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Empirical Analysis of Factor affecting Quality Assessment: A Case Study of Surat Building Construction

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Abstract: ***Quality is one of the important phase of all construction project. The success of construction project mainly depends on quality. The Surat construction sector is facing many quality related issues, which all among factor some factor is more depend in quality assessment. This research are carried out on those factor is more effect in quality assessment. A questionnaire is developed based on literature review and then verify to construction expert, after take their opinion add some more question add in questionnaire. Collect feedback of questionnaire, after their feedback a statistical analysis tool use and arrange all factor rank wise. Find that which factor more effected in quality assessment in construction project in sequential form.***
Keywords: Empirical Analysis, Factor Affecting Quality Assessment

I. INTRODUCTION

Quality in design and construction means different things to different people. To the architect and designers, the builders, the contractors, engineers, and supervisor etc. who participated in construction they deliver quality as per specification, standardization and customer satisfaction as the promised. Quality is also a service to the owner during the construction process from both designers and builders and after the project is complete through continued customer service that enhances the customer satisfaction to the work. Furthermore, creating processes that bring Therefore about and manage quality, as well as provide metrics for ensuring that a quality outcome is an integral part of all activities, is important for the successful outcome of each project. Additionally, quality processes should be embedded not just at the project level, but within the entire enterprise, with engineer, builder, and owner committed to integrating quality into all their business activities and their customer. There in all process many factor effected in construction, but some factor are carry most of quality. In this study to find those those factor and to useful in building construction industries, so manage those highly effected factor and improve quality.

II. OBJECTIVES

A. To identify the factor affecting on quality assessment in construction.
B. To analyze affected factor influencing factors of quality assessment.
C. To create framework using partial least squares (PLS) analysis.

III. LITURATURE REVIEW

Paul Williams, Nicholas J.Ashill,Earl Naumann,Eric Jackson, focus on quality satisfaction to the customer as they which. All data collected by telephonic interview by several group of 20 customers each. Then questionnaire to all over satisfaction based on ranking Data classified by t-distribution and PLS(Partial Least Square).Generate a relationship model to each other and find path coefficient to find most inter related factor those are effected in quality. They find various factor affecting in quality and also analysis by PLS model. To establish inter relation of all factor to special developed equation and calculate path factor &loading of each factor. At finally we find that what factored is more effected on quality

A.O.Aiyetan's, "Influence of the Management Styles and Quality of Management on project delivery" given various factor effecting on quality based on management team and influence qualities on project delivery time. Quality influence data collected by various field expert. The collected data analyzed by descriptive and inferential statistical method. Then find mean score and categorized by major, moderate, minor etc. group. The factor affect project delivery time when attention is not given to them. Identify of key performance factor such as physical and social- cultural factors that could impede on construction speed is recommended for further research.

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K.K. Tripathi & K.N Jha's Indians researchers "An empirical study on factors leading to the success of construction organizations in India" Suggested to find factors those are leading to construction project. Those factors divided into 8 group. All are categorized and find out standard deviation and mean values of them. To the order construction success attributes in squently.Drow success factor path diagram, its representation useful to top management and organization team. The factor analysis of the responses to success attributes enabled the extraction of the eight success factors. Stepwise regression of the success factor and found most critical success factor, organization management team create strategic solution of those factors.

IV. RESEARCH METHODOLOGY

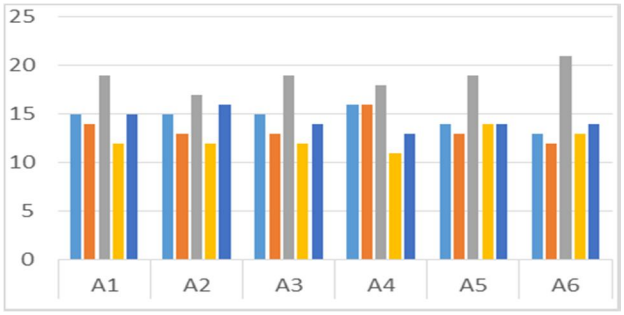
Research methodology of this study contains three main steps. The first step includes literature Survey. The literature review was conducted through books, research papers, journals, internet, etc. As the outcome of this step is to identify factors of affecting Quality in Surat building construction and their effect were grouped in Management related, construction site related, Material related, labour & machinery related, stakeholder related and natural social factors. Second step includes the questionnaire survey conducted by 72 experts in the construction industry as a contractor, engineer, architect and consultant. The questionnaire is prepared in two parts. The first part contains personal information of respondent is experience, qualification, site details, etc. and the second part contains factors of contractor's failure. The questionnaire is distributed to expert participants of Surat. Third step contains result analysis and concludes with PLS (partial least Square) method.

V. SURVEY OF FACTORS AFFECTING QUALITY ASSESSMENT AND THEIR GRAPHICAL REPRESENTATION

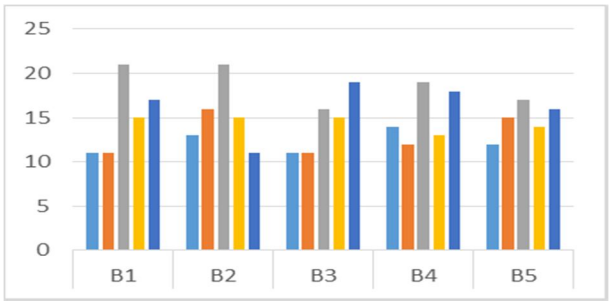
Design of questionnaire survey: A questionnaire survey is designed by identified 32 causes of factors affecting Quality assessment in Surat. The questionnaire carries both the instructions and questions to respondents and provides an enough space for respondents to write down any comments or remarks. The authors considered list of factors in likert scale in terms of very low (1), low (2), medium (3), high (4) and very high (5).There are two main parts in the questionnaire:

1) *Part I:* This part included a general introduction of Respondents and description of Survey.
2) *Part II:* This part included a listing of the identified 32 factors of Quality Assessment in building construction. The contractor's causes of failure are divided into five groups, namely; Managerial related, Construction site related, and Labour Machinery related, Material related stakeholders related, Natural social factors. For each question, the respondents having five options as follows: For likers scale very low, low, medium, high, very high.

All collected survey data represented in the form of chart in all various factors of in clusters. Due to chart all data understanding easily and analysis in the form of numerical data and analysis.



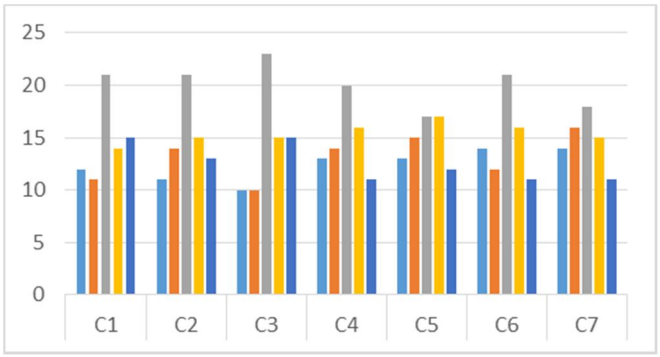
Management related



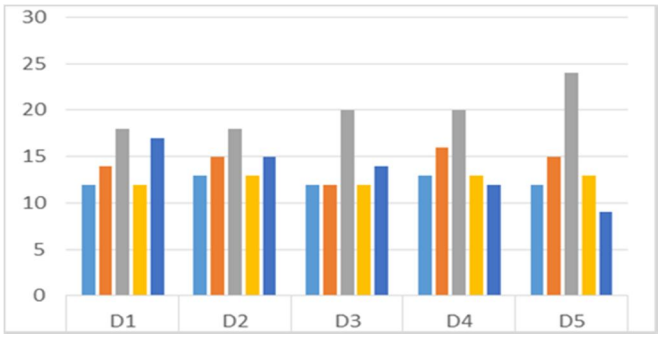
Construction Site related

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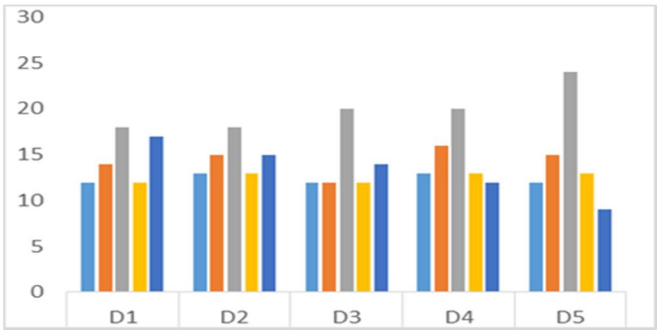
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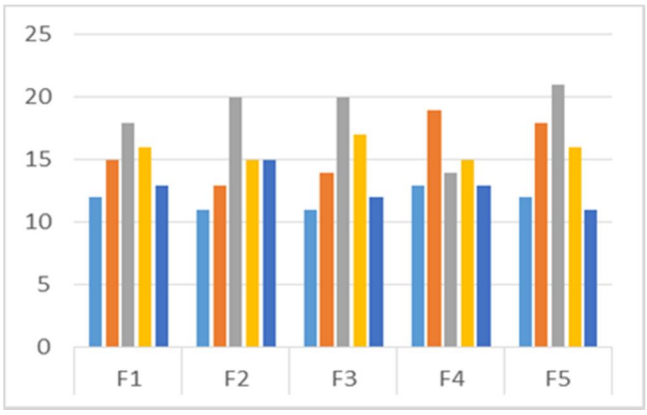
Labour & Machinery related



Material relate



Stakeholder related



Natural & Social factors

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VI. DATA ANALYSIS

All collected data are analysis by the partial least square method with the use of SMART PLS 3.0 software and get path factor (path co-efficient) of each path and their factors and also get conceptual model of those data to understanding and represented by easily.

Sr. No.	FACTORS AFFECTING QUALITIY ASSESMENT	PATH FACTOR
A	Management related	0.63
A1.	Project planning & management	0.63
A2.	Contract management	0.58
A3.	Government policies	0.63
A4.	Economic instability	0.60
A5.	Poor relationship between managers and labours	0.64
A6.	Lack of coordination between design and contractor	0.70
B	Construction site related	0.66
B1.	Supervision team experience	0.78
B2.	Accident occurred in workplace	0.73
B3.	Lack of experience	0.54
B4.	Lack of Coordination between team	0.64
B5.	Awareness of quality for team	0.59
C	Labour & machinery related	0.71
C1.	Working time hours	0.73
C2.	Poor labour productivity	0.71
C3.	Work knowledge of labour	0.86
C4.	Wages of labour	0.69
C5.	Shortage of manpower (skilled, semi-skilled, unskilled labour)	0.59
C6.	Shortage & Failure of equipment	0.71
C7.	Lack of modern equipment	0.64
D	Material related	0.65
D1.	Quality of material	0.62
D2.	Shortage of material	0.61
D3.	Changes in material types and specifications during construction	0.69
D4.	Materials price fluctuations	0.68
D5.	Manipulation of suppliers	0.64
E	Stakeholder related	0.64
E1.	Disputes on site	0.82
E2.	Frequent changes in design	0.60
E3.	Number of projects going at the same time	0.65
E4.	Number of competitors	0.48
F	Natural & social factors	0.63
F1.	Project location	0.62
F2.	Social and cultural impacts	0.68
F3.	Effects of weather	0.69
F4.	Lack of basic anematies	0.42
F5.	Health & cleanliness	0.74

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VII. CONCLUSION

All Data collected & Analyse with help of SMRT PLS 3.0. Software and to construct PLS conceptual model. This PLS conceptual model construct with path co-efficient. Construct model and all data and Path co-efficient. Due to this study we find those factors that are most effected in construction quality and those carry mostly quality in construction on field of building construction on Surat region.All data analyze with the help of SMRT PLS 3.0 software and find Co-efficient (Path factors) that denoted important of quality effected factors in numerical values.

Those conceptual model also given specific groups factor those affected on Quality. This study help to future improvement in construction Quality in Surat building construction industries.

All Stake holder those co-related to construction industries also help those data & study to their field projects and other study proposes. A single project will have different type of quality for various aspect of project because of the differences in their point of view and for a different requirement. Quality is one of biggest factor of any product or in construction. Quality assure to customers money's proper valuation and validated to improve satisfaction of customers. Quality also give a benchmark of brand value of any firm or organization. Customer also trusted on those company. Due to this study construction firm also improve their quality and also achieve their customer trust easily and full-fill theirs goals with minimum supervision and low cost. They also decrease the use of resources with the minimum deflection of quality and finish their product with customers requirement therefore customer use their product with joyfully.

VIII. ACKNOWLEDGEMENT

I extend my sincere thanks to my College; provide me platform and support to carry out this research work. Furthermore I like to acknowledge my Guide and Co-guide for his/her continuous support during the work and lastly all the construction professionals who shown their willingness to provide data and share their excellence of knowledge with me to make this work more effective.

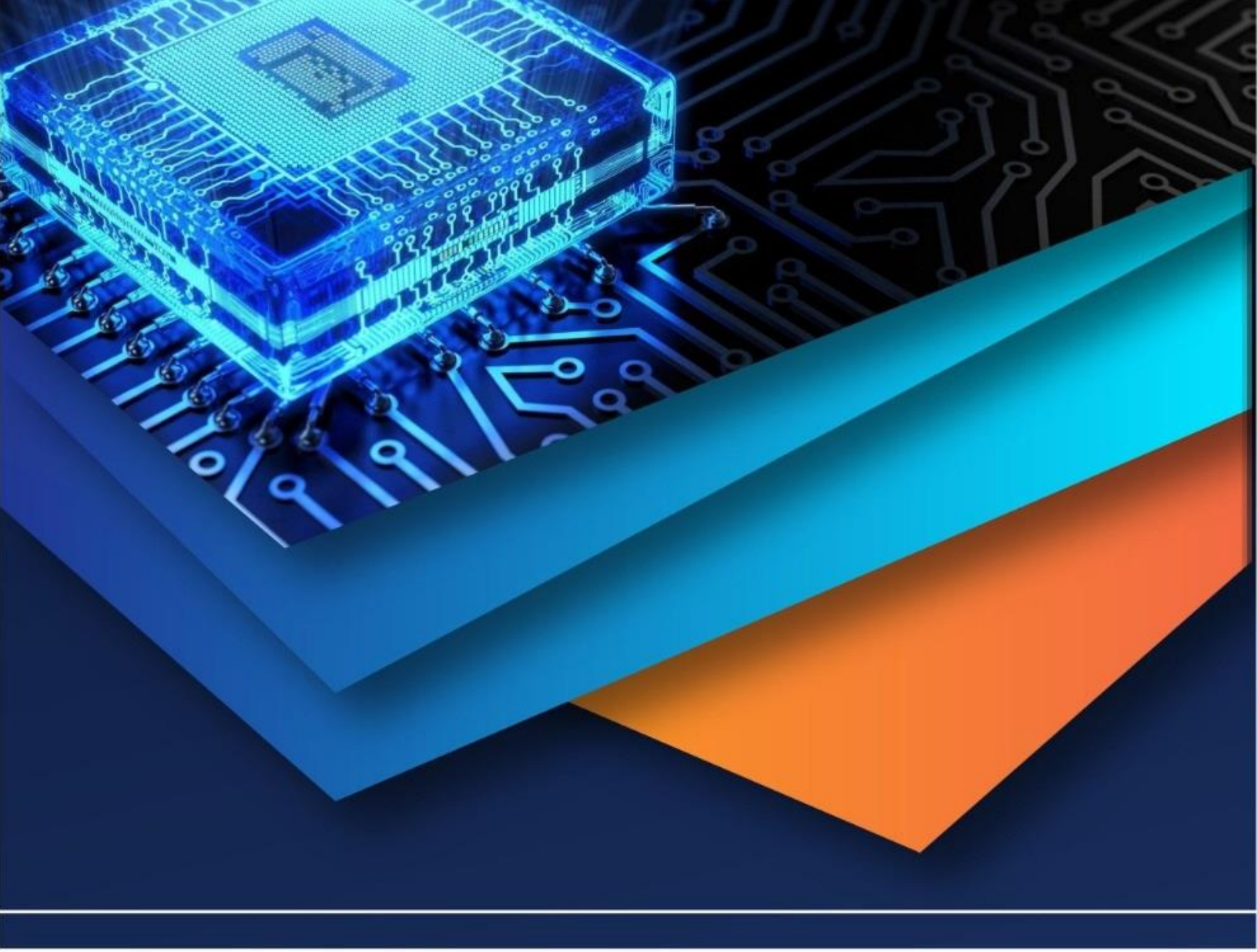
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