"TO STUDY THE DEMAND OF TECHNICAL SKILLS REQUIRED BY THE TRANSPORTATION INDUSTRY FOR CIVIL ENGINEERS"

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Abstract- **India has the one of largest road network across the world, spanning over a total of 5.89 million km. This road network transports 64.5 per cent of all goods in the country and 90 per cent of India's total passenger traffic uses road network to commute. Road transportation has gradually increased over the years with the improvement in connectivity between cities, towns and villages in the country. The Indian roads carry almost 90 per cent of the country's passenger traffic. In India sales of automobiles and movement of freight by roads is growing at a rapid rate The Government of India has set a target for construction of 10,000 km national highway in FY19. The length of national highways constructed reached 6,715 km at a pace of 24.42 kms per day between April-December 2018. As of March 01, 2019, the total length of National Highways in India stood at 132,500 km. Total length of roads constructed under Prime Minister's Gram Sadak Yojana (PMGSY) was 47,447 km in 2017-18. In short Construction industry in India is growing very rapidly. With this there is a huge demand for the technical manpower by the industry. But on the other hand industry always finds a gap in the technical skills that are required by the civil engineers. In this project we will try to study the demand of the transportation industry so that the coming generations can prepare themselves in the better direction and get ready for the transportation industry**.

Keywords – PMGSY, Road Network, Transportation Industry, Construction Industry etc.

I. INTRODUCTION

The government, through a series of initiatives, is working on policies to attract significant investor interest. A total of 200,000 km national highways is expected to be completed by 2022. In next five years, National Highway Authority of India (NHAI) will able to generate Rs 1 lakh crore (US$ 14.30 billion) annually from toll and other sources. The Ministry of Road Transport and Highways has fixed an overall target to award 15,000 km projects and construction of 10,000 km national highways in FY19. A total of about 295 major projects including bridges and roads are expected to be completed during the same period.

Transport is an essential component with which people not just connect with each other, but also progress. To fulfill the increase in demand for safe, reliable, environmentally friendly, economical and efficient transport system, road infrastructure becomes crucial. With an increase in types of motor vehicles, there has been a gradual transition from rail-dominated transport to road-dominated transport over last few decades. The share of railways in passenger- km has decreased by ~60%. Transport of passengers and goods is vital to satisfy the mobility needs, which is

commensurate with today's lifestyle characterized by social interactions and reliable goods distribution nationwide. The transportation system of any country works as the backbone of the nation's economy.

A report says that there will be need of 4 million construction professionals in next few years but on the other hands industry finds gap in technical and managerial skills in civil engineers. This not only hamper the project but the construction industry as well. Problems like

1. Time over runs
2. Cost over runs
3. Inferior project quality
4. Disputes at construction site
5. Defects in structures etc

In this project we are going to study the demand of technical skills required by the transportation industry for civil engineers and some part of advantage that industry will enjoy if they got the right manpower for the infrastructure projects.

Objectives

1. Identify the need technical and managerial skills required by the transportation industry.
2. Interview the industry stalwarts to identify the problems associated with this gap in technical and managerial skills
3. Highlight the areas which are very important for civil engineers from the perspective of transportation industry and weighting them accordingly

SITE .II. PROPOSED ALGORITHM

2.1 Literature review

Author Ayodeji Oke in their paper named 'Effect of Skills Shortage on Sustainable Construction' The desire for sustainable construction has been on the increase and one of the identified challenges is the adequacy of skilled workforce to understand and execute projects in line with sustainable goals. This study examines the general effects of skill shortages in the construction industry with a view to improving the delivery of construction projects. Variables from reviewed literature materials were examined using closed-ended questionnaires administered on professionals and artisans in the industry. Shortage of project managers has the most effect on sustainable construction while the general effects of skill shortages are cost increase, time overrun, decrease quality, high accidents rate and more rework, which are related to the three elements of sustainable development, that is, economic, social and environment. Agencies shouldered with the responsibilities of managing and regulating skilled workforce in the construction industry will find this study useful in their quest for delivery of sustainable construction projects. Construction industry is a people oriented one with the presence of various forms of skilled to unskilled labor. These people are multidisciplinary but their focus is to deliver their services to enhance sustainable project performance for the satisfaction of clients and other stakeholders. The shortage of necessary skills in the industry has been on the increase as observed from reviewed literature materials, which prompt this study to

examine the effect of the phenomenon on sustainability of construction project and the industry at large. Skills shortage in the construction industry leads to such issues as project cost increase, project delay, reduction in quality, increase in number of accidents on site, rework and low productivity of workforce. Other effects include reduction in organization's competitiveness, complete failure of the enterprise failure, rise in construction workers' pay and decrease in the number and size of building and construction labor sector. The availability of necessary construction skills affects the success of project in terms of sustainability, quality, cost, time, health and safety as well as satisfaction of stake- holders.

2.2 Basic work

In this paper we are going to interact with industry stalwarts who are working in this industry from last so many years .Then we are going to frame a questionnaire what will first ask for the problems faced by the industry specially in transportation projects and then we will focus more on improving problem of human resource in transportation industry. Firstly, we will find the demand technical skills that are required by the industry while recruiting the engineers in transportation projects. With this we will try to analyse the impact of having technically sound engineers on infrastructure project and impact of it on time, cost and quality of the project.

We are going to interview industry stalwarts like retried secretary, superintended engineers, executive engineers, deputy engineers of PWD department. With this we will meet directors of the engineering consultancy firms, Project managers of the contracting firms, some assistant managers and project directors as well.After the feedback and answer given by the industry stalwarts, we will try to analyze the demand of the industry. Author ArghadeepLaskar and C. V. R. Murty in their research named "Challenges before Construction Industry in India" stated that the construction industry is the second largest industry of the country after agriculture. It makes a significant contribution to the national economy and provides employment to large number of people. The use of various new technologies and deployment of project management strategies has made it possible to including challenging undertake projects of mega scale. In its path of advancement, the industry has to overcome a number of challenges. However, the industry is still faced with some major challenges, transportation projects, unskilled manpower, housing, disaster resistant construction, water management and mass transportation. Recent experiences of several new mega-projects are clear indicators that the industry is poised for a bright future. It is the second homecoming of the civil engineering profession to the forefront amongst all professions in the country.

III. RESULY AND DISCUSSION

This chapter presents results of responses received from the respondents. It also shows the relative importance index and planning implementation level of various studied factors for the above-mentioned group of respondents. This study involves a questionnaire survey approach from which statistical data was collected to answer questions in respect of the main subject of study. Questionnaire is the main tool used. Figure 4.1 represents the percentage of responses received from representatives of civil engineer, contractor, consultant.

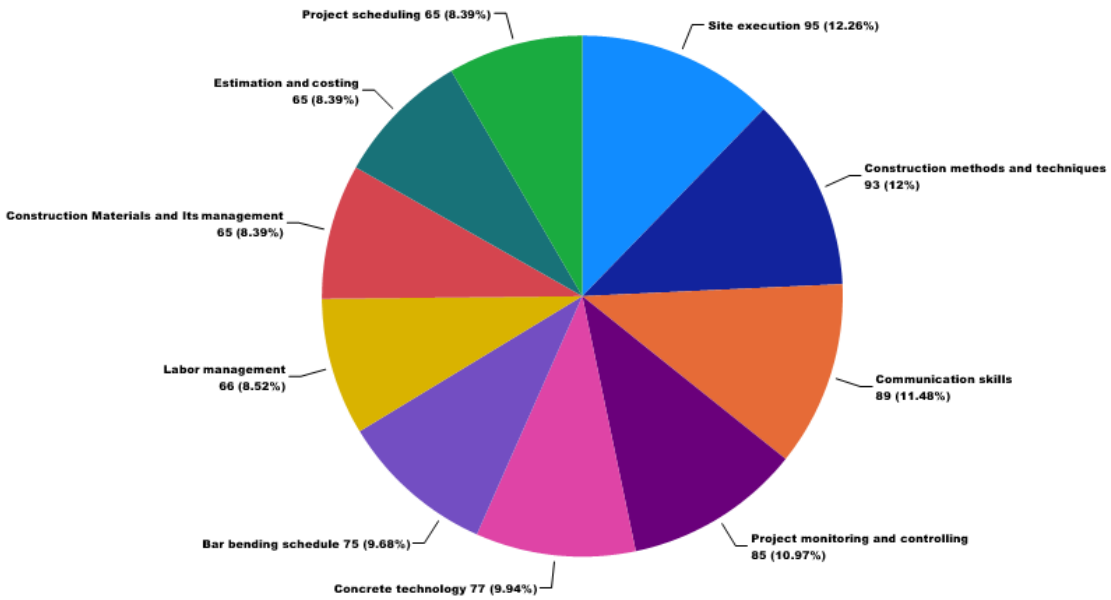
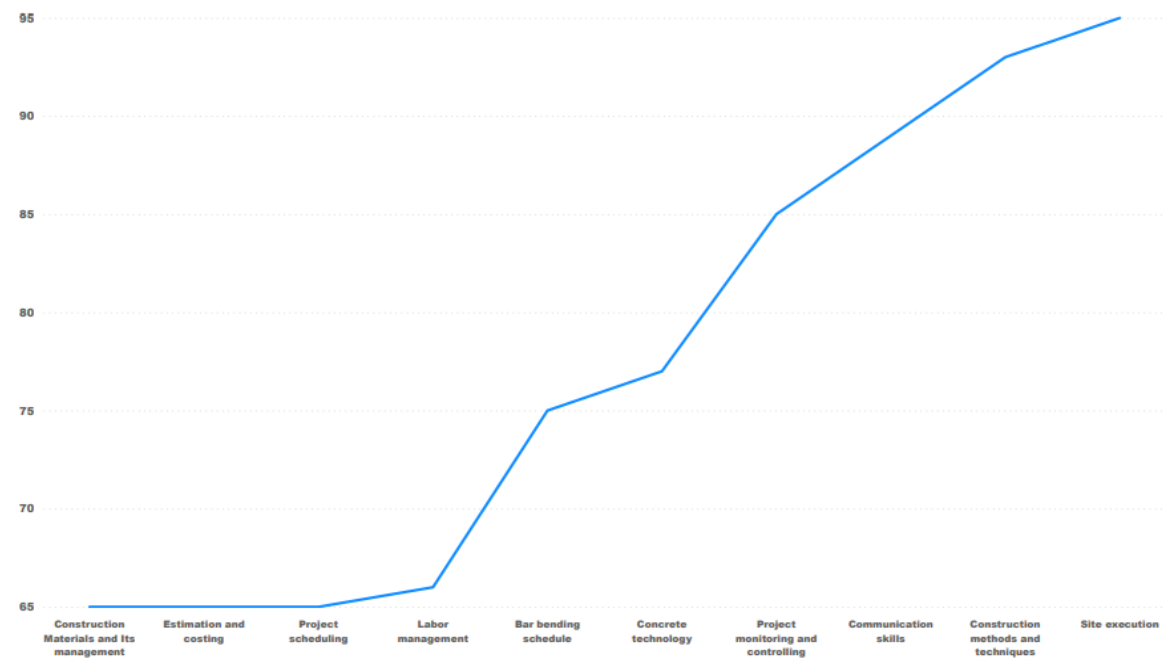
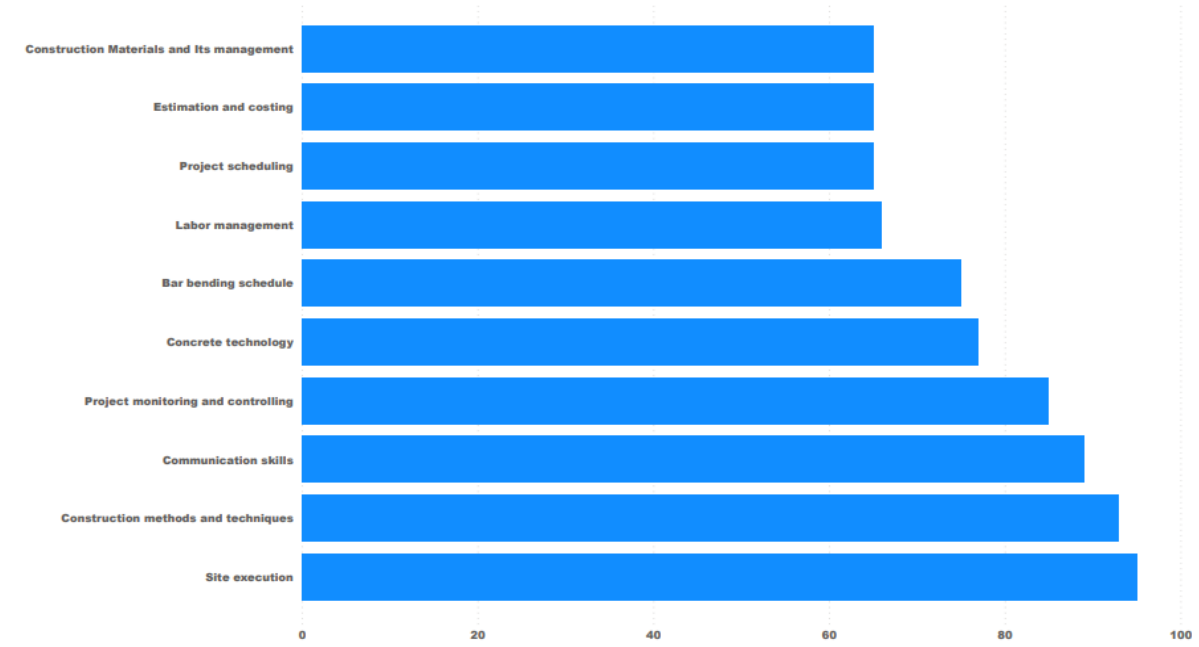


Figure 1: Percentages of Respondents


95
90
85
80
75
70
65
Construction Materials and Its management
Estimation and costing
Project scheduling
Labor management
Bar bending schedule
Concrete technology
Project monitoring and controlling
Communication skills
Construction methods and techniques
Site execution


Construction Materials and Its management
Estimation and costing
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Labor management
Bar bending schedule
Concrete technology
Project monitoring and controlling
Communication skills
Construction methods and techniques
Site execution
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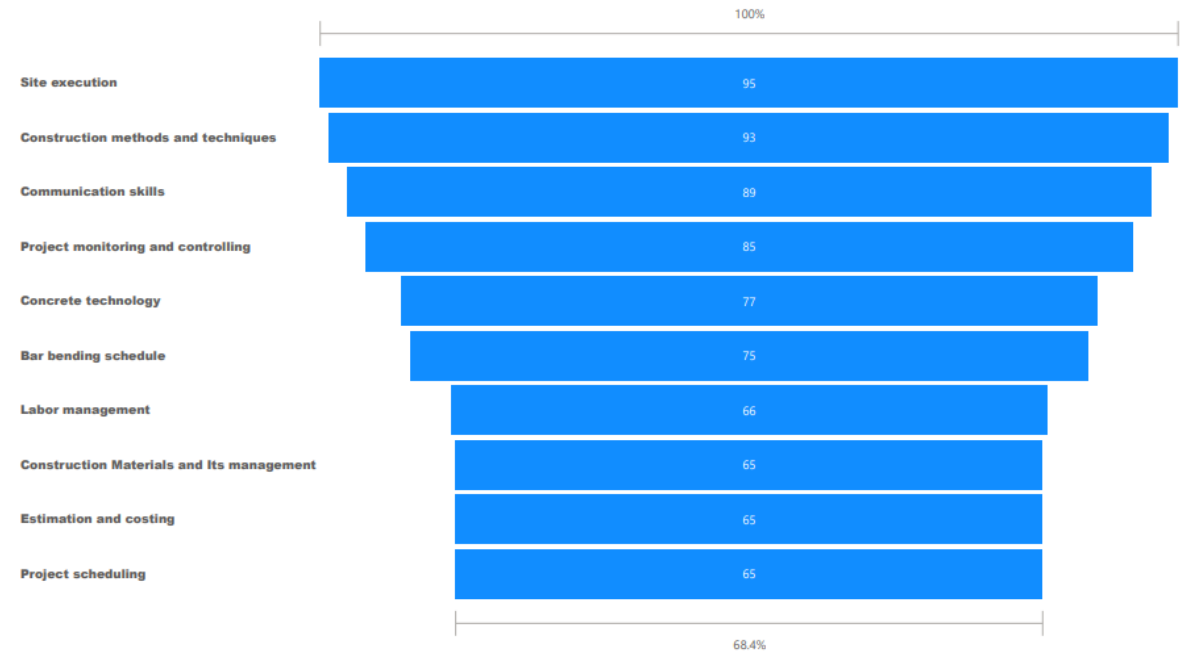
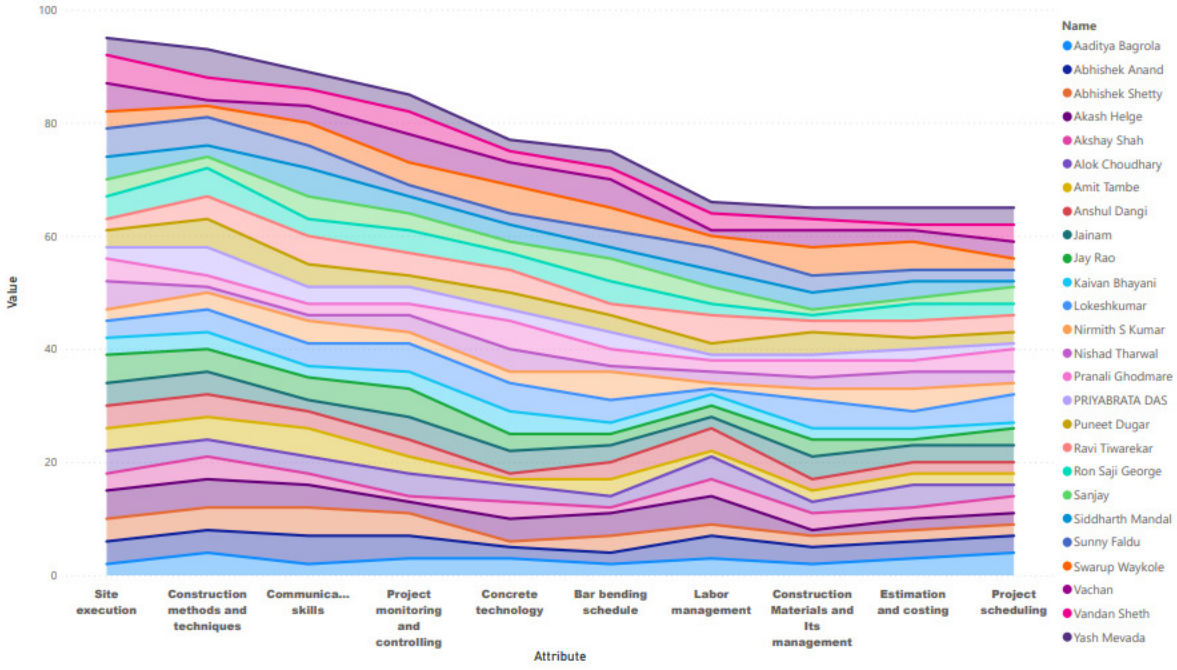

100%
Site execution
95
Construction methods and techniques
93
Communication skills
89
Project monitoring and controlling
85
Concrete technology
77
Bar bending schedule
75
Labor management
66
Construction Materials and Its management
65
Estimation and costing
65
Project scheduling
65
68.4%


100
80
60
40
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Value
Site execution
Construction methods and techniques
Communica... skills
Project monitoring and controlling
Concrete technology
Bar bending schedule
Labor management
Construction Materials and Its management
Estimation and costing
Project scheduling
Attribute
Name
Aaditya Bagrola
Abhishek Anand
Abhishek Shetty
Akash Helge
Akshay Shah
Alok Choudhary
Amit Tambe
Anshul Dangi
Jainam
Jay Rao
Kaivan Bhayani
Lokeshkumar
Nirmith S Kumar
Nishad Tharwal
Pranali Ghodmare
PRIYABRATA DAS
Puneet Dugar
Ravi Tiwarekar
Ron Saji George
Sanjay
Siddharth Mandal
Sunny Faldu
Swarup Waykole
Vachan
Vandan Sheth
Yash Mevada

IV.CONCLUSION

Construction industry is a people oriented one with the presence of various forms of skilled to unskilled labor. These people are multidisciplinary but their focus is to deliver their services to enhance sustainable project performance for the satisfaction of clients and other stakeholders. The shortage of necessary skills in the industry has been on the increase as observed from reviewed literature materials, which prompt this study to examine the effect of the phenomenon on sustainability of construction project and the industry at large.Skills shortage in the construction industry leads to such issues as project cost increase, project delay, reduction in quality, increase in number of accidents on site, rework and low productivity of workforce. Other effects include reduction in organization's competitiveness, complete failure of the enterprise failure, rise in construction workers' pay and decrease in the number and size of building and construction labor sector. The availability of necessary construction skills affects the success of project in terms of sustainability, quality, cost, time, health and safety as well as satisfaction of stake-holders. To manage the situation, there is a need for absorbing and training of more skilled workforce in the construction industry, that is, artisans and professionals, to enhance performance of construction projects. In view of this, construction firms and other associated ones from both public and private sectors should invest in training, research and developing their employees cutting across various departments of the organization.

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