

IDENTIFYING PROJECT MANAGEMENT CHALLENGES FOR GREEN CONSTRUCTION IN GUJRAT

Kevin U. Desai¹, Dr. Neeraj D. Sharma², Hiren A. Rathod³

PG Student, Construction Engg. and Management at SNPIT & RC, Umrakh, Gujarat, India ¹

Professor, Department of Civil Engineering, SNPIT & RC, Umrakh, Bardoli, Gujarat, India ²

Ass. Professor, Department of Civil Engg., SNPIT & RC, Umrakh, Bardoli, Gujarat, India ³

Abstract: Green construction can be seen as an alternative option to maintain sustainability of environment in construction. Project manager plays an important role of project success, and also confirmed "the industry's growing awareness of the relationship between achieving project success and construction project management competencies." Several studies have highlighted critical challenges of green construction are designed for optimum energy efficiency and are constructed with a preference for recycled materials something like if using OPC than behalf of that use PPC cement, using low voc paint. This study will take consideration of data collected from Questionnaire Survey by responses of project manager within Ahmedabad, Vadodara, Surat & Rajkot and the collected data will be analyzed using SPSS tool for find out the mean of individual project management challenges.

Keywords: Green construction, Challenges, Project manager, Project management.

I. INTRODUCTION

According to Indian Green Building Council (IGBC), Green construction is defined as "green construction is one which uses minimum water, reduce energy efficiency, consumes natural resources, generates less waste and provides healthier environment for occupants, as compared to a conventional building."

It is a practice of constructing structures and using processes that are environmentally responsible and resource-efficient throughout a life cycle period of building. This practice elaborates and complements the conventional building design concerns of economy, utility, durability, comfort and health which provides eco-friendly environment.

Project manager plays a very crucial role for project success. Green construction project aims to provide healthy and eco-friendly environment. A project manager has directly influence the project over 50% for success of project. Based on studies different types of challenges facing during construction project is defined and which skills of project manager needs to develop to solve these problems easily.

In green construction IGBC provide the rating system. It provides the rating based on its performance. It divided in four categories 1. Certified 2. Silver 3. Gold 4. Platinum which shows the performance of green construction. As a result, project

manager completes the green construction project easily without compromising the competitiveness.

Now a day's awareness regarding green construction is very important because lots of stake holder of construction industry are not aware with the benefits of green construction. The cost difference between traditional building and green building is depends upon the required performance of green building, usually the difference is up to 30%.

II. LITERATURE REVIEW

Bon-Gang Hwang, Wei Jian Ng [1] This study gives the top 10 project management challenges, which are directly affect the work of project managers in green construction projects. Bon-Gang Hwang, Jac See Tan [2] Investigate the common problems that project managers encounter during the planning and construction of green buildings. Bon-Gang Hwang, Jac See Tan [3] A comprehensive list of 15 factors was determined. These factors are grouped into six categories: time, cost, technology, awareness, construction management, contract management. Mohammed Shareef, M. S. Hasan, Rong-jun Zhang [4] This research categorizes project management challenges into four major groups i.e., Economics, Technology, Awareness, Management. Patrick T.I. Lam, Edwin H.W. Chan, C.S. Poon, C.K. Chau, K.P. Chun [5] Describes 20 project management challenges were identified through a primary data questionnaire survey responded by 31 participants aware with the green construction. Qian Shi, Jian Zuo, Rui Huang, Jing Huang, Stephen Pullen [6] Data was collected using interviews with the experts to ensure that they understand the factors and to ensure that they will fill the surveys. Then data was analyzed and the factors ranked according to their Relative Importance Index (RII). Xiaoling Zhang, Liyin Shen, Yuzhe Wu [7] Identify typical barriers for applying green elements in housing projects. This study highlights the proposed benefits of green construction in housing development.

III. RESEARCH METHODOLOGY

3.1 Identification of factor:

In this research, main part is questionnaire survey so, from the literature study and the site survey, 35 project management challenges were identified.

3.2 Questionnaire formulation:

All the 35 identified challenges were classified into 7 main categories which is A) Planning related challenges B) Project related challenges C) Client related challenges D) Project team related challenges E) Material & Equipment related challenges F) Labor related challenges G) External challenges.

The questionnaire has five part:

- Project title and personal information of surveyor
- Short description of green construction and respondent's detail
- Sample of filled questionnaire
- Main questions with 1-5 ratings
- Suggestion section for respondent

3.3 Pilot study and validation:

The pilot study was carried out to ensure the validity of the questionnaire. In this study questionnaire given to experts for review the questionnaire and after that done some changes as per their suggestion.

3.4 Data collection:

All the data were collected by the questionnaire survey. The questionnaire was prepared and distributed to 140 Project managers. Out of which 97 responses were obtained.

3.5 Data analysis:

The received data were analyzed using the SPSS tool. From that, frequency and mean were obtained

IV. RESULT

4.1 Frequency test:

Frequency test was carried out by using SPSS tool to find out mean.

TABLE I: - Mean of all the challenges

SR.NO	CHALLENGES	MEAN
A1	Adoption of different contract forms of project delivery	3.0000
A2	The design and structure of the building	3.9897
A3	Planning of various construction sequence	4.0309
A4	Planning of different construction technique	3.5670
A5	Lengthy approval process for “green technologies	3.3196
A6	Pre-construction process required longer time	4.1340
B1	Problems in approving payment disbursement to suppliers and subcontractors	1.9381
B2	Problems in assessing the progress of completion in green construction	1.9381
B3	Problems in the selection of subcontractors in providing green construction service	3.9072
B4	Longer time is required to apply green construction practices onsite	2.4330
B5	More variation with the design during the green construction process	1.8351
C1	Clearly defined budget specification of the green project	3.6186
C2	Delay in progress payment by client	1.7216
C3	Client initiated variation of work	1.7216
C4	High Level of risk the client is willing to take in green technologies	2.0103
C5	Client uses a more time in making decision	1.6701
D1	Clash with the architect over the type of material to be used	3.7216
D2	Less communication and interest among project team members	2.8041
D3	Delay in providing information by green consultant	2.0928
D4	Difficulties in financing green construction project	3.6495
D5	Specific performance required for green construction projects	3.9278
D6	Low priority given to safety by labor/contractor	4.4948
D7	Less follow up of health and safety regulations on site	4.5567
E1	Higher cost of green material and equipment	3.9794
E2	Equipment breakdown	1.6392

E3	Availability of material and equipment	3.8351
E4	Change in material during construction	2.0309
E5	Imported green construction related material or equipment	1.8454
F1	Change from their traditional practices	2.6495
F2	Lack of the technical skill regarding green construction	3.6907
F3	Workers unaware of the correct technique	4.1856
F4	Shortage of skilled labour	4.4845
G1	Government policy	4.2268
G2	Lengthy IGBC (Indian green building council) approval process for new technologies	2.5464
G3	Unforeseen circumstances in green project	2.3505

TABLE II: - Top 10 Challenges

Rank	Challenges	Variable	Mean
1	Less follow up of health and safety regulations on site	D7	4.5567
2	Low priority given to safety by labor/contractor	D6	4.4948
3	Shortage of skilled labour	F4	4.4845
4	Government policy	G1	4.2268
5	Workers unaware of the correct technique	F3	4.1856
6	Pre-construction process required longer time	A6	4.1340
7	Planning of various construction sequence	A3	4.0309
8	The design and structure of the building	A2	3.9897
9	Higher cost of green material and equipment	E1	3.9794
10	Specific performance required for green construction projects	D5	3.9278

V. CONCLUSION

- From Questionnaire survey and analysis with the help of RII the top 10 challenges, which are facing by project managers in green construction projects:(1) Less follow up of health and safety regulations on site;(2) Low priority given to safety by labor/contractor;(3) Shortage of skilled labor;(4) Government policy;(5) Workers unaware of the correct technique;(6) Pre-construction process required longer time;(7) Planning of different construction sequence;(8) The design and structure of the building;(9) High cost in green material and equipment;(10) Specific performance required for green building projects.
- This study will be helpful to the ones who are looking forward to work on green construction If the challenges listed above are properly taken care of, then the green construction work easily execute.

REFERENCES

- [01] Bon-Gang Hwang, Wei Jian Ng, "Project management knowledge and skills for green construction: Overcoming challenges", International Journal of Project Management ISSN: 0360-8581 Volume 31, Issue 2, Pages 272–284, February 2013.

- [02] Bon-Gang Hwang, Jac See Tan, “Sustainable project management for green construction: challenges, impact and solutions”, Published in World Construction Conference 2012 – Global Challenges in Construction Industry.
- [03] Bon-Gang Hwang, Jac See Tan, “Green Building Project Management: Obstacles and Solutions for Sustainable Development”, Published in Sustainable Development, ISSN 1099- 1719, Volume 20, Number 5, Page. 335-349, 1 September 2012.
- [04] Mohammed Shareef ,M. S. Hasan, Rong-jun Zhang, “Critical Barriers and Challenges in Implementation of Green Construction in China”, International Journal of Current Engineering and Technology, ISSN 2277, Vol.6, No.2 (April 2016).
- [05] Patrick T.I. Lam, Edwin H.W. Chan, C.S. Poon, C.K. Chau, K.P. Chun, “Factors affecting the implementation of green specifications in construction”, Journal of Environmental Management. Volume 91, Issue 3, January–February 2010, Pages 654–661.
- [06] Qian Shi, Jian Zuo, Rui Huang, Jing Huang, Stephen Pullen, “Identifying the critical factors for green construction - An empirical study in China”, Journal of Habitat International ISSN 0197-3975, Volume 40, Pages 1–8, October 2013.
- [07] Xiaoling Zhang, Liyin Shen, Yuzhe Wu, “Green strategy for gaining competitive advantage in housing development: a China study”, Journal of Cleaner Production ISSN: 0959-6526 Volume 19, Issues 2–3, Pages 157–167, February 2011.