Construction Delays of Indian Mega Projects

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Abstract – *This paper attempts construction delays happening in construction and commissioning of Mega Projects of worth more than 15Thousand Cr. The mega projects involve combination of various individual projects which are being integrated to one massive to get commissioned. The construction delays are due to developer, contractor and consultant. The combinations of the reasons are presented here with ranking based on statistical analysis. (Size 10 & Italic , cambria font)*

Key Words: Construction Delay, Contractor, Developer, Owner and Consultant, Ranking, Index

1.INTRODUCTION

The delays are generally unavoidable in any construction project. The delays may happen in construction project of size small to large and huge causing huge capital investments. The projects of national importance create cost overrun resulting budgetary impacts.

Delays can be defined as time overrun beyond the project stipulated period (S. Assaf and S.AL Hejji 2006). It can be read as difference of time between approved stipulated time period given in any contract and actual finishing time period. The effects of delays can cause the projects reputation financially and slipping of commitment to stake holders. The delays may grant extension of time period to contractors to complete the project. The extension of time period generally causes unwanted favors to the agencies in settlements through arbitration (Megha and Bhatt 2013).

As per the reports submitted by the Ministry of Statistics and Programme Implementation (MOSPI) on every three months on the status of central sector projects costing Rs 150 crore and above. The summarize report for the quarter Apr-June 2021 out of 1,779 projects 12 projects were ahead of schedule, 241 on schedule, 559 delayed and for more than half, that is 967 projects, the original or anticipated date of completion is unknown. The delays, the report reveals, range between one month and 324 months (https://www.mospi.nic.in). The cost overrun is causing Rs 4.39 Trillion as 19.89% increase in original cost of projects(Newspaper Mint Nov 2021).

1.1 Objectives

a) To investigate major causes of delays in Mega structure
b) To investigate effects caused by delays happening in construction industry
c) To find out potential of way minimizing the delay in the project

2. LITERATURE REVIEW

Technical papers and documents have been collected and literature review is presented here with emphasis on methodology considered in their papers.

Marzouk MM& EI Rases T.I (2014) have analyzed causes of delay causes in Egyptian Projects. Egyptian projects are delayed on account of improper scheduling, in effective site management, financial issues and design changes are causing the project delays.

Saiful Islam et al (2015), studied Causes of Delay in Construction Projects in Bangladesh. It is identified as financial difficulties, lack of planning, in efficient site management and delay in selection of contractor are causes for delay in Bangladesh.

Sambasivan, M and Soon Y.W (2007) have considered the causes and effects of delay in Malaysian construction industry in their paper. Managerial issues, financial difficulties, shortage of resources like labour, material, and equipment along with contractor's inexperience contribute delays in Malaysian projects.

Sander and Eagles (2001) considered delays in Building Construction projects in Ghana. The main reasons for delay is lack of experienced contractor, improper planning and scheduling.

Megha Desai & Rajiv Bhatt (2013) have studied causes and delays of construction projects in central Gujarat region of India.

John G McConville CCP, Compass Inc, Blog (2021) emphasized in their technical paper 6 projects out of 10 in EPC are running cost over runs and delays. The delays are mainly due to improper communication, improper manpower planning and low construction productivity.

Mc Cord et al 2015 utilized questionnaire survey for collecting the data of delays which occur in housing projects in Northern Ireland. The methodology applied in this survey is relative ranking and component analysis to find factors in delay process.

3. Methodology

The methodology adopted in this paper is based on the questionnaire survey which comprises of delays attributable on account of owners, contractors, consultants, materials and equipment, external problems and Finance/Billing. The questionnaire with database has been collected from representatives of owner, consultants and contractors.

Table 1 Questionnaire

S No.	Causes of Delay	Group	strongly agree	agree	disagree	strongly disagree
1	Owning of Site	Owner	33	53	0	7
2	Site Approval		33	47	13	7
3	Delay in project bidding		20	47	20	7
4	Delay in selection of bidder		27	27	13	7
5	Improper mobilization	Contractor	47	33	6.7	7
6	Improper Scheduling		33	40	7	7
7	Ineffective site supervision		33	13	27	7
8	Improper construction method		27	33	7	7
9	Rework due to bad work execution		20	33	7	7
10	Delay due to frequent sub contractor selection		27	33	13	13
11	Late issue of working drawings	consultant	13	73	7	7
12	Unclear and inadequate detailing in drawings		20	40	7	7
13	Misunderstanding owner requirements		20	20	7	7
14	Frequent changes in drawings		20	40	7	13
15	Approval of site related problems and site drawings submitted by contractor		27	33	27	7
16	Shortage of construction material in the market	Material And Equipment	13	40	13	26
17	Delay in construction material supplied to site		20	9	13	13
18	Quality of Materials		20	47	13	13
19	Low productivity and efficiency of equipment		20	40	13	13
20	Shortage of Labour	Labour related	47	33	13	7
21	Unqualified and Low Productivity of Labour		20	47	13	13
22	Labour payments from owner		20	47	13	7
23	Labour conflicts		7	47	13	13
24	Natural Disasters	External Problems	7	33	13	13
25	National Insecurities-strikes, curfews, civil wars		20	27	20	7
26	Festivals, cultural and traditional mishaps		13	40	13	20
27	Changes in Government laws		13	33	20	20
28	Change in political power		7	20	40	6.7
29	Change in prices of materials		27	40	13	20
30	Release of paymnets from owner	Finance/Billing	13	20	27	40
31	Release of payments to labour from contractor		33	33	13	20
32	Economic slow down		7	20	27	33

The results are obtained using Relative ranking index method. The final values of table is as under

Table 2

S No	Causes of Delay	Group	RII
1	Owning of Site	Owner	7
2	Site Approval		8
3	Delay in project bidding		23
4	Delay in selection of bidder		9
5	Improper mobilization	Contractor	2
6	Improper Scheduling		4
7	Ineffective site supervision		10
8	Improper construction method		1
9	Rework due to bad work execution		5
10	Delay due to frequent sub contractor selection		11
11	Late issue of working drawings	Consultant	16
12	Unclear and inadequate detailing in drawings		6
13	Misunderstanding owner requirements		12
14	Frequent changes in drawings		18
15	Approval of site related problems and site drawings submitted by contractor		24
16	Shortage of construction material in the market	Material And Equipment	30
17	Delay in construction material supplied to site		14
18	Quality of Materials		22
19	Low productivity and efficiency of equipment		26
20	Shortage of Labour	Labour related	3
21	Unqualified and Low Productivity of Labour		17
22	Labour payments		13
	from owner		
23	Labour conflicts		21
24	Natural Disasters	External Problems	19
25	National Insecurities-strikes,curfews,civil wars		15
26	Festivals,cultural and traditional mishaps		27
27	Changes in government laws		29
28	Change in political power		28
29	Change in prices of materials		25
30	Release of paymnets from owner	Finance/Billing	32
31	Release of payments to labour from contractor		20
32	Economic slow down		31

4. CONCLUSIONS

The raking on construction delays has been obtained from relative importance index followed in the methodology of 'Likert's scale'. The results drawn from the data observed that improper construction methods, mobilization and shortage of labour stood at ranking 1, 2 and 3.

The other major causes of delay are improper scheduling, bad reworking and delays due to issue of drawings which are having rankings 4, 5 and 6.

The Other ranks are delay of owning the site, site approvals from Government bodies, delay in selection of contractor/bidder and ineffective site supervision are ranked as 7,8,9 and 10.

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BIOGRAPHIES

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