionnaire Exactness	Response Rate Duration
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Applicable
Completeness
Understanding

Ease of Completion

Carefulness and great measures were taken to make the questionnaire efficient, it was however not assured that the response will be of a high percentage. Great care was taken to assure respondents get precise duration to respond to the survey questionnaire and turn it into the researcher online. Considering the length, importance, sensitivity, experience of the researcher's advisor and feedback collected from a pilot survey it was decided, Questionnaires were kept effective and simple for the respondents. Various sections were designed for the survey questionnaire and they were assigned distinct colours for appropriate responding.

9. QUESTIONNAIRE SURVEY

The questionnaire survey was the main method of collecting data. Two types of questionnaires were prepared, one targeting experienced persons at administrative and professional levels such as managers, engineers, architects and quantity surveyors. This questionnaire was a quantitative one which was filled by them. Most of the questionnaires were sent by email, LinkedIn and manual methods (by hand) were also used whenever it was appropriate. The other questionnaire was a qualitative questionnaire targeting the labour. Unlike the previous questionnaire, this questionnaire was filled by ourselves in most cases after having face to face interviews with the labourers.

Questionnaire A: Targeting Administrations and Professionals

01. Background Information
 - Information about the organization
 - Information about the respondent
02. Identification of the reasons for the shortage of skilled labour
03. Identification of the consequences of the shortage of skilled labour
04. Determination of mitigation measures
05. Conclusion.

Questionnaire B: Targeting Labours

01. Basic personal details
02. Type of job and work experience
03. Job satisfaction
04. Training and educational qualifications
05. Physiological aspects of the job
06. Future Plans with the job

10. DATA ANALYSIS

An analytical method was used to analyse the questionnaire data. To calculate the severity and the importance of the consequences of the shortage of skilled labour Importance Index and Severity Index were calculated.

The Relative Importance Index was calculated from the above two indices to rank the causes and the effects.

To calculate the frequency of occurrence of certain events, the frequency index was calculated. Importance Index was calculated to rank the importance of mitigation measures.

11. SCOPE OF STUDY

A standard civil engineering construction project is expected to meet the requirements of cost, time and quality of the client, which are to a significant extent rely on the performance of the involved workforce. The workforce performance mainly depends on their acquired training or skills. Though many past researchers identified the shortage of skilled labour as a key factor that adversely affects the construction industry both locally as well as internationally, there are only a few studies done to analyze this situation to come up with effective mitigation measures. Thus, this research is an attempt to cover the shortcomings of the past studies and to suggest effective strategies to reduce the impact of skilled labour shortage in construction industry in Pune region (India). Data were collected from both government and private sector organizations including client, contractor and consultant, three parties.

12. PRACTICAL IMPLICATION

The study seeks to have positive implications on sites are as:

- The results will help construction firms to face the problem of skilled labour shortage and to overcome the problems that occurred by a skilled labour shortage.
- Enables overall improvement in construction quality, speed of construction, economy and efficiency through the utilization of the mitigation measures presented to reduce the impact of skilled labour shortage.
- Improving skilled labour will help in increasing profitability, improve company performance, save Time and Cost, etc.

13. Outline of Thesis

This thesis consists with following Six Chapters

- The first chapter of the Introduction explains the present scenario of the Indian construction industry, labour information and projected workforce then the Aim and Objectives of the proposed study.
- The second chapter consists of the literature review of Previous work on skilled labour shortage and skill gap.
- The third chapter consists of the methodology that is used throughout the study for the skilled labour shortage. The structure of the questionnaires, the methods adopted to analyse the data.
- Chapter Four explains results, discussions, which are evaluated from the collected data and also suggestions and discussion of both questionnaire findings.

- Chapter Five concludes the overall study and recommendations for future research.

14. Conclusion

- By analysing the results obtained, find out the main reason for the shortage of skilled labour in the construction industry in Pune region (India).
- Apart from that, the consequent impacts due to the shortage of skilled labour also find out.
- Finally, propose suitable strategies/mitigation methods to overcome the shortage of skilled labour.

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