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The Impact of Prefabrication Technology on Profitability in Residential Building Construction

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Abstract: ***In this study have been analysis to the benefits of prefabricated building type over traditional building, such building is having G+15 floors. Aim to this study to pragmatism for the two prospective. First, it's based on the comparative study of both types of building on the basis of cost, time, and productivity by using different methods of data collection and second Using a complementary questionnaire survey, the study also investigated the level of influence of various factors that contribute to the benefits of prefabrication technology. This combined approach helps to minimize the shortcoming of the individual philosophical approaches and provides the benefits of both worlds.***
Here is going to compare the cost, time, and productivity, with the conventional and prefabricated type of construction, productivity has a significant impact on time, cost, and quality of a construction project.
Keywords: Comparison of cost, time with prefabricated and traditional type building, factor influencing.

I. INTRODUCTION

Construction industry is one of the largest and fastest growing industries in India. The construction industry has contributed an estimated US $ 131 billion, the construction sectors provide almost 50 million employment. It involves 5% of national GDP and 78% to the gross capital formation. Despite the significant importance of the industry to the economy and the social wellbeing of the citizens, its productivity performance has steadily declined. For instance, reported a steady decline in the productivity of the industry over the construction.

The Building and Construction Sector Productivity Taskforce report also warns that "India construction industry productivity has been disappointing and it is limiting the sector's ability to respond positively to change.

The report highlighted the urgent need to address this unhealthy development by the use of modern technologies such as prefabrication. This research study is focused on filling the identified knowledge gap by aiming to provide objectively quantifiable benefits of the technology compared to the traditional building systems. The quantifiable benefits relate to the cost saving, and time savings and productivity improvements achievable in some case study projects over and above the outcomes for the traditional building system.

II. LITERATURE REVIEW

Chetankumar b et.al. in this paper author has been studied to apparition of conventional and precast construction technology, he estimates the eighteen-floor prefabricated and conventional types building, here author make comparison between conventional and prefabricated type technology and give the result for which technology is economical then other.

Nitesh j Ramchandani here researcher having objective to identify the new technology or methodology for construction industry and suggestion that precast in setu method of concrete construction, which is cost effective and faster construction, he provides information about the cost and time effect on construction by cast and setu & conventional type technology.

N. dinesh kumar and p. kathirvel into this study author tried to explain the current situation of precast construction industry in India and give suggestion how to improve the construction industry condition and make the construction cost effective and economical.

Abhishekh k. taware and Akshaya A. taware here author said that the level of interest of prefabrication technology and benefits in construction sectors he describes that the prefabrication technology can be help the construction and make project cost effective.

Kaicheng shen this paper author has been studying the cost effectiveness due to prefabricated structure over traditional type building he gives the comparison between both type of building and give the result for which building is economical and cost effective.

Evanjline here this author says that the label of possible impact can be arises due to the prefabricated construction and their effectiveness here provide the knowledge for environment effect due to construction and by using of prefabrication method it can be reduce up to which level.

III. METHODOLOGY

Based on the data collection and data analysis method, the research methods are classified in three categories which include the qualitative, quantitative and mixed research methods. These research methods offer different choices of data collection, data analysis and a level of flexibility that is required for various research approach.

A. Comparisons of Cost

As per studies we know that the total cost of traditional building 68, 71, 51,630 and the total cost of prefabricated building 41, 60, 03,660.

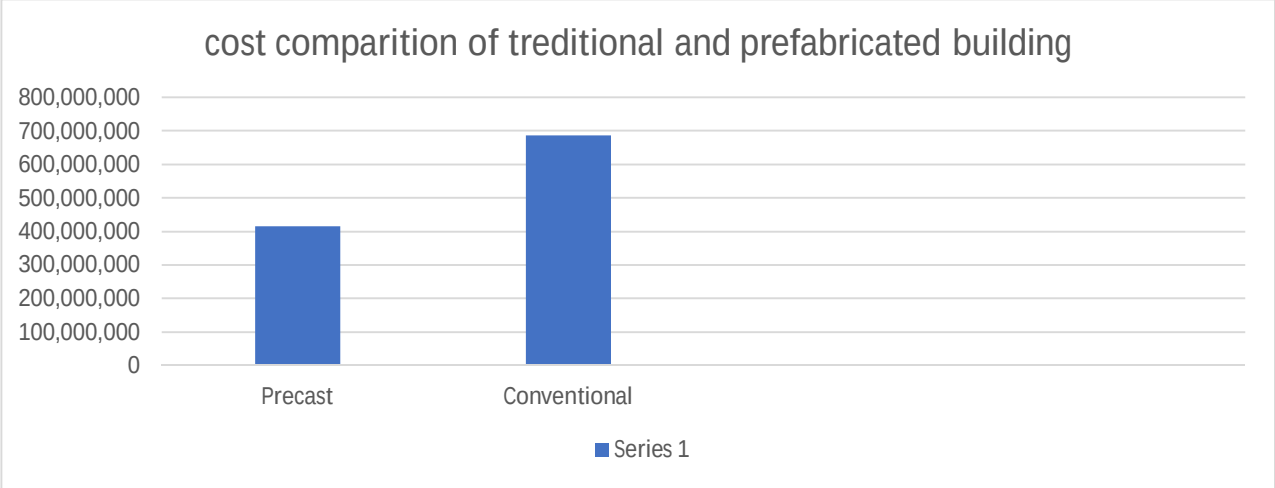


Fig.01 Cost comparison of prefabricated building over traditional type of building

As per graph we can understand the construction cost of traditional building is more than prefabricated building which is 27, 11, 47,970 rupees. So, by analysing of graph we can say that prefabricated building is more economical then traditional type of building construction.

One of the key advantages of using prefabrication technology is the saving in total project cost. Cost savings achievable with the use of prefabrication technology in place of traditional construction approaches were computed as the difference between the final cost of the prefabricated building and the corresponding cost for a similar building erected using the traditional building system.

B. Comparison of Time Duration

Duration of project make a notable importance at this stage of project schedule make project as economical or costly, here the comparison of time duration between traditional and prefabricated building which is having G+15 floor.

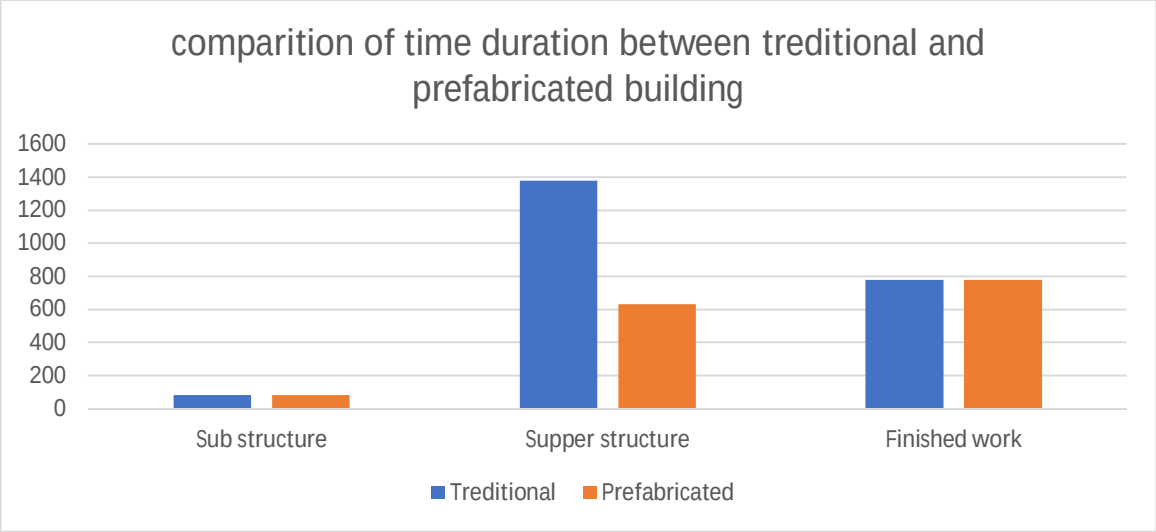


Fig.02 Comparison of time duration of traditional building over prefabricated building type

As per the graph we can say that time duration of sub structure construction is same for traditional and prefabricated building, here both types of building take around 82 days duration for sub structure work completion, were supper structure construction work both type of building shows massive difference between them, as per the graph we can observe that the time duration of supper structure time span of traditional building is more than two times of prefabricated type building, here traditional type of building construction time span for whole construction around 1380 days where prefabricated type building construction time span of supper structure for whole construction around 630 which is less than two times of traditional type of building construction, and The construction of finished work for prefabricated type building and traditional type building time span of whole building construction is same. So, at this phase of construction take similar time for both types of building construction.

As per the analysis of whole graph we can say that the construction of traditional type of building takes time span for whole construction more than six and half year and while construction of prefabricated type of building construction take time for completion of whole construction around four year, by comparing of both prefabricated type of building contain the time for completion of project is less than two and ½ year it means it save the two and ½ half year time duration, which makes the project faster. So, comparing of both prefabricated type of building construction makes project economical as well as increase the productivity of construction.

IV. CONCLUSION

A. General

In this study initial focus is to analysis of cost and time saving, due to this productivity improvement archive with the use of panelised prefabricated building over traditional type building.

B. Result of Cost Saving

In this study result of cost shows that the construction cost of traditional building 68,71,51,630 and prefabricated building cost of construction 41,60,03,660, therefore here prefabricated building saves 27,11,47,970. Here observing this prefabricated building is more economical then traditional type building.

C. Result of time Saving

As per the graph 2nd and 3rd we can say that the construction duration of traditional and prefabricated type building is divided in three phases as sub structure, supper structure and finished work, so while analysis of graph sub structure construction duration 82 days which is same of both building. Were we consider the time duration of supper structure for traditional building 1380 days and prefabricated building supper structure time duration of construction is 630 days therefore at this phase time difference is more than two year, such phase make the impactable and faster of construction of prefabricated type building then traditional type building.

So here by observing the cost and time for both type of construction and we can say that prefabricated building type is more economical then traditional type of building, and while consider the construction duration of both type of building then prefabricated type building is faster than then traditional type building.

REFERENCES

[1] Tayyab Ahmada,, Ajibade Aibinua, Muhammad Jamaluddin Thaheemb faculty of architecture planning, university of Melbourne, its published at international high performance built environment conference – A sustainable built environment conference 2016

[2] Chetan Kumar B., Akshayakumar V. H., Harshad R. Parate faculty of engineering and technology M.S. Ramaiah university of applied science Bangalore published at RUAS-SASTech Journal in 2016.

[3] Nitesh j Ramchandani and Prof. Hemant Salunkhe M.E. student of construction management at D.Y. Patil institute of engineering and technology Ambi Pune it published at Published Online July 2019 in IJEAST.

[4] T. Subramani1, M. Muhammed Ansar, S.Priyanka 1Professor & Dean, Department of Civil Engineering, VMKV Engineering College, Vinayaka Missions University, Salem, India and published the paper on IJETTCS at May 2017.

[5] N.Dineshkumar, P.Kathirvel PG Scholar, Department of Civil Engineering, Mahindra Institute of Engineering and Technology, he published on April 2015 at international journal of innovative science and technology.

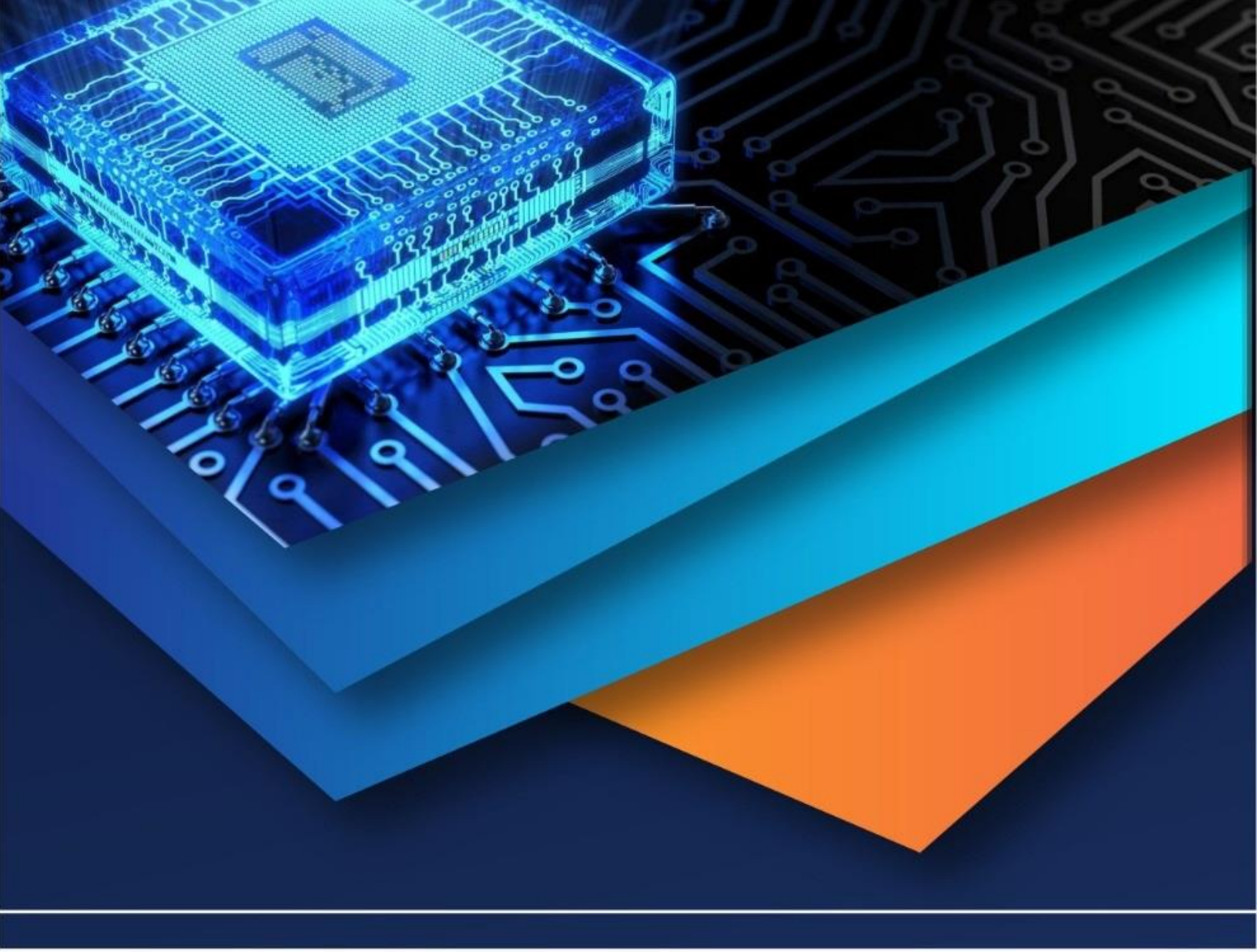
[6] Evanjaline Libie he is PG student of civil department Arunachala college of engineering for women, this paper published at international journal of innovative work in engineering and technology.

[7] Abhishek K.Taware and Akshaya A.Taware , department of civil engineering KJ college of engineering management and research, sinhgad college of engineering Pune India such paper published at a RIJSE on 2nd February 2017.

[8] Kaicheng Shen , Chen Cheng, Xiaodong Li and Zhihui Zhang, Department of Construction Management, School of Civil Engineering, Tsinghua University, published at 3rd January 2019 in MDPI journal.

[9] Hamza Khan and Kkartikh Jain, department of civil engineering Mewat engineering college of engineering India it published on 2nd November 2017 at a journal of IJCER pp. 81-89.

[10] Satheeskumar Navaratnam, Tuan Ngo, Tharaka Gunawardena and David Henderson Department of Infrastructure Engineering, The University of Melbourne Australia , it published on 24th January 2019, at Mdpi journal.



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