

DEVELOPMENT OF PROJECT MANAGEMENT MATURITY MODEL FOR MEASURING SUCCESS OF CONSTRUCTION PROJECTS IN SURAT CITY

¹Mr. Dhruv R. Patel , ²Dr. Neeraj D. Sharma, ³Mr. Rushabh A. Shah

Student, Phd Civil, M.E. (C.E.M).
Civil Engineering Department
S.N.P.I.T & RC, UmraKh Bardoli, Surat, India

Abstract: Practitioners and academics have developed numerous maturity models for many domains in order to measure competency. These initiatives have often been influenced by the Capability Maturity Model. However, an accumulative effort has not been made to generalize the phases of developing a maturity model in any domain.

From site survey, observation was made that there are many projects which have been done in Surat using standard tools of Construction Management but still they are not achieving the Benchmark level for which they have been designed so I came to conclusion of developing Maturity Assessment Frame for Surat City in Gujarat region.

The aim of this study is to develop a framework to assess “Maturity Level of Construction projects” for Surat city. Total 10 main dimensions were collected from Literature review and site interview and with the help of Pilot survey new 4 dimensions were added and questionnaire was drafted for all 14 dimensions based on the practices followed on construction sites. Qualitative stakeholders like Owner, Site Engineer, Architects, Project Management Consultants, Project Manager and Contractors and from their reviews by using Rank Sum Method, Probability Method and Statistical Tools the analysis was done and Maturity Assessment framework of 5 levels was developed for Surat city of Gujarat region. It was developed by questionnaire survey and 149 participators gave response out of 183.

If this developed model is applied on construction site we can get to know how much mature is the construction site and practices are well described in questionnaire so by following it construction site can be made matured.

Keywords: Construction Management, Maturity model, benefits, Graphical representation.

1. INTRODUCTION

Project management maturity refers to the progressive development of an enterprise-wide project management approach, methodology, strategy, and decision-making process. The appropriate level of maturity will vary for each organization based on its specific goals, strategies, resource capabilities, scope, and needs. Maturity is attained when it is capable of demonstrating improvements such as on-time project delivery, cost reductions, organizational efficiency, and profitability. The Project Management Maturity Model (PMMM) is a formal tool developed and used to measure an organization's project management maturity. Once the initial level of maturity and areas for improvement are identified, the Maturity Model provides a roadmap, outlining the necessary steps to take toward project management maturity advancement and performance improvement.

2. NEED OF MATURITY MODEL

- By observing certain sites I found out there was not proper management on the site.
- From this sites I observed that there are many projects which have been done in developing countries using standard tools of Construction Management but still are they achieving the Benchmarking level for which they have been designed? It is a very big Question for Construction Industry.
- No standardization is there for projects so there will be problems in projects management.
- So to suggest where your project is application of maturity model have been developed.

3. DEFINATION AND CONCEPT MATURITY MODEL OF SURAT

3.1 Defination

Generally Maturity is filling the gap between where your project is and where it needs to reach to achieve its goal.

3.2 Levels

The proposed Maturity model is of five level. On the basis of practices followed for construction the model is divided from initial level to optimized level.

- Level 1-Initial
- Level 2-Controlled
- Level 3-Managed
- Level 4-Defined
- Level 5-Optimizing

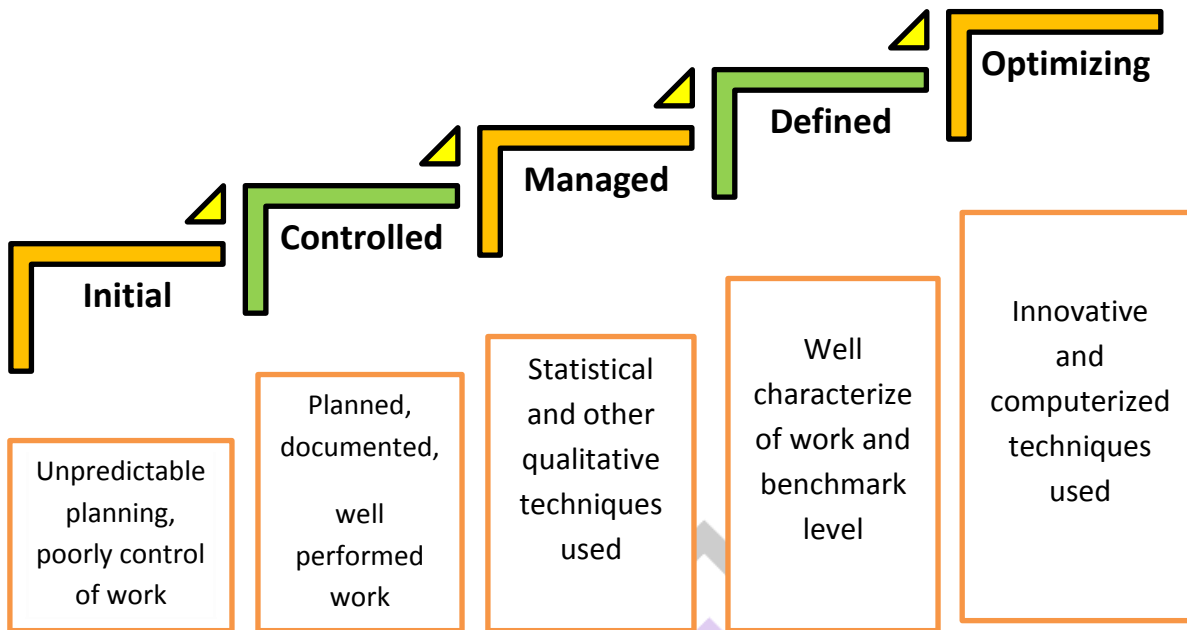


Figure 1 Conceptual Maturity Model of Surat

4. METHODOLOGY

On the basis of PMBOK (Project Management Body of Knowledge) and Literature review 10 dimensions were identified and based on Pilot Survey interview 4 new dimensions were added. Questionnaire was drafted based on this 14 dimensions related to practices followed at site. Data was gathered through a questionnaire survey & analyzed by using three different techniques: Rank sum method, probability method and Statistical method. Based on this analysis by all the three methods Maturity assessment model for Surat city was developed.

4.1 Rank Sum Method

Part 1 questionnaire has been analyzed by rank sum method and ranking of all 14 factors have been given. This questionnaire is marked according to the importance of all 14 dimensions rated by qualitative site respondents (owner, architecture, project manager,

site engineer, PMC consultant, contractor). Means marks has been given on their experience of work how much all 14 dimensions is important in terms of marks 5,4,3,2,1.

The Mean Score method is used to obtain the level of significance and importance of dimensions affecting maturity of construction project. The rating of the respondents was converted into actual scores.

4.2 Probability Method

Part 2 questionnaire has been analyzed by probability method. It includes all 14 factors questions in the format of A,B,C types where A= basic procedures which have 5 marks, B= average practices which consists of 10 marks and C= advanced practices which are of 15 marks and questions are of Yes, No format which has been marked by respondents according to the practices followed at site. Experience based practices has been marked and analyzed.

4.3 Statistical Method

Then for establishing relationship between both the questionnaire “Statistical Method” has been used. Based on the above correlation Maturity of overall Surat has been marked. 5 level of Maturity has been represented in the graph.

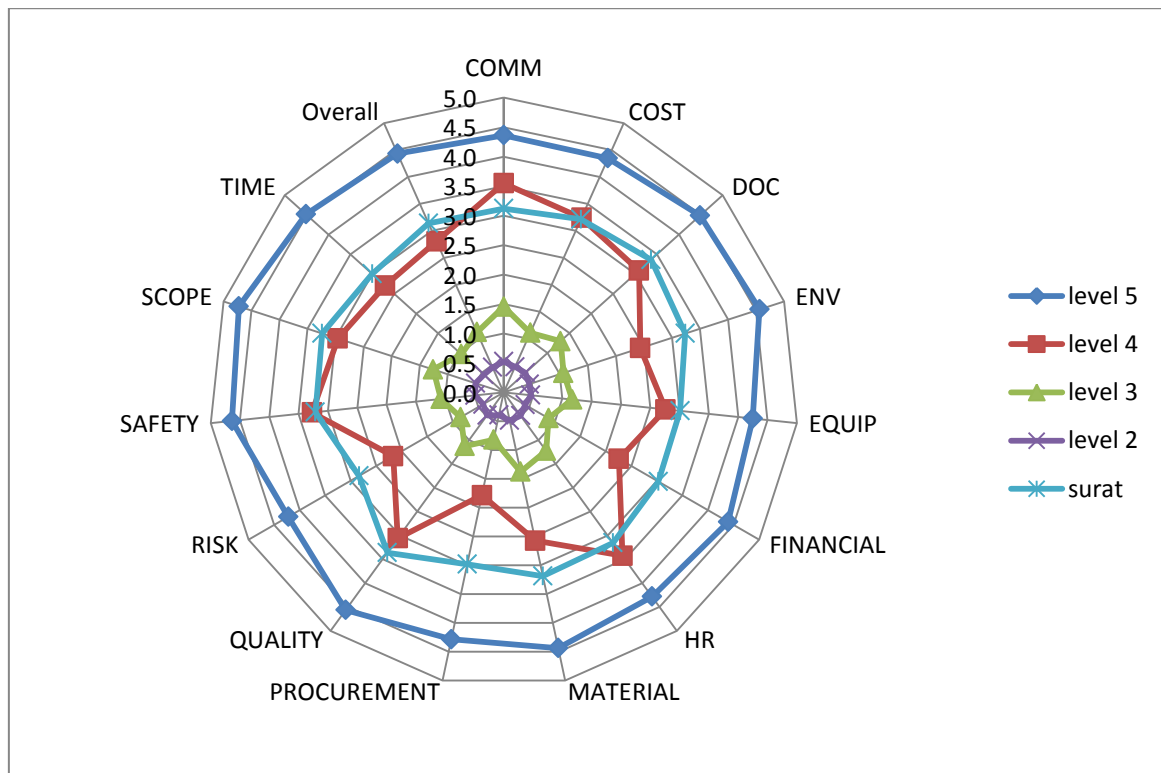
5. SURAT’S MATURITY MODEL

This is Surat’s Maturity Model showing all 14 dimension Maturity and showing overall Maturity of Surat City.

Table 1 Surat’s Maturity Model

SURAT MATURITY MODEL					
DIMENSIONS	LEVEL 5	LEVEL 4 (SURAT)	LEVEL 3	LEVEL 2	LEVEL 1
COMMUNICATION	4.3624	3.1202	3.5481	1.4541	0.5235
COST	4.3490	3.2165	3.2420	1.1070	0.4744
DOC	4.4832	3.3636	3.0884	1.2952	0.4981
ENVIRONMENT	4.5638	3.2392	2.4340	1.0649	0.4564
EQUIPMENT	4.2483	3.0099	2.7614	1.1683	0.4602

FINANCIAL	4.3960	3.0286	2.2553	0.8792	0.4205
HR.	4.2819	3.1529	3.4255	1.2234	0.4894
MATERIAL	4.4362	3.1858	2.5730	1.3752	0.4880
PROCUREMENT	4.2819	2.9817	1.7841	0.8207	0.3925
QUALITY	4.5638	3.3609	3.0604	1.1275	0.4832
RISK	4.2215	2.8337	2.1658	0.8443	0.4038
SAFETY	4.6376	3.2153	3.2707	1.0740	0.4882
SCOPE	4.7248	3.2416	2.9609	1.2600	0.5040
TIME	4.5168	3.0035	2.7101	0.9679	0.4517
Overall	4.4334	3.1395	2.8057	1.1187	0.4667



Graph 1 Surat's Maturity Representation

Table 2 Surat's Overall Maturity and Name of Maturity

LEVEL	MATURITY ANSWER	NAME OF MATURITY
Level 1	0.4667	Initial
Level 2	1.1187	Controlled
Level 3	2.8057	Defined
Level 4	3.1395	Managed
Level 5	4.4334	Optimized

6. BENEFITS OF MATURITY MODEL

- By following this model we can make our project up to the mark and we can achieve our goals easily.
- It helps in comparing maturity with other organizations in terms of time, cost, performance, organization, etc.
- It helps in setting benchmark for projects.
- By maturity model we can compare different levels of same organization
- It acts as standardization.

7. CONCLUSION

How to develop a maturity model for construction project has been understood. Certain factors for evaluating project has been determined from literature. Maturity model of different level has been made and by questionnaire survey projects can be evaluated. Experts of that projects have been interviewed by questionnaire survey to evaluated the projects. By maturity model we can know exactly where our project stand and we can trace the route of improvement. This model acts as a benchmarking tool and we can compare our projects with other organizations. Relationships between different organizations and relationship between upstream and downstream of same organizations can be developed.

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