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EVALUTION OF FACTORS AFFECTING PROJECT MANAGEMENT PHASES IN PUBLIC HOUSING PROJECTS

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Abstract: ***With increasing demand for public housing Indian government decided to reduce the waiting time of future public housing owners, which requires these projects to be completed on time. A project can be said successful only when it is completed within the scheduled time and cost. In India, construction industry stands next to agriculture in the economic activity. Any problem in the economy of the construction industry would directly affect the country's economy. This study aims to identify the factors affecting project management phases. In order to eliminate this decline in countries economy, the factors influencing the construction industries decline is been studies. Five major groups of independent variables, namely project-related factors, project procedures, project management actions, human related factors, and external environment are identified as crucial to project phases. This study is also helpful to the different stakeholders like contractors, site engineers, owners etc.***

Keywords: **Buildings, Economy, Project management phases, Public housing.**

I. INTRODUCTION

In india, construction industry is the second largest employer in the country after agriculture. Infrastructure, especially construction, is vital for the growth of indian economy and government also recognizes its importance. This is seen in the launch of mega and major projects by government departments to cover the historical gap between what is available and what is required. Over the next decade, India will continue to be among the fastest-growing countries in terms of construction output. Large infrastructure investments and growing urbanization will fuel this growth. Due to globalization, increasing competition and awareness of clients, there is a requirement to deliver projects successfully and build up organizations. This requires adoption of Project Management methodologies at the industry level.

Definition :

Management is the science and art of planning, organizing, leading and controlling the work of organization members and of using all available organization resources to reach stated organizational goals.

Construction project management deals with economical consumption of the resources available in the least possible time for successful completion of construction project.

'Men', 'materials', 'machinery' and 'money' are termed as resources in construction Management.

Planning, scheduling is an important part of the construction project management. Planning and scheduling of construction activities helps engineers to complete the project in time and within the budget.

II. NEED OF THE STUDY

The study intends to analyze and promote a better understanding and recognition of the complexities of the performance of contractors as well as project managers in completing projects. This study will offer some practical ideas, based on actual construction experience, to assist project managers and contractors in developing realistic construction planning, schedules and controlling the work. It is intended to make the reader aware of certain aspects that frequently seem to be ignored and to alert owners to potential problems as well as possible courses of action to avert problems. The points outlined in the study will also assist owners in evaluating the qualifications of potential contractors who may propose on residential building development projects.

Objectives :

To achieve the aim, the main objectives of this study are outlined as follows:

- To identify factors that affects directly on the different management phases.
- To give ranking to the factors and identify most crucial factors amongst all factors which will be affecting.

Phases of Construction Project Management :

The phases of construction project management are: Planning, Scheduling, Organizing, Staffing, Directing, Controlling.

List of factors:

NO.		Factors	Description
A		**Factors related to planning phase**	
1	Man	Lack of knowledge	Have a lack of ideas and information about field.
2		Inexperience of planner	Not enough experience about the field.
3		Inappropriate planning	The planning is inappropriate in the sense the not applicable on site.
4		Lack of awareness	Lack of awareness about past, presence and future.
5		Inadequate follow-up	Follow up is not done when needed.
6	Project condition	Territory of the area	Different territory has different planning.
7		Weather condition of site	If weather differs then planning will differs.
8		Natural calamities	Natural problems affects the planning.
9	Design	Complex planning	Planning is complex enough to do the work.

B		Factors related to scheduling phase	
10		Poor site management	Management is improper.
11		Coordination among parties	Improper coordination between the vendors and purchasers.

12	Man	Preparation of schedule plan and updates	Scheduling is not well prepared and updating is not done timely.
13		Experience of contractors	Contractor's experience is less.
14		Frequent change orders	Work procedure has been changed frequently.
15		Considerable extra work	Extra works given to the workers.
16		Increase in scope of work	Whether work is more or less.
17		Labour shortage	Availability of labours.
18		Poor supervision	Supervision is inadequate.
19		Inaccuracy of material estimate	Deficiency in estimation of material.
20		Poor labour productivity	Labour productivity is low.
21		Lack of personnel training & management support	Insufficient training of labours and lack of support from management.
22		Planning and scheduling deficiencies	Not link among the planning and scheduling.
23		Organizational deficiencies	Things like i.e., material has not been provided at time.
24		Shortage of resources	Lack of availability of resources.
25		Construction method	Different method has different approaches to work.
26	Man	Client initiated various method	Client looks to change method.
27		Political situation	Political enforcement during progress of construction work.
28		Experience of contractors	Lack of experience of contractor.
29		Experience of consultant	Consultant's experience matters.
30		Experience of owners	Owner's decision making power and experience.
31		Availability of staff to manage projects	Experience of staff members.
32		Inadequate planning	Planning is improper.
33		Conflicts	Conflicts between two parties.
34	Time	Low speed of decision making	Process of decision making is slow.
35		Delays in design work	Late due architectural design
36		Waiting for information from clients	Delays from clients to give orders.
37		Delays in payments by owner	Payments to different stakeholder has been delayed.
38	Material	Material procurement	Procurement is done at right time or not.
39		Lack of material in market	Shortage of different material in market near site.
40	Money	Cash problem during construction	Money management during construction.
41		Finance by contractor	Contractor not pays when needed.

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42	Machine	Shortage in equipment	Equipment not available at particular site or location.
43		Selection of equipment	Type of equipment selected for work.
44	Project condition	Bad weather	Whether condition is bad enough to do the work.
45		Ground problems	The ground condition is important for work.
46		Design complexity	Design is in the manner that work should not be completed at time.
47		Foundation condition	Locality and ground water table condition of site.
C		**Factors related to controlling**	
48	Man	Detalization problem	Improper detail given by controller.
49		Managing innovation	Innovation technique has not known to all.
50		Managing operation	Operation's activities are not managed.
51		Development problem	Problem due to development.
52		Culture problem	Different languages has not known.
53		Leadership and review	Lack of experience of leader.
54		Measurement identity problem	Low access to identify the problem.
55		Lack of common understanding	Understanding of common thing of work is lacked.
56		Volume of information flows	Information about process of work .
57		Lack of experience of head	Inexperience of leader.
58		Non union thoughts	Thoughts of workers is non-unionized.
59		Lack of constant supervision	Supervision during process of work has been lacked.
60		Over controlled	Something over controlled in process.
61		Communication problem	Communication between staff and management.
62	Time	Due to not timely update	Updating of work has not been done time to time.
63		Time limit for decision making	Decision making of leader in controlling.
64	Money	Finance	Financial procurement towards the controlling staff members by organization.
65		Cost of controlling & its efficiencies	Money spend towards controlling.

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III. METHODOLOGY

This chapter introduces the methodology which is applied in this research to achieve the research aim. Basically, this research work includes five different sections. First section of research covers the project title and identification of the objectives. Second section of research covers review of literatures. Third section of research includes overview of different project management phases. Fourth section includes factors affecting to different project management phases. In this section data analysis was done by SRCCM techniques to rank the factors. In this technique criticality index as a function of frequency index and impact index is calculated for each factors.

Data analysis approach

The collected data were analyzed through the following statistical techniques and indices:

Criticality Index as a Function of Impact and Frequency Indices

Bon-Gang Hwang (2013) used this same technique to rank the factors affecting schedule performance of housing projects in Singapore.

 Impact Index: The impact index of each factor was computed using the following equation:

$$\text{Impact Index (I.I.)} = (5n_5 + 4n_4 + 3n_3 + 2n_2 + n_1)/5N$$

where N is the total number of respondents; n_5 is the number of respondents answered "very high"; n_4 is the number of respondents answered "high"; n_3 is the number of respondents answered "mid"; n_2 is the number of respondents answered "low"; n_1 is the number of respondents answered "very low". The II value ranged from 0 to 1 (0 not inclusive) and the higher value of II indicates the factor has higher-level impact on different phases of project performance.

 Frequency Index: The frequency of each factor was derived from the following equation:

$$\text{Frequency Index (F.I.)} = (5n_5 + 4n_4 + 3n_3 + 2n_2 + n_1)/5N$$

where N is the total number of respondents; n_5 is the number of respondents answered "always"; n_4 is the number of respondents answered "often"; n_3 is the number of respondents answered "sometimes"; n_2 is the number of respondents answered "rare"; n_1 is the number of respondents answered "never". The FI value also ranged from 0 to 1 (0 not inclusive) and the higher FI value indicates the factor is more likely to occur and affect project phases.

 Criticality Index: Based on the II and FI, the criticality index of each factor was calculated and the equation is:

$$\text{Criticality Index (C.I.)} = [\text{I.I.} * \text{F.I.}]$$

The top 5 factors of planning phase, scheduling phase as well as controlling phase according

No.	Respondent	Questionnaire Distributed	Questionnaire Received	% of Response	% Total
1	Contractor	116	68	58.62	31.48
2	Developer	82	60	73.17	27.78
3	Site Engineer	88	53	60.23	24.54
4	Architect	64	35	54.69	16.20
TOTAL		**350**	**216**	**61.71**	100.00

to the different stakeholders are as given as below:

PHASE	TOP 5 FACTOR	ARCHITECTS	SITE ENGINEERS	DEVELOPERS	CONTRACTORS
PLANNING	1	Inappropriate planning	Lack of knowledge	Lack of knowledge	Inexperience of planner
	2	Lack of knowledge	Inexperience of planner	Inexperience of planner	Lack of knowledge
	3	Inexperience of planner	Inappropriate planning	Inappropriate planning	Inappropriate planning
	4	Lack of awareness	Inadequate follow-up	Lack of awareness	Territory of the area
	5	Inadequate follow-up	Lack of awareness	Inadequate follow-up	Lack of awareness
SCHEDULING	1	Low speed of decision making	Poor site management	Coordination among parties	Coordination among parties
	2	Poor site management	Poor supervision	Poor site management	Experience of contractors
	3	Poor supervision	Coordination among parties	Availability of staff to manage projects	Poor site management
	4	Availability of staff to manage projects	Low speed of decision making	Low speed of decision making	Preparation of schedule
	5	Coordination among parties	Availability of staff to manage projects	Poor supervision	Low speed of decision making
CONTROLLING	1	Leadership and review	Lack of experience of head	Lack of experience of head	Leadership and review
	2	Time limit for decision making	Leadership and review	Leadership and review	Lack of experience of head
	3	Lack of experience of head	Volume of information	Volume of information	Volume of information
	4	Detalization problem	Detalization problem	Detalization problem	Detalization problem
	5	Communication problem	Lack of common understanding	Time limit for decision making	Time limit for decision making

CONCLUSION

- These finding factors are those inputs to the management system that lead directly or indirectly to the success of the public housing projects. The purpose of this study is to define factors affecting to the project management phases.
- Findings in this study asserted that the critical factors perceived as most influential in avoiding or preventing to better performance within construction industries and they are likely to improve success in building construction projects.
- The overall top 5 factors which affects the planning phase are: Lack of knowledge, Inexperience of planner, Inappropriate planning, Lack of awareness, Inadequate follow-up.
- The overall top 5 factors which affects the scheduling phase are: Coordination among parties, Poor site management, Poor supervision, Availability of staff to manage projects, Low speed of decision making.
- The overall top 5 factors which affects the controlling phase are: Lack of experience of head, Leadership and review, Volume of information, Detalization problem, Time limit for decision making. . This study provides a forecasting tool to enable parties to rapidly assess the possibility of a successful project from their point of view.

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REFERENCES

[01] Assaf, S.A., Al-Khalil, M and Al-Hazmi, M.(1995).'Causes of delay in large building construction projects'. Journal of Project Management in Engineering ASCE, 2; 45-50

[02] Abd. Majid, M.Z., and McCaffer, R. (1997). Assessment of Work Performance of Maintenance Contractors in Saudi Arabia Journal of Management in Engineering, ASCE, Vol. 17 No. 1:91

[03] Albert P. C. Chan (2004) "Factors Affecting the Success of a Construction Project" 10.1061/(ASCE)0733-9364(2004)130:1(153).

[04] Arti J. Jari (2013) "To Study Critical Factors Necessary for a Successful Construction Project" International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-2, Issue-5, April 2013.

[05] Ballard Glenn. (1997). Lean construction and EPC performance improvement. Luis Alarcon: Lean Construction.

[06] Bon-Gang Hwang (2013) , " Identifying the critical factors affecting schedule performance of public housing projects" Habitat International 38 (2013) 214 -221.

[07] Callixtus Tamin. (2005). Factors Affecting the 'S' Curve in Determining Project Completion. UTM.

[08] Che Wan FadhilChe Wan Putra. (2001). Basic Review of Construction Work Scheduling Approaches. Faculty of Civil Engineering. UTM.

[09] Chua D.K.H., Kog Y.C. and Loh P.K. (1999). Critical Success Factors for Different Proect Objectives. Journal of Construction Engineering and Management, May/June.

[10] Claugh RH, Sears GA, Sears SK. (2000). Construction project management. 4th ed.

[11] Walker A. Project management in construction. 3rd ed. Blackwell Science; 1996

[12] Ganesh,L.and Mehta A. 2010.Critical Success Factors For Successful enterprise Resource Planning Implementation.In : "International Journal Of Business, Management And Social Sciences" , Vol. 1 No.1, pp. 65-78.

[13] Kumaraswamy, M.M and Chan, W.M (1998). 'Contributes to Construction delays', Journal of Construction Management & Economics, 16; 17-29

[14] Pundir,A.K. and Ganpathy,L. and Shahu,R. Oct-Dec2011. Success Factors For Construction Projects:A Survey of Selected Projects.In:"NICMAR Jornal of construction management",Vol.XXVI No.IV,pp.5-18.

