

Reducing over Budgeting in Construction Project

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Abstract - Construction firm have very poor image in the project will finished in the proper budget. The 99% project goes over budgeting at the end. So, the study help to identified the different factors are affecting on the over budgeting on the construction projects. The survey are done with help of questionnaire and the google form survey, the factors rank divided in five parts: 1: very low effective, 2: low effective, 3: moderate effective, 4: high effective and 5: very high effective. After the survey was done the analysis method should be selected, in this study arithmetical mean method was selected and find out the impact index for each factors, And after analysis was completed find out the percentage of each factors also find and the factors are divide in the based on the their percentage: less than 20% are affective very low, between 20 to 40% are affecting low effective, between 40 to 60% are affective moderate effective, between 60 to 80% are affective high effective and 80 to 100% are most very high effective factors.

KEY WORDS: REDUCING OVER BUDGETING, VARIOUS FACTORS, COST OVERUN, ARITHMETICAL MEAN INDEX.

1. INTRODUCTION

Project budgeting is defining the whole amount of money that is given for the project to custom completed. The project budget has been estimated by the proper estimator and the project handling team. The budget is an estimate of all the prices that can be mandatory to complete the project. **Over budgeting** can be basically defined as when the total cost of the project can higher the estimated cost. In terms of construction, this defines the actual cost of the project minus the tendered cost during the tendering stage. This consequently creates either a positive value or a negative value. If the value is positive, the project is not over budgeting created a profit, if the value is negative, the project is over budgeting. The **WEMBLEY STADIUM** is a makeover construction project required the stadium to be destroyed and recreated. The key resolution of the innovative stadium was to upsurge the size of the stadium. The creative estimated cost of the stadium is **£757m**. (United States Dollar). The project will be completed approx. **£798m** (. So **£41m** over budging to the estimated cost. The **SYDNEY OPERA HOUSE** the innovative projected cost to figure the Opera House was **34,93,72,342/-** Indian rupee and the project will be completed in **5,08,94,75,986/-** Indian rupee. The project will approx. **4,74,01,03,644/-** Indian rupee over

budgeting. In **INDIA** in February 2018 Report said that Total unique cost of application of the **1,305 projects** was **Rs 16,21,995.63 crore** and their conclusion cost likely to be **Rs 18,38,802.80 crore** so complete over budgeting **Rs 2,16,707.80 crore** Approx. **13.36% over** budgeting of the original budget.

1.1 NEED FOR STUDY

The study the various factors are affecting on the over budgeting of the construction project. So, study help to overcome of that all factors and help that the project will be completed in proper budget and also in proper time. And using some techniques to overcome the over budgeting of the construction project. And also help to improve the Statistical data in the future construction project. The study will also reduce the disputes between client and the contracting company or various consultancy for the reason of the over budgeting of the construction project.

1.2 OBJECTIVES

To survey the various aspects are affecting happening the over budgeting of the construction project. ow to overcome that aspects which remain affecting the construction project.

1.3 SCOPE OF PROJECT

The construction projects stand location on Ahmedabad. The study in carried out on the Housing and commercial construction with help of questionnaire. The residential project will be bungalows and multistory high-rise building.

1.4 LITERATURE REVIEW

To study the various literature paper of the over budgeting on the construction project so find out that the most of the project in the construction industries are completing in the over budgeting. The literature help to find out the various new method analysis the data which we have collected by survey like RII method, impact index method, categorical method, weight point method and RIW etc. for the various method for data analysis methods to help getting result of the survey. For the study we will find out total 74 important

factors are affecting on the over budgeting on the construction projects after the proper study the short list of their factors and become 34 for the study purpose. Various study are complete in the various construction phases and the factors are also divide in the phase like pre_construction phase, during the construction phase, and post construction stage. And also study included more phase like first three month phase and also the study make the six month phase. And the survey are done in the phase wise. Also learning how to given rank of each factors basically two method are find out first method was to given the rank to all the factors between 1 to 10 and second method to given the rank between 1 to 5. In this study used second method. After the rank was given the percentage will also calculate with help of proper formula. Some paper helps to find out the facture scope of the study. And also help to learning various new procurement process and also proper identified the material requirement for the daily basis it was most important point to control the over budgeting on the construction projects.

2. METHODOLOGY

The methodology are done in the following process very first step to recognized the number of the various factors are affecting the over budgeting on the construction project and then all the factors are will be short list with the help of experience person. Second step to creating the questionnaire form for the survey required and also creating the online goggle form for the online survey. After the second step will be completed than after decide the sample size for the survey. And after the distribution of the questionnaire will be start.

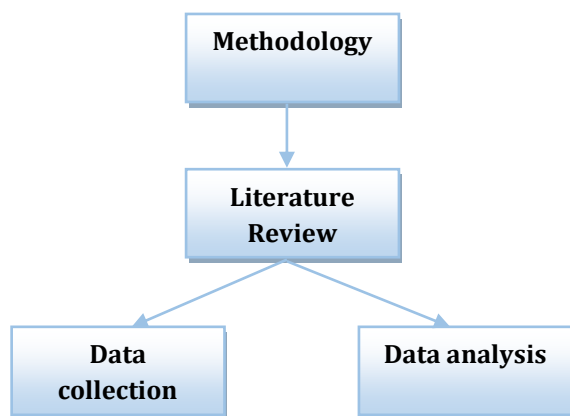


Figure 1 Flow of Methodology

2.1 DATA COLLECTION

Data collection can be classified into two ways namely, quantitative approach and qualitative approach. Qualitative approach is included the understand people’s perception, or opinion of the various people with various designation of any particular project. As well it is used when a limited amount of knowledge about the topic are available. Quantitative approach to collect factual data and to study relationship between facts and how such facts and relationships accord with theories and finding of any research executed previously.

2.1.1 QUESTIONNAIRE SURVEY

The questionnaire included the various factors which are affecting the over budgeting of the construction projects. The selection of factors is based on various research paper. The questionnaires are distribution contractor, owner, sub-contractor, engineer and project manager of the various projects. And the answer of the questionnaire is based on the below method:

Table 1: RANK AND DESCRIPTION

RANK	DESCRIPTON
1	Very low effective
2	Low effective
3	Medium effective
4	High effective
5	Very high Effective

Table 2: PERCENTAGE OF AFFECTING

APPOX IMPACT	FREQUENCY
≤ 20%	very low
20% - 40%	low
40% - 60%	moderate
60% - 80%	high
80% - 100%	very high

2.1.2 DATA COLLECTED FROM ONLINE SURVEY

The other way to collected data is available on google forms which will be later taken under consideration for analysis method name of the data analysis method is arithmetical mean method. All the details based on method are shown in data analysis part.

2.2 DATA ANALYSIS

2.2.1 DATA ANALYSIS BASED ON QUESTIONNAIRE SURVEY

Data analysis are based on the date which will get from the questionnaire survey and the google form responses, we will collect the 48 total responses with the help of both questionnaire and the google form survey. The questionnaire is also distribution to engineer, contractors, owners and also some experience site supervisor. The Arithmetical mean method is used to identified the impact of the factors. And the also find out the percentage of effect on the over budgeting of the construction project.

$$\text{ARITHMETICAL MEAN} = \frac{\sum f_i}{N}$$

Where; f_i = the sum of the factors rank form all the Reponses. (1 to 5)

N = Total of the responses.

2.2.2 DATA ANALYSIS BASED ON GOOGLE FORM

We will also collect the date from the online survey. The factors will be same, the google form help to collect the date when we will not reach. The result of the google form data are as follow for each and every factor. The form will distribution in all designation having people, like site supervisor, consultant, engineer, project manager, contractor, owner of any organisation etc.

2.2.3 RESULT OF THE GOOGLE FORM

In the paper collected total 22 responses from the base on the online survey the responder are contractors, engineer, project manager and owner etc. they all they are given their view and feedback form their experience.

2.2.4 ARITHMETICAL MEAN ANALYSIS

Responders	TOTAL ($\sum f_i$)	ARITHMETICAL MEAN ($\frac{\sum f_i}{48}$)	PERCENTAGE OF EFFECT ($(\frac{\sum f_i}{48} \times 100) \%$)	APPOX IMPACT	FREQUENCY
Poor Project Management	224	4.66666667	93.33333333	≤ 20%	very low (VL)
Inaccurate quantity take-off	195	4.0625	81.25	20% - 40%	low (L)
Frequent design changes	128	2.66666667	53.33333333	40% - 60%	moderate (M)
Mistakes and errors in design	75	1.5625	31.25	60% - 80%	high (H)
Delay preparation and approval of drawings	125	2.60416667	52.08333333	80% - 100%	very high (VH)
Schedule delay	112	2.33333333	46.66666667		
Mistakes during construction	188	3.91666667	78.33333333		
Delay in progress payment by owner	209	4.35416667	87.08333333		
Labour productivity	181	3.70833333	75.41666667		
Late delivery of materials and equipment	190	3.95833333	79.16666667		
Poor communication and coordination by owner and other parties	94	1.95833333	39.16666667		
Lack of software	73	1.52083333	30.41666667		
Disputes on site	67	1.39583333	27.91666667		
Number of projects going at the same time	72	1.5	30		
delays in decision making	110	2.29166667	45.83333333		
bid award for lowest price	85	1.77083333	35.41666667		
high interest rates by bankers	96	2	40		
Inadequate quality	207	4.3125	86.25		
Procurement system is not properly selected	188	3.91666667	78.33333333		
Transportation cost	117	2.4375	48.75		
Fluctuation of prices of materials	110	2.29166667	45.83333333		
Lack of experience	79	1.64583333	32.91666667		
Low level of equipment operating skill	88	1.83333333	36.66666667		
Late in reviewing and approving design document by consultant and client	90	1.875	37.5		
Bad weather	97	2.02083333	40.41666667		
resource management	94	1.95833333	39.16666667		
late inspection	107	2.22916667	44.58333333		
Weak organization chart	113	2.35416667	47.08333333		
Lack of cost planning, monitoring and controlling during pre-and post-contract stages.	218	4.54166667	90.83333333		
Estimation in not proper	139	2.89583333	57.91666667		
Bad weather	-	-	-		
Level of competitors	70	1.45833333	29.16666667		
late approval	103	2.14583333	42.91666667		
Extra items and variation	204	4.25	85		

Figure 2 Arithmetical Mean Analysis

According to the figure 2 if the factors are affecting between 20 to 40 percentage so they all factors should be LOW affecting on the over budgeting on the construction project. The factors are as follow:

Table 3 Factors are low effective

FACTORS	PERCENTAGE
Mistakes and errors in design	31.55%
Poor communication and coordination by owner and other parties	39.16%

Lack of software	30.41%
Disputes on site	27.91%
Number of projects going at the same time	30%
bid award for lowest price	35.41%
high interest rates by bankers	40%
Lack of experience	32.91%
Low level of equipment operating skill	36.66%
Late in reviewing and approving design document by consultant and client	37.5%
resource management	39.16%
Level of competitors	29.16%

According to the figure 2 if the factors are affecting between 40 to 60 percentage so they all factors should be MODERATE affecting on the over budgeting on the construction project. The factors are as follow.

Table 4 Factors are moderate effective

FACTORS	PERCENTAGE
Frequent design changes	53.33%
Delay preparation and approval of drawings	52.08%
Schedule delay	46.66%
delays in decision making	45.83%
Transportation cost	48.75%
Fluctuation of prices of materials	45.83%
Bad weather	40.41%
late inspection	44.58%
Weak organization chart	47.08%

Estimation in not proper	57.91%
late approval	42.91%

According to the figure 2 if the factors are affecting between 60 to 80 percentage so they all factors should be HIGH affecting on the over budgeting on the construction project. The factors are as follow.

Table 5 Factors are high effective

FACTORS	PERCENTAGE
Mistakes during construction	78.33%
Labour productivity	75.41%
Late delivery of materials and equipment	79.16%
Procurement system is not properly selected	78.33%

According to the figure 2 if the factors are affecting between 80 to 100 percentage so they all factors should be VERY HIGH affecting on the over budgeting on the construction project. The factors are as follow.

Table 6 Factors are very high effective

FACTORS	PERCENTAGE
Poor Project Management	93.33%
Inaccurate quantity take-off	81.25%
Delay in progress payment by owner	87.08%
Inadequate quality	86.25%

Lack of cost planning, monitoring and controlling during pre- and post-contract stages.	90.83%
Extra items and variation	85%

3. CONCLUSIONS

After the all the responses are collected and the arithmetical mean index also successfully find the result come with some level. We have on the first find out the 72 factors are affecting the over budgeting on the construction project, than the short the factors and find out the 34 are most important factors which are most affecting on the over budgeting in the construction project, and after find the factors the prepare the one questionnaire and goggle form of the same factors.

Table 7 Percentage of received responses

Respondents	Questionnaire distributed	Responses return	Percentage of responses
TOTAL	30	22	73.33 %

Poor Project Management:- To reducing poor project management the owner of the project can be higher the proper project management consultants. The consultant helps to manage to project can completed in proper time and proper duration. The consultants can track the project on the week base so project will not be getting over budgeting.

Inaccurate quantity take-off:- For now day the large amount variation are comes to the material quantity and their procurement process. This problem solved to using various software to find out the quantity of the material, the auto cad, Revit can use to find out the proper quantity but some on site engineer are not use for the much of facility so the using of the software we will reduced the over budgeting on the construction projects.

Lack of cost planning, monitoring and controlling during pre- and post-contract stages:- Now day many software is used for the tracking the project and monitoring the project. The software is controlled also the case flow of the project. The material requirement also identified in the software. So, using these types of software also help to reduces the over budgeting of the construction projects. Click up,

Monday.com, Coaspect, Coda etc. are the new software are used for the planning and tracking the project.

Extra items and variation:- Extra item and various are one of the most important part of the project disputes and the over budgeting of the projects because the contractors are not adding the amount of working on extra item and variation. So proper documentation work is required for the extra item and variation like forwarding latter, proper estimation of the extra work, proper material requirement also in the paper work included.

3.1 FACTURE SCOPE

The facture scope of this project was to done the date analysis with other methods like Categorical method, Weightage Point Method, RII etc. this method is also useful for the data analysis, some time the various software is also use for the analysis of the data. And research of the various software for the monitoring, controlling and tracking the project will be completed in their required duration so the project cannot be delayed so the project cannot be the over run as much possible.

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