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FACTORS AFFECTING TIME OVERRUN IN GOVERNMENT AFFORDABLE HOUSING CONSTRUCTION: THE CASE OF MAHARASHTRA HOUSING AREA DEVELOPMENT AUTHORITY (MHADA) IN PUNE METROPOLITAN AREA.

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***Abstract*— Construction industry is considered as a locomotive of the national economy; it has significant effect on the efficiency and productivity of all sectors. The ongoing urban housing development in this industry certain patterns have indicated an arrangement towards market-situated types of housing pair with globalization and the development of the Indian economy (Sengupta and Tipple, 2007). This study is aimed to identify and examine the major factors that contribute to construction time overruns, their negative effects and possible solutions to overcome such delays from Indian construction industries Accessing the different factors affecting the time overrun necessary recommendations has been provided through this report for the stated problem**

***Keywords*— LIG, Affordable housing, MHADA, Delays, overrun.**

I. INTRODUCTION

Affordable housing is the new addition to the vocabulary of Indian policy conversations. The ongoing urban housing development patterns have indicated an arrangement towards market-situated types of housing pair with globalization and the development of the Indian economy (Sengupta and Tipple, 2007). As neoliberals began gathering political and strategy force in the course of the most recent decade, the talk around low-income housing has now moved towards the Government of India (GOI's) plan of 'affordable housing for all'. With regards to diminishing state financing, it has re-emerged as a working structure with which to rebuild and rescale low-to middle income housing under various public-private partnership (PPP) plans. An expressed objective of the arrangement is to build home-ownership rates, including those of low-income gatherings. The arrangement was to be expected, as the country is defied with the test of making homes for right around 25 million individuals, who are at present living in substandard housing conditions. As indicated by the Government of India's 11th Five-Year Plan from 2007 to 2012, very nearly 99% of this shortage originates from an economically weaker section (EWS) and low-income groups (LIG).

Furthermore, one of the main issue in the affordable housing sector is time overrun. Time postponement happen in each construction project and the greatness of these delays shifts significantly from undertaking to extend. So, it is fundamental to characterize the real reasons for time delay to limit and evade the postponements and expanding rate in any development project.

II. PROPOSED ALGORITHM

A. Methodology–

This study consists of different phases;

- The first phase includes the research proposal for identifying and defining the problems and establishment of the objectives of the study and development of research plan.
- The research includes literature review; in this phase research papers related to time overruns factors were thoroughly reviewed.
- Design of questionnaire & questionnaire distribution to a sample of Client, contractors, consultant and researchers.
- data analysis and discussion which includes questionnaire validity and reliability; Statistical Package for the Social Sciences (SPSS) used to perform the required data analysis and discussions.

The main focus of this project was to find the factors affecting the time overrun in the government affordable housing projects. There are so many government affordable housing construction projects underway but I have limited study to the MHADA undertaken projects in the Pune Metropolitan region.

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B. **Types of Delays–**

The main types of delay have been stated by a number of researchers (Vidalis et al 2002), Ahmed et al (2003), Alaghabri et al (2007) and Al- Gahtani and Mohan (2007). These types are Excusable delay, Concurrent delay, Compensable delay, and Critical delay.

To be continued, Inner reasons for delay incorporate causes that come from the proprietor, fashioners, temporary workers, and specialists. Outer reasons for delays are started from outside of development undertakings, for example, service organizations, government, subcontractors, providers, trade guilds, nature, and so on.

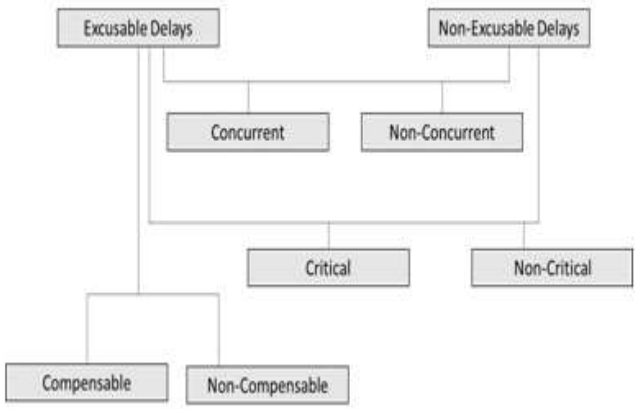

Fig. No. 01 Sequential relationships of various categories of delays

As the advancement business continues filling in size and complexity, there exists organizing and arranging issues. Similar number of experts' disclosures showed that it is standard for adventures not to be done on a given time and inside the embraced monetary arrangement. This for the most part happened as a result of the presence of various interest packs on the errand works out. These interest bundles consolidate task owner, authoritative specialists, counselors, financers, suppliers, end customers, government and such. Inside purposes behind defer fuse the causes rising up out of three social events related with the endeavor. These social occasions fuse the owner, legally binding specialists and counselors. Various deferrals, which don't rise out of these three social affairs, depend on external causes. Propositions outside causes are material suppliers, government, financers and atmosphere condition. Various researchers have arranged the reasons behind undertaking delays are inside and external segments achieved by different accomplices.

C. **Causes of Delays–**

- Construction Cause- Absence of assets, awful workmanship, Resistance with wellbeing rules, Delay by designated sub-temporary worker OR Change of needs, site conditions, existing structure, Delay by businesses selected contractual workers, in giving endorsement, giving perpetual utilities.
- Managerial Cause- Insufficient efficiency, Absence of development coordination and management, Joint endeavor coordination issues in the activities, lacks in arranging and planning, Low speed of dynamic, Work strike nearby for various reasons
- Political causes of Delay
- Financial Causes- Delay in instalment, financial preparing
- Technical Cause- Change of development strategy procedure to new one, Underestimation of development techniques.

D. **MHADA's Affordable housing–**

The Maharashtra Housing and Area Development Authority (MHADA) is a position set up by the Maharashtra Housing and Area Development Act, 1976 for assembling of moderate lodging ventures in the territory of Maharashtra. It appeared on 5 December 1977. At present MHADA is coordinating and controlling the activities of seven commonplace housing sheets, course of action for each pay division in the state viz. Mumbai, Konkan, Pune, Nashik, Nagpur, Amravati, Aurangabad and two explicit explanation sheets viz. Mumbai Building Repairs and Reconstruction Board and Mumbai Slum Improvement Board. In Mumbai, it has created around 3 lakh dwelling units. The MHADA dwelling board has pre-set the level costs which are then allocated by lotteries or on the primary beginning things out served premise, whichever the norm.

Category of the applicant considering the income;

□ 2500	EWS
□ 2501 to □ 5500	LIG
□ 5501 to □ 10,000	MIG
Above □ 10,000	HIG

A person is eligible for allotment of the plots or flats of the category in which his/her income falls; he/she will not be eligible for any other category.

Prices of the Flat;

EWS	1.5 - 2 millions
LIG	2 - 3.5 millions
MIG	3.5 - 8 millions
HIG	8 - 58 millions

MHADA Projects in Pune;

Talegaon	HIG
Saswad	MIG
Saswad	LIG
Yerawada	HIG
Yerawada	MIG
Hadapsar	LIG
Kharadi	MIG
Kharadi	LIG

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Pimpri- 73 T/s - 20 Shops HIG
Pimpri- 14 Row houses HIG

III. EXPERIMENT AND RESULT

A. Pilot Study–

The pilot study was the underlying advance of the feasible utilization of the assessment being finished. A pilot study is a little type of a full-scale study or a fundamental endeavour done in preparation of the all-out assessment. It can moreover be a specific pre-testing of investigation studies. The pilot study will in this manner trail the researcher has an away from of the investigation point and questions, the methodologies and strategies, which will be applied, and what the assessment schedule will look like. It is assessing all assessment procedures and methods, which the researcher has as a main concern to see how well they will work eventually. In case crucial it can, by then really be changed constantly moreover. The pilot pack in the rhythmic movement investigation can be portrayed as basically an offer a chance of assessment systems and procedures, yet also of reviews. The pilot examination of the rhythmic movement assessment can in this manner be portrayed as both a common sense concentrates similarly as a pre-testing of overviews.

Advantages of pilot studies include the following as listed:

- Gave pre-emptive guidance about where the fundamental exploration undertaking can fall flat.
- Research conventions probably won't be followed.
- The pilot study can likewise distinguish reasonable issues of the exploration method.
- Proposed techniques or instruments are unseemly or excessively confounded.

The pilot study was done with the assistance of the fifteen business specialists. The poll was shipped off them and they were approached to fill the structure. And furthermore, give their significant input. With the assistance of their surveys, the essential change was made.

Statistical method to analyses the data;

Inferential insights will be utilized to dissect the information. The investigation relies upon both essential and auxiliary information that was gathered through polls, organized meetings, surveying important literary works and reports and perceptions. A five-point gauging scale "w" will be utilized to show the overall significance of benefactor "i" in a period invade, where - Not Significant (1); Slightly Significant (2); Moderately Significant (3); Very Significant (4); Extremely critical (5). A factor evaluated "4" and "5" will be deciphered as a huge supporter in time invade, the one appraised "1" and "2" will be deciphered as irrelevant donor of time and cost overwhelms. A factor appraised with a "3" will be taken as unsure. The outcomes get will be utilized to analyses the assessments of the key respondents - public, contractual worker, advisor and scientist about the elements influencing time overwhelms in government lodging venture. The general significance record, RII, which showed the overall significance of a contributing element "i" to time overwhelm determined dependent on the accompanying condition.

$$RII = \sum \boldsymbol{wi}/\boldsymbol{A}*\boldsymbol{N}$$

$$RII = \boldsymbol{1}*\boldsymbol{n1} + \boldsymbol{2}*\boldsymbol{n2} + \boldsymbol{3}*\boldsymbol{n3} + \boldsymbol{4}*\boldsymbol{n4} + \boldsymbol{5}*\boldsymbol{n5}/\ \boldsymbol{A}*\boldsymbol{N}$$

Were,

w = Weighting given to each factor by the respondents and ranges from 1 to 5 where '1' is 'not significant' and '5' is 'extremely significant'

i = Response category index (frequency of response given for each cause)

A = Highest weight

N = Total number of respondents.

n1 = No. of respondent for not significant

n2 = No. of respondent for slightly significant

n3 = No. of respondent for moderately significant

n4 = No. of respondent for very significant

n5 = No. of respondent for extremely significant

After studying the data from the surveyors and analysis of it overall ranks, we can say that the top 3 ranks according to the perception of respondents are: Pandemic, conflict, war, and public enemy, delay in obtaining permits from municipality and delay in approving major changes in the scope of work by consultant. According to contractor top 3 ranks are same as we found in overall ranking with different sequence: Delay in obtaining permits from municipality, delay in approving major changes in the scope of work by consultant and pandemic, conflict, war, and public enemy. Pandemic, conflict, war, and public enemy remains in top 3 ranks of causes of time overrun by all the stakeholder except the researchers/academicians. From the analysis of the top few rankings we can say that the Covid-19 pandemic has major effect on the time overrun of the projects. Apart from that the delays faced by the contractors and consultants for obtaining the different permits from the municipality affects the project schedule at large extent. Similarly the change in the scope of work by consultant also causes time overrun in the projects.

The Relative Important Index (RII) of all the factors with respect to the different stakeholders in the project – contractors, consultant, public and researcher/academicians, was performed to determine the ranking of these factors. The pandemic, delay in obtaining permission from government offices were important factors relatively compared to the other.

The respondents' reaction was tested for relationship correlation using Spearman rank correlation coefficients. It was done to check for the degree of correlation between two groups of respondents i.e., stakeholders. The hypothesis testing was carried out for 95% confidence interval. From the analysis carried out it was observed that there was a significant degree of correlation between the viewpoint of contractor, consultant, public and researchers.

IV. CONCLUSION & RECOMMENDATION

Each construction project is unique in every way from the other project. It is usually considered successfully implemented when they are completed on specified time, within the predefined budget and with the required quality. In India, because of quick urbanization and expanding populace, the number of housing construction projects is increasing over time. But it is observed that many projects experiences time overrun and cannot be completed in speculated. Time overrun in the project is foremost and main dilemma of the construction industry in India. There are many factors responsible for the delays in public housing construction project which are identified in this project. This study focuses on the factors causing time overrun in government housing projects specifically MHADA projects in Pune, Maharashtra. So, we can say that there is pressing need to zero in on the variables influencing time overrun in government housing project and how it affects the project. The questioner survey mainly focuses on the responses of different stakeholders in the MHADA housing projects namely Public i.e., government, consultants, contractors and researchers. The factors causing time overrun are ranked in order of their RII. The factors of time overrun considered in the project are of the construction industry in general and in particular MHADA housing construction projects. In total 62 survey replies were received for the study from different stakeholders: public, consultant, contractor and researchers.

From the analysis of the top few rankings, we can say that in case of MHADA housing projects in Pune the Covid-19 pandemic has major effect on the time overrun of the projects. Apart from that the delays faced by the contractors and consultants for obtaining the different permits from the municipality affects the project schedule at large extent. Similarly the change in the scope of work by consultant also causes time overrun in the projects. Thus we need to address to these factors to tackle the problem of time overruns in the government housing projects. Apart from waiting for the Covid-19 pandemic to pass, we need to focus on the communication between different stakeholders, inefficiency in government processes, high inefficiency in initial data collection and project planning and scheduling in the initial stages of the project due to which the projects are affected at the later stages.

Recommendations:

Subsequent amount of construction projects around the world faces the problem of time overrun including government housing projects in India, which need to be taken into consideration. All the stakeholders responsible for the project should work in collaboration to taker this problem and develop the construction industry as a whole. Especially government, contractors, consultants and researchers need to utilize an all-encompassing methodology for taking care of issues in the development business; they need to acclimate themselves to the most recent innovation and strategies to tackle issues and search for arrangement proactively. Researchers also have to work alongside with the practitioners for improving the industry. A consolidated effort of stakeholders is required to apply the results of researches conduct in the construction industry.

V. REFERENCE

[1] Sengupta, U. (2013). Affordable housing development in India: a real deal for low- income people?. International Development Planning Review, 35(3), pg. no. 261.

[2] Sengupta, U., & Tipple, A. G. (2007). The performance of public-sector housing in Kolkata, India, in the post-reform milieu. Urban Studies, 44(10), pg. no. 2009-2027.

[3] Abd El-Razek, M. E., Bassioni, H. A., & Mobarak, A. M. (2008). Causes of delay in building construction projects in Egypt. Journal of construction engineering and management, 134(11), pg. no. 831-841.

[4] Albogamy, A., Dawood, N., & Scott, D. (2014). A risk management approach to address construction delays from the client aspect. In Computing in Civil and Building Engineering (2014) pg. no. 1497-1505.

[5] Al-Ghafly, M. A. (1995). Delay in the construction of public utility projects in Saudi Arabia (Doctoral dissertation, King Fahd University of Petroleum and Minerals).

[6] Al-Momani, A. H. (2000). Construction delay: a quantitative analysis. International journal of project management, 18(1), pg. no. 51-59

[7] Assaf, S. A., Al-Khalil, M., & Al-Hazmi, M. (1995). Causes of delay in large building construction projects. Journal of management in engineering, 11(2), pg. no. 45-50.

[8] Chan, D. W., & Kumaraswamy, M. M. (1997). A comparative study of causes of time overruns in Hong Kong construction projects. International Journal of project management, 15(1), pg. no. 55-63.

[9] Doloi, H., Sawhney, A., Iyer, K. C., & Rentala, S. (2012). Analysing factors affecting delays in Indian construction projects. International journal of project management, 30(4), pg. no. 479-489

[10] Ezeldin, A. S., & Abdel-Ghany, M. (2013). Causes of construction delays for engineering projects: An Egyptian perspective. In AEI 2013: Building solutions for architectural engineering pg. no. 54-63.

[11] Frimpong, Y., Oluwoye, J., & Crawford, L. (2003). Causes of delay and cost overruns in construction of groundwater projects in a developing countries; Ghana as a case study. International Journal of project management, 21(5), pg. no. 321-326.

[12] Kazaz, A., Ulubeyli, S., & Tuncbilekli, N. A. (2012). Causes of delays in construction projects in Turkey. Journal of civil Engineering and Management, 18(3), pg. no. 426-435.

[13] Koushki, P. A., Al- Rashid, K., & Kartam, N. (2005). Delays and cost increases in the construction of private residential projects in Kuwait. Construction Management and Economics, 23(3), pg. no. 285-294.
[14] Mahamid, I., Bruland, A., & Dmaidi, N. (2012). Causes of delay in road construction projects. Journal of Management in Engineering, 28(3), pg. no. 300-310.
[15] Marzouk, M., El-Dokhmasey, A., & El-Said, M. (2008). Assessing construction engineering-related delays: Egyptian perspective. Journal of Professional Issues in Engineering Education and Practice, 134(3), pg. no. 315-326
[16] Mulla, S. S., & Waghmare, A. P. (2015). Influencing factors caused for time & cost overruns in construction projects in Pune-India & their remedies. Int. J. Innovative Sci. Eng. Technol, 2(10), pg. no. 622-633.
[17] Odeh, A. M., & Battaineh, H. T. (2002). Causes of construction delay: traditional contracts. International journal of project management, 20(1), pg.no. 67-73.
[18] Odeyinka, H. A., & Yusif, A. (1997). The causes and effects of construction delays on completion cost of housing projects in Nigeria. Journal of Financial Management of Property and Construction, 2, pg. no. 31-44.
[19] Ogunlana, S. O., Promkuntong, K., & Jearkjirm, V. (1996). Construction delays in a fast-growing economy: comparing Thailand with other economies. International journal of project Management, 14(1), pg. no. 37-45
[20] Prasad, K. V., Vasugi, V., Venkatesan, R., & Bhat, N. S. (2019). Critical causes of time overrun in Indian construction projects and mitigation measures. International Journal of Construction Education and Research, 15(3), pg. no. 216-238
[21] Shete, A. N., & Kothawade, V. D. (2016). An analysis of cost overruns and time overruns of construction projects in India. International Journal of Engineering Trends and Technology, 41(1), pg. no. 33-36.
[22] Wiguna, I. P. A., & Scott, S. (2005, September). Nature of the critical risk factors affecting project performance in Indonesian building contracts. In 21st annual ARCOM Conference Vol. 1, pp. 225-235.
[23] Yang, J. B., & Wei, P. R. (2010). Causes of delay in the planning and design phases for construction projects. Journal of Architectural Engineering, 16(2), pg. no. 80-83.