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## Comparative Study of Successive Factors of Residential and Commercial Project in Nashik

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**Abstract:** - Various measures exist to assess the success of real estate projects. The major objective of this study is to propose a comprehensive success model for real estate projects considering both short-term and long-term performance. In this respect, a wide range of success criteria are identified based on an extensive literature survey and these criteria are classified according to the balanced scorecard (BSC) framework. Then, an analytic network process (ANP) model is developed to examine the links between the attributes of success and to compute the importance weights of these variables on the real estate project success.

The findings of this study suggest the importance of the attractiveness of project location, level of contribution to business value, accuracy of cost estimation, level of innovativeness, and effectiveness of cost control for a successful real estate project. The applicability of the proposed model is tested on Nashik real estate projects and the results are found to be satisfactory. Real estate companies may benefit from the findings of the proposed model in assessing the performance of their projects and may take the necessary actions to achieve better success in their projects.

This paper aims to identify and study the constraints and the contribution factors which lead to the success of a project. The projects usually suffer and fail due to diligence, poor project Planning, poor financial management or operations oversight. For these obvious reasons the initial feasibility, assessment and planning stages are the most critical for the overall project success.

**Keywords:** - Real estate, Success criteria, construction projects, balanced scorecard, Analytic network process.

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### I. INTRODUCTION

Countless papers have been written about project success. The research content could be classified to three directions: Some focuses on the factors influencing project success; another examines the criteria required for success; the rest study connects of success factors and success criteria. This paper mainly analyses the project success criteria. In general, the industry-accepted classical success metrics for construction project have been cost, schedule, and quality/performance (Kerzner, 2003). Then many people found that these criteria are too limited for measuring project broadly. For these triple criteria precondition project has the same efficiency. In the reality, some project does realize three triple measurements but it is still failed in the end. Some project is over budget and schedule, but it brings customers value in the long run. They mention their opinions about project success criteria from different perspectives, such as from the project short term and long term; from the macro view or micro view to get the project success criteria; from different participates' view to get the success criteria. Many authors agree that there are many stakeholders taking part in the project, and their success criteria are different. Some researchers separate project to many different stages. However, they do not get the exact project stakeholder project success criteria. Actually, not all the stakeholders would take part in all the phases of project, so there is a problem

for us to address. Real estate projects are cooperative tasks. Construction projects have many different, and sometimes discrepant, interests to be considered (Stefan & Anne, 2005).

When measuring project success, one must consider the objectives of all stakeholders throughout the project life-cycle and at all levels in the management hierarchy (Anton, 1988). However, there is no standard method about how to measure key stakeholders' satisfaction during the project life-cycle. This paper attempts to provide a project success measurement framework: to address the specific complexities of real estate development project. In particular the framework integrates different stakeholder perspectives and the life-cycle of a project. The framework can easily be used as a basis to evaluate the project status and to forecast the results at every stage. It should help key stakeholders and project managers to measure and predict of a project's success in an early stage. First, a project success literature review would be provided, followed by introduction to stakeholder theory and project life-cycle, using the Mendelow's power/interest matrix (Mendelow, 1981) to identify the key stakeholders. Finally, success criteria are offered for each key stakeholder. Two cases are presented which demonstrate the application to support the framework.

## **II. OBJECTIVE OF STUDY**

The main objectives of this study include the following:

1. To find out the factors contributing to the success of real estate construction projects.
2. To find out the weightage of each factor using a questionnaire developed by software named SUPER DECISIONS.
3. To recommended the stakeholder or Developers importance of weightage of factors by priority wise.
4. Comparative Study of factors contributing to Success of Residential and Commercial Project in Nashik.

## **III. LITERATURE REVIEW**

1) Didem Erdem<sup>1</sup> and Beliz Ozorhon<sup>2</sup> (2014) (1) studied that wide range of success criteria are identified based on an extensive literature survey, and these criteria are classified according to the balanced scorecard (BSC) framework. Then, an analytic network process (ANP) model is developed to examine the links between the attributes of success and to compute the importance weights of these variables on the real estate project success. Data used for the ANP model are collected from eight experienced civil engineers. In this respect, first the internal and external factors associated with real estate project success have been identified.

2) NIU Jing-min<sup>1</sup>, Thomas G. Lechler<sup>2</sup>, JIANG Jun-long<sup>3</sup> (2010) (2) this paper presents a new success measurement framework using a Chinese real estate project, which identifies different success criteria for different key stakeholders throughout the phases of the project life-cycle. This framework can be used as a basis to evaluate project status and to forecast the results in the future at every stage. It could be help key stakeholders and project managers to ensure a project's success.

3) Arti J. Jari, Pankaj, P. Bhangale (April 2013 ) (3) many critical success factors such as factors related to project manager's performance, factors related to organization, factors related to project, factors related to external environment became apparent from this study This study will helpful to identify which factor influence the project success.

4) S.H.Wai<sup>1</sup>, Aminah Md Yusof<sup>2</sup> and Syuhaida Ismail<sup>3</sup> (June2012) (4) this paper seeks to achieve the followings: (1) review of the current literature on building success criteria and (2) develop an empirical framework for measuring the success of a building project in Malaysia. A total of 120 quantitative responses were distributed to different sizes and types of building project developers. 59 complete responses were retrieved. By employing Principal Component Analysis (PCA) through the Statistical Package for the Social Science (SPSS) software.

#### **IV. RESEARCH METHODOLOGY**

The methodology for this study is taken from some literature search and conference study, books and international journals. The first step was to construct a conceptual model based on a comprehensive literature review on real estate project success. The list is refined to 23 variables through the pilot study, which involved interviews with professors of civil engineering and two highly experienced civil engineers from the real estate sector. The identified variables are grouped under four categories, namely, financial, customers, value adding, and operational. These factors are assessed using analytical network process through software named as SUPER DECISIONS wherein questionnaire is generated by the software based on the matrices which are fed to the software.

#### **V. DATA COLLECTION**

Data is to be collected from various Books, literature survey, internet, international journals and conducting conferences. Project managers, Project coordinators, technical office engineer, architect, contractor and developers of various firms in Nashik were targeted for survey. List of Successive factors are given in Table 1.

#### **VI. DATA ANALYSIS**

A team of experts were asked to assess the relations between the model parameters. Experts were decided among experienced civil engineers who have worked on real estate projects throughout their careers. Eight civil engineers participated in the study. Although there is no minimum number for the panel size, it is common to conduct the analytical network process exercise with the participation of three or more experts. The experts were given a  $23 \times 23$  matrix and asked to mark the variables that influence each other. To reach consensus, two rounds of discussions were completed. The network of interrelations was finalized based on both a synthesis of experts' opinions and a literature survey. Categorization of the identified variables leads to a two-level hierarchy, in which the top-level elements (cluster) are decomposed into lower-level attributes (node). The interrelations among the clusters are depicted in Figure. 1. Comparisons between nodes and among clusters were performed in this step. After the model was constructed, pair wise comparison matrices were formed based on the node connections. The experts were then asked to evaluate these matrices, which were later used to compute the importance weights of the attributes. Pair wise comparisons between parameters were performed based on the brainstorming sessions of the expert team. This collaborative approach was used to achieve a more reliable model through consensus among experts. The last step of the analysis is to compute the magnitudes of influence of each node on the project success. The pair wise comparison matrices were combined by the SUPER DECISIONS program to form a synthesized matrix called the super matrix. The importance weight is found in the form of a bar chart which is generated by the software. The matrices are to be shown in Table 2.

#### **VII. RESULT AND CONCLUSION**

- 1) To get the weightage of cluster in Residential Project as shown in Graph 1.
- 2) To get the weightage of cluster in Commercial Project as shown in Graph 2.
- 3) To get weightage of each node in Residential Project as shown in Table 3.
- 4) To get weightage of each node in Commercial Project as shown in Table 4.

The analysis results derived from the model suggest that for residential project level of customer satisfaction, effectiveness of construction schedule , accuracy of cost estimation, effectiveness of cost control, and attractiveness of project location are the most

important determinants which contributes success in Residential projects in Nashik. In Commercial projects attractiveness of project location, past project experience, accuracy of cost estimation, and effectiveness of cost control are the most important determinants which contribute success in Commercial projects in Nashik.

The financial objectives, customer satisfaction, and operational perspectives hold the position of being the most influential paradigms for the success of real estate construction projects. The value adding perspective, however, is not found to be as effective as the other three perspectives.

## **VIII. RECOMMENDATIONS AND FUTURE SCOPE**

This model may be considered as a huge approach to assessing real estate developing project success Prime attention to customer satisfaction and project location must be given as it ranks the most important factor in success of any real estate construction project.

Also special attention to initial cost estimation must be given. An accurate estimate of cost will always help the stakeholders in keeping the project under control financially. In a broader aspect the financial and customer attributes of a project hold the position of prime importance.

Project stoppage and failures can be avoided if due attention is given to the suggested recommendations.

The model can be applied to real estate construction projects of all quanta. Model may be applied for testing in foreign lands.

## **ACKNOWLEDGEMENT**

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- 3) Damial F. Oferi, "Project Management Practices and Critical Success Factors-A Developing Country Perspective".
- 4) S.H. Wai<sup>1</sup>, Aminah Md Yusof<sup>2</sup> and Syuhaida Ismail<sup>3</sup> (June 2012), "Exploring Success Criteria from the Developers' Perspective in Malaysia".
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Table 1 – List of 23 finalized Project successive factors used in study.
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Cluster	Code	Factor	Description
Financial	F1	Accuracy of cost estimation	Estimating the cost correctly in the beginning of the project
	F2	Effectiveness of cost control	Keeping the project cost under control, regular reporting, and savings cost
	F3	Effectiveness of marketing	Success of sales/renting of real estate
	F4	Effectiveness of financial resources	Accurate financing plans, credibility, regular receipt of payments
	F5	Accuracy of risk assessment	Proper analysis of financial and operational risks, correctness of feasibility study
Customer	C1	Level of customer satisfaction	Satisfaction of customers during or at the end of the project
	C2	Functionality of the space	Functional design, ergonomic solutions
	C3	Attractiveness of project location	Being in a preferred district by the customers
	C4	Environmental friendliness	Low environmental effect; green and sustainable design
Value adding	V1	Level of satisfaction of project employees	Satisfaction of the staff involved in the project
	V2	Level of employee competency	Effectiveness of project employee in the headquarters and on site
	V3	Level of contribution to business value	Extent the project adds value to the company through awards or recognitions
	V4	Level of innovativeness of the project	New ideas, methods, and technology employed in the project
Operational	O1	Effectiveness of leadership	Supervision and decision making of the project manager or site chief
	O2	Effectiveness of construction schedule	Completing the tasks and project in a timely manner
	O3	Efficiency of design	Implementation of design on site, quality of design documents, ease of construction
	O4	Subcontractor effectiveness	Productivity and contribution of subcontractors
	O5	Efficiency of coordination and communication among project participants	Working relations with the project participants

	O6	Effectiveness of consultancy services	Contribution of the consultants to project success
	O7	Level of compliance with government, with laws and regulations	Lack of legal and administrative problems, conformance to quality requirements
	O8	Performance on technology use	Effective use of information technology, both on site and for decision
	O9	Achievement in health and safety on site	Good record of health and safety; fewer number of accidents
	O10	Benefiting from past project experience	Applying lessons learned from previous projects

Table 2 - Matrices showing the interrelations amongst the factors

1	Accuracy of cost estimation (F1)	F2	F5	O4	O10	
	Effectiveness of cost control (F2)					
	Accuracy of risk assessment (F5)					
	Subcontractor effectiveness (O4)					
	Benefiting from past project experience (O10)					
2	Effectiveness of cost control (F2)	O2	O3	O6	O10	
	Effectiveness of construction schedule (O2)					
	Efficiency of design (O3)					
	Effectiveness of consultancy services (O6)					
	Benefitting from past project experience (O10)					
3	Effectiveness of marketing (F3)	C2	C3	C4		
	Functionality of the space (C2)					
	Attractiveness of project location (C3)					
	Environmental friendliness (C4)					
4	Effectiveness of financial resources (F4)	C1	C3	C4		
	Level of customer satisfaction (C1)					
	Attractiveness of project location (C3)					
	Level of innovativeness of the project (V4)					

5	Accuracy of risk assessment (F5)	O1	O10			
	Effectiveness of leadership (O1)					
	Benefitting from past project experience (O10)					
6	Level of customer satisfaction (C1)	C3	O2	O7		
	Attractiveness of project location (C3)					
	Effectiveness of construction schedule (O2)					
	Level of compliance with government, with laws and regulations (O7)					
7	Functionality of the space (C2)	O3	O6			
	Efficiency of design (O3)					
	Effectiveness of consultancy services (O6)					
8	Environmental friendliness (C4)	O7	O10			
	Level of compliance with government, with laws and regulations (O7)					
	Benefitting from past project experience (O10)					
9	Level of contribution to business value (V3)	C1	C3	C4		
	Level of customer satisfaction (C1)					
	Attractiveness of project location (C3)					
	Environmental friendliness (C4)					
10	Level of innovativeness of the project (V4)	C2	O6	O8		
	Functionality of the space (C2)					
	Effectiveness of consultancy services (O6)					
	Performance on technology use (O8)					
11	Effectiveness of construction schedule (O2)	O1	O3	O4	O5	O10
	Effectiveness of leadership (O1)					

	Efficiency of design (O3)					
	Subcontractor effectiveness (O4)					
	Efficiency of coordination and communication between project participants (O5)					
	Benefiting from past project experience (O10)					
12	Efficiency of design (O3)	V2	V4	O1	O6	O10
	Level of employee competency (V2)					
	Level of innovativeness of the project (V4)					
	Effectiveness of leadership (O1)					
	Effectiveness of consultancy services (O6)					
	Benefitting from past project experience (O10)					
13	Achievement in health and safety on site (O9)	C4	V2	O4	O7	
	Environmental friendliness (C4)					
	Level of employee competency (V2)					
	Subcontractor effectiveness (O4)					
	Level of compliance with government, with laws and regulations (O7)					

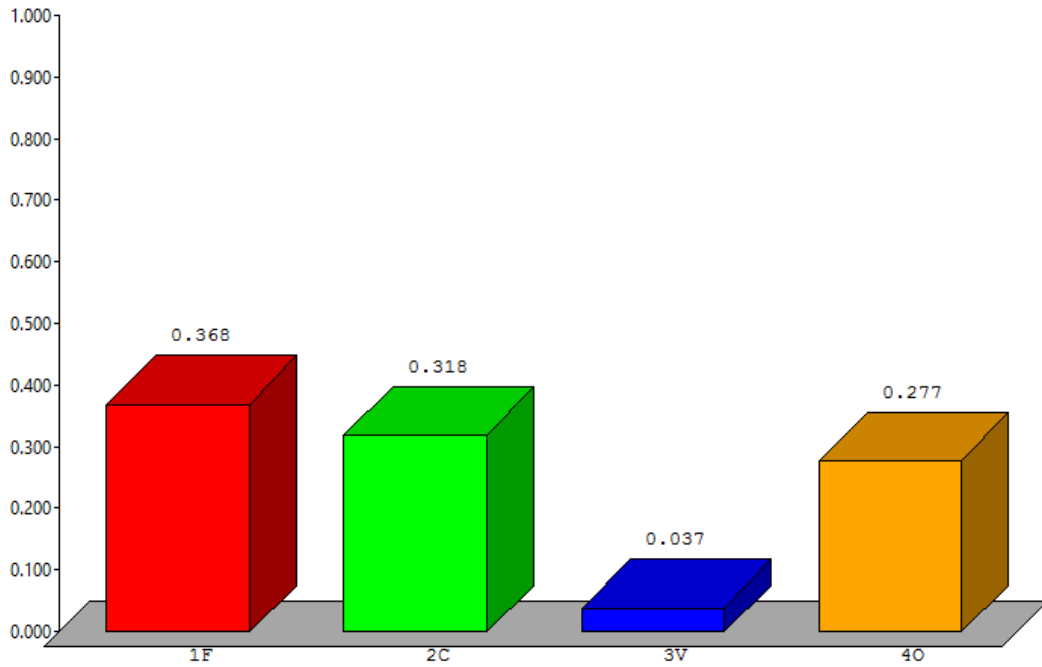
Graph 1 – Graphical presentation of importance weightage of Cluster in Residential Project



Mode for sensitivity: F1

Plot: Barchart Piechart Horz Barchart

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Graph 2 – Graphical presentation of importance weightage of Cluster in Commercial Project

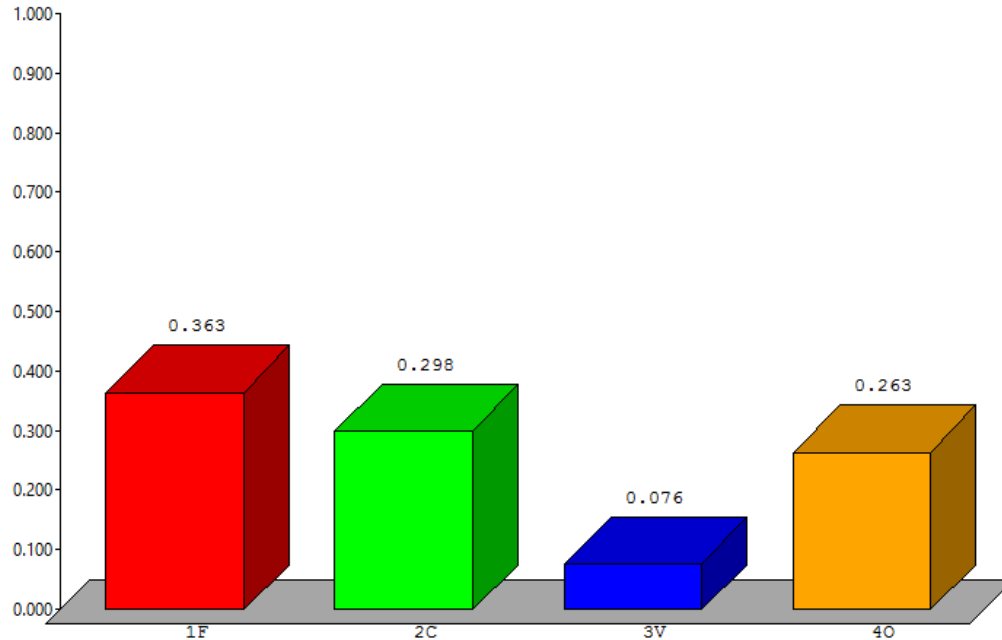


Table 3 - Importance weightage of each Node in Residential Project

Cluster	Code	Factor	Importance weight
Financial	F1	Accuracy of cost estimation	0.107518
	F2	Effectiveness of cost control	0.092607
	F3	Effectiveness of marketing	0.014403
	F4	Effectiveness of financial resources	0.065938
	F5	Accuracy of risk assessment	0.087514
Customer	C1	Level of customer satisfaction	0.153002
	C2	Functionality of the space	0.048119
	C3	Attractiveness of project location	0.092044
	C4	Environmental friendliness	0.024831
Value	V1	Level of satisfaction of project employees	0.007741

adding			
	V2	Level of employee competency	0.010212
	V3	Level of contribution to business value	0.003351
	V4	Level of innovativeness of the project	0.015694
Operational	O1	Effectiveness of leadership	0.023482
	O2	Effectiveness of construction schedule	0.141521
	O3	Efficiency of design	0.009817
	O4	Subcontractor effectiveness	0.001808
	O5	Efficiency of coordination and communication among project participants	0.005586
	O6	Effectiveness of consultancy services	0.018560
	O7	Level of compliance with government, with laws and regulations	0.041840
	O8	Performance on technology use	0.003566
	O9	Achievement in quality and safety on site	0.002089
	O10	Benefiting from past project experience	0.028710

Table 4 - Importance weightage of each Node in Commercial Project			
Cluster	Code	Factor	Importance weight
Financial	F1	Accuracy of cost estimation	0.106057
	F2	Effectiveness of cost control	0.091348
	F3	Effectiveness of marketing	0.065042
	F4	Effectiveness of financial resources	0.014207
	F5	Accuracy of risk assessment	0.086325
Customer	C1	Level of customer satisfaction	0.086255
	C2	Functionality of the space	0.045093
	C3	Attractiveness of project location	0.143379
	C4	Environmental friendliness	0.023270

Value adding	V1	Level of satisfaction of project employees	0.006883
	V2	Level of employee competency	0.015902
	V3	Level of contribution to business value	0.032236
	V4	Level of innovativeness of the project	0.020977
Operational	O1	Effectiveness of leadership	0.027259
	O2	Effectiveness of construction schedule	0.022296
	O3	Efficiency of design	0.039725
	O4	Subcontractor effectiveness	0.005304
	O5	Efficiency of coordination and communication among project participants	0.003385
	O6	Effectiveness of consultancy services	0.017622
	O7	Level of compliance with government, with laws and regulations	0.009321
	O8	Performance on technology use	0.001716
	O9	Achievement in quality and safety on site	0.001984
	O10	Benefiting from past project experience	0.134369