EasyChair Preprint

№ 11853

Analysis of Factors Impacting on Cost Overrun of Residential & Commercial Building by Quantitative Method

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January 23, 2024

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***Abstract*— The most crucial factors for the effective completion of building projects are cost, schedule, and quality. The thesis includes cost-cutting strategies for building construction based on these factors, which is crucial, particularly for poor nations like Ethiopia. We must take into account several cost factors in order to complete the aforementioned task items. The majority of these costs are covered by material costs. Therefore, minimizing the cost of these materials could lead to the construction of buildings at a reasonable cost by adopting the right construction procedures. In this thesis, relevant cost-reduction strategies for building construction are discussed, such as reducing the amount of cement used in concrete manufacturing, employing a contemporary formwork method that can do away with plastering, and welding reinforcing instead of overlaying it. The study was carried out by employing grade one contractors and consultants as major data sources for construction projects. The projects involve the construction of many types of structures, including multifunctional, hotel, commercial, office, and apartment complexes. In order to gather pertinent information that aids in achieving the goals of this research, a questionnaire was employed in the projects. According to the survey, a laboratory test (compressive strength test) was conducted for concrete of normal strength by decreasing the cement content as required by the specification. The results of the study showed that by using the aforementioned cost-reduction strategies, construction costs can be decreased without sacrificing quality.**

Keywords*— *Cost performance, Cost reduction, Cost-efficiency

I. INTRODUCTION

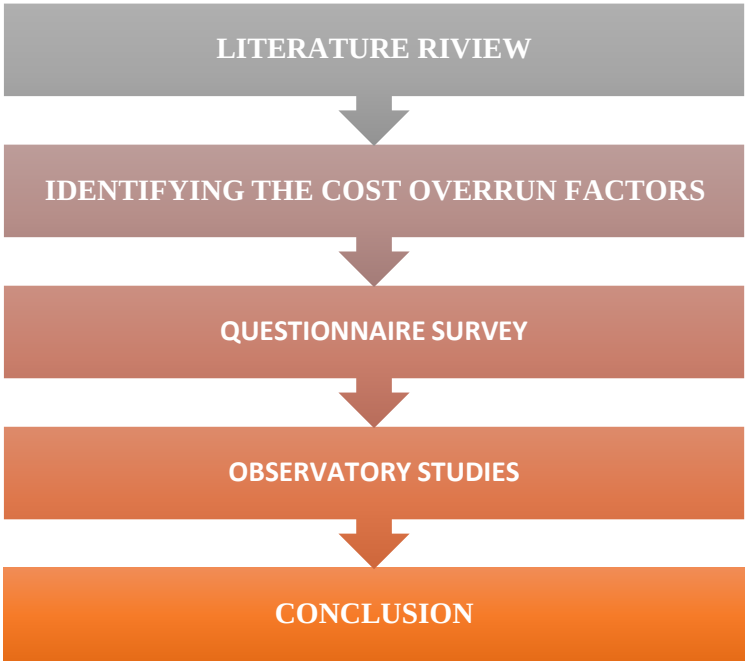
Along with many studies of cost overruns, at least some equivalent explanations for cost overruns have been proposed. There are two categories of these clauses. This phase consists of both behavioral and policy explanations, suggesting that made conscious or unconscious hypotheticals about cost can poison threat opinions where felicitousness only minor variations do. This suggests that underestimation may be an important reason for system cost overruns. A fresh explanation focuses on customary grounds for rejection, which encompasses Compass changes, contractual controversies, ground conditions, and other enterprises. Smith calls the first order underestimation, and the other he calls overestimation. If expenses are not properly evaluated, costs may increase excessively during the design process due to issues such as unexpected field conditions or technical difficulties that occur during operations, along with sudden price changes. The root cause of cost overruns is pernicious bias, an explanation that is both intellectual and political. They completely reject traditional explanations and argue that similar problems may be the cause, but are not the root cause, meaning that cost estimates must take these pitfalls into account. But the reason why that does not be is either a conscious choice or a matter of tone. They further argued that the problem was underestimation, not overestimation. thus, working the problem of underestimation also solves the problem of overestimation. This is a miracle where a client has to spend further plutocrat than firstly estimated to complete a design i.e. This is a design that has exceeded its budget.

II. LITERATURE REVIEW

Approximately 100 elements are linked and materialized with reference details. This is because 50 factors is too large and some factors have equal importance. These 50 factors were reduced to 30 factors contributing to cost overruns. Some factors may appear unimportant in one design, but turn out to be important in another because conditions are not always the same. They categorized the factors that influence construction time and cost overruns in Indonesia and analyzed the relationship between the two. The focus of their special investigation was solely on high-rise buildings. Mr. Dissanayake also developed a time and cost overrun model by linking and grouping factors that have a significant bearing on time and cost performance. found that when designing a waste treatment, cost over the life cycle of the design treatment is one of the most important considerations. They linked 30 factors related to cost overruns and delays. Difficulties in annual payments from distributors, poor contract performance, inadequate professional services, material procurement, and material price increases were the five main factors causing time and cost overruns. Estimates of cost increases and their causes were provided by surveying 100 randomly selected private contractors and inventors in Ahmedabad, Gujarat. The three primary factors contributing to cost overruns were contractors, materials, and the financial constraints of the owner. Project owners must ensure that they have enough time and plutocracies in the design stage to carry out the work, as a lack of sufficient funding means more time is spent on unnecessary tasks due to time or cost overruns. We recommended that you should choose a comprehensive consultant and a safe contractor. It was concluded that mid-sized businesses are more vulnerable to cost overruns compared to large and small businesses because they are in a transition stage where they need to take more risks to find and establish more business. Cost overruns were identified as arising from five factors: fluctuating raw material prices, significant ministries costs, unstable manufacturing equipment expenses, minimal bid procurement system (minimum bid operation), and poor point-of-use operations.

III. Research Methodology

The research methodology of this study is based on a questionnaire survey to identify the important factors that influence cost overruns in construction projects. Literature searches and discussions with experts were conducted to identify factors contributing to cost overruns. Based on the existing literature on the construction industry, important effects of cost overruns on project performance were identified. A questionnaire was then developed. The review identified 30 factors contributing to cost overruns. These questionnaires were distributed to owners and contractors in the construction industry. Questionnaire data were statistically evaluated. We analyzed the perspectives of owners and contractors and ranked the causes of cost overruns based on fuzzy logic techniques. This was used to assess factors hierarchically to identify the most important drivers of cost overruns. The survey is designed to be easy to read and complete. Regular measurement scales are used to measure data in questionnaire surveys. These sections are designed to capture responses on an ordinal scale indicating the relative importance of various cost overruns. The questionnaire was personally handed to the respondents and they were informed that they could respond without hesitation. We also surveyed all our engineers and customers. First, imprecision and uncertainty are inherent in decision makers' mental models about the problem being studied. Therefore, the experience and judgment of decision makers can be used to complement established theory and promote a better understanding of the problem. In this study, fuzzy logic theory was used and calculated to classify the causes of cost overruns in construction projects. Numerous of us are familiar with terms similar as artificial neural networks, inheritable algorithms, flyspeck group optimization, inheritable programming, fuzzy logic, evolutionary calculation, expert systems, graveness algorithms, ant algorithms, multi-agent systems, and numerous further. multitudinous scientific publications in papers and lectures, scientific colloquies and conferences.



3.1 Methodology

A. Data Collection

Thirty key factors were shortlisted from various literature references from around the world on cost overruns. The primary research sought advice from experts to narrow down the main factors that lead to cost overruns in construction funds. A questionnaire survey was conducted to identify various factors that influence structural design cost overruns. During the exam, I went to points, offices and other professors so that the exam influenced the structure. The questionnaire was distributed across a number of systems in Ahmedabad for distribution to construction industry professionals and followed up for responses. The experimenter triangulated the data using a variety of data sources from the literature, point observations, and document reviews. Based on a data collection system using big data technology, we collect construction cost information from related companies in the construction industry. Distribute the project to all senior engineers, junior engineers, project managers, developers, contractors, subcontractors, customers, and other entities. To obtain opinions on factors influencing cost overruns, five options were provided and respondents were asked to indicate their agreement with each question. Based on this data, decisions must be made about cost overruns.

B. Data Analysis

TABLE.1 ANALYSIS OF COST OVERRUN IN BUILDING PROJECTS

Sr. No	*FACTORS THAT AFFECT ON COST OVERRUN IN BUILDING PROJECTS*	*F(x)*
1.	Lack of project time schedule	0.56
2.	Lack of experts and poor management	0.46
3.	Lack of coordination between work and appliances	0.65
4.	Wrong decisions of minor managers	0.49
5.	Lack of supervisors' technical knowledge	0.89
6.	Poor accuracy in estimating volumes	0.49
7.	Lack of accuracy in geotechnical studies	0.34
8.	Unexpected/Unmeasured conditions on site	0.67
9.	Customers delay progressive payments to contractors	0.64
10	Delays in work by subcontractors	0.39
11	Shortage of manpower labour	0.75
12	Change in material and labor prices during construction	0.56
13	Changing consultant during implementation	0.46
14	The addition of new works was a result of the owner's scope change.	0.89
15	Delay in material supply	0.65
16	Contractor is slow to introduce specialized subcontractors to be recognized	0.87
17	Design changes	0.65
18	Specification changes when made by owner	0.79
19	Modify position positions after the designer has updated the global location.	0.59
20	Mistakes in design	0.64
21	Deficiencies in cost estimate	0.48
22	Problems related to work	0.87
23	Change of Laws and regulatory framework	0.45
24	Increasing materials cost due to inflation	0.49
25	Bid award for lowest price	0.48
26	External work due to other public agencies	0.68
27	Lack of experience in project	0.64
28	Owner interferences	0.68
29	Unrealistic contract duration	0.78
30	Lack of experience in contract	0.89

CONCLUSION

According to the study we have to make the factors about the cost overrun by using Fuzzy set theory in residential & commercial building. In this Research we have received from Construction team is mostly there are 5 factors (1.) Lack of supervisors' technical knowledge, 2.) Problems related to work, 3.) Contractor is slow to introduce specialized subcontractors to be recognized 4.) The addition of new works was a result of the owner's scope change., 5.) Lack of experience in project which should be consider on a cost overrun. However, before using fuzzy logic to solve it, we need to define a reliable membership function. As a result of this factor, we had to enhance our workforce by assigning skilled engineers and making adjustments for the size and improvement of construction. This made it possible to reduce construction costs.

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