

“Cost Escalation In Development Of Residential Projects: Empirical Evidence Of Sources”

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Abstract:

Infrastructure costs can consist of both construction and any related cost. Based on the preference in conjunction with the size of the project, the estimates are calculated. But in today's scenario the infrastructure projects are delayed due to various reasons, because of which the cost escalates for both contractors and clients. Budget management is one of the important stages to understand the various factors that contribute to cost escalation like time factors, site management factors and general factors. The researcher has attempted to measure the significance of various factors and their impact on cost escalation. The significance is measured by collecting 145 responses of developers/project managers/consultants from Bangalore by adopting multistage, proportionate stratified random sampling method. The researcher concluded the study by understanding the various attributes that develop and manage the site under construction of residential infrastructure.

Key words: Residential, Cost Escalation, Developers, Factors, Management.

1. Introduction:

Migration of people from semi urban areas to cities has been a trend as people are looking out for better life in terms of quality of life, education, livelihood, income, social status, safety etc. with majority of the urbanization occurring in developing countries like India. Metros and

even cities are becoming more intertwined with the global economy resulting in enhanced demand for infrastructure development. However, it is essential for the developing countries to provide better infrastructure and to fulfill demand government has policy taken policy decisions and supporting the industries with well-defined plan and schemes.

Private players-developers are also contributing enormously to meet the demand for residential projects. In the current scenario, it is very difficult to manage the residential projects as the expectations of the customers is high in terms, cost, quality, material, design, technology amenities etc at a very affordable price with varied payment options. Apart from these, developers are facing challenges regarding procurement, affordable technology, site management, labor issues, coordination, and overall management of the projects along with fluctuations in prices of materials. These are the primary reasons that industry is facing issues regarding cost escalation. It is evident for the developers to locate the problem, identify the causes of cost escalation and find the solution so that customer is delighted to buy value created such affordable price.

In this regard, researchers intend to identify the Sources of Cost Escalation in developing residential projects with an empirical approach by gathering the responses directly from the developers, consultants, and project managers.

2. Literature Review:

Kog (2012) in his study found that there are several reasons determining the success of construction industry which also determines the achievement of their objectives. Kog has segregated these factors majorly into three categories: Budgeting, Scheduling and Quality aspects. The financial difficulties slow down the pace of the success of the project. According to authors the common constraints in completion of the project are time, cost and quality. There are other sub-factors such as lack of coordination, communication and controlling measures causing the cost escalation.

Asian Development Bank (2014) reports on cost estimation of projects sponsored by the bank with intent of ensuring that cost estimates are vigorous.

Memon, A.H et al (2010) found that cash flow and contractor's site management, deficiencies in supervision, improper planning, shortage of site workers etc are the causative factors of Cost Escalation.

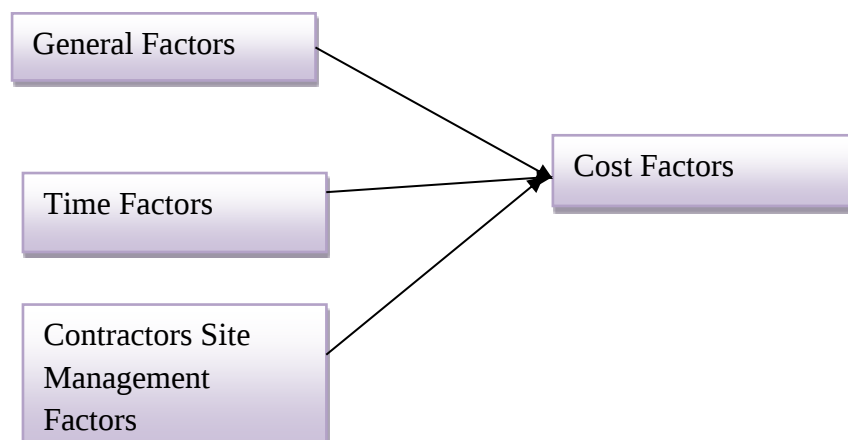
Serdar Durdyev (2012) has identified 40 different factors causing cost escalation which are basically the part of planning, inaccurate cost estimation, lack of resources management and high material costs.

Kasimu, M. A. (2012) had an in-depth qualitative approach to gather information on factors causing price overrun, found that cost overruns are due to material costs, lack of experience in handling procurement aspects and insufficient time management.

3. Conceptual Frame:

The conceptual framework of the study represents the relationship between the identified variables. For the current research, researcher has identified variables; General Factors (GF), Cost Factors (CF), Contractors Site Management Factors (CSMF) and Time Factors (TF). There are sub-variable (attributes) under each primary variables. Researcher intends to know the significance of the attributes under the study being responsible for the Cost Escalation in developing residential projects.

Figure-1: Conceptual Framework



Source: Author's Compilation

4. Objectives

1. To measure the significance of the General Factors, Cost Factors, Time Factors and Contractor Site Management Factor
2. To measure the Impact of General Factors, Time Factors and Contractor Site Management Factor on Cost Factor.

5. Methodology:

Researcher has collected primary data by administering questionnaire to 145 developers/project managers/consultant who is geographically spread across Bangalore City. The secondary sources data were literature from various research articles from National and International perspectives, white paper, Government publications etc. Researchers have adopted Chi-square test to measure the significance of the variables under study and regression analysis to measure the impact. 145 respondents (Developer/ Project Managers/ Consultants) are chosen randomly from the North, east, west and south zone of Bangalore by adopting multistage, proportionate stratified sampling method.

6. Results and Discussion

Researcher has tested the hypotheses-

H0: General Factors (GF), Cost Factors (CF), Time Factors (TF) and CSMF (Contractor Site Management Factors) are insignificant.

H0: General Factors (GF), Time Factors (TF) and CSMF (Contractor Site Management Factors) doesn't have any impact on Cost Factors

6.1. Significance of Variables:

H0: General Factors (GF), Cost Factors (CF), Time Factors (TF) and CSMF (Contractor Site Management Factors) are insignificant.

To test the Hypothesis, researcher has used non-parametric test- Chi-square Test. Table -1 presents the results of

descriptive statistics where mean value of GF is 3.17 with Standard deviation 1.00, mean value of CF is 3.26 with standard deviation .79, mean value of TF 3.29 with standard deviation .687 and mean value of CSMF is 3.33 with standard deviation 1.00.

Table-1: Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
GF	145	3.1701	1.00197	1.11	4.89
CF	145	3.2672	.79712	1.83	5.08
TF	145	3.2933	.68792	1.41	4.59
CSMF	145	3.3356	1.00819	1.33	6.67

Source: Primary Data

Table-2: Results of Chi-square Test Statistics						
			GF	CF	TF	CSMF
Chi-Square			54.862 ^a	62.228 ^c	66.503 ^d	55.834 ^e
df			27	31	43	50
Asymp. Sig.			.001	.001	.012	.265
Monte Carlo Sig.	Sig.		.002 ^b	.001 ^b	.012 ^b	.261 ^b
	99% Confidence Interval	Lower Bound	.001	.000	.009	.250
		Upper Bound	.003	.002	.014	.272
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 5.2.						
b. Based on 10000 sampled tables with starting seed 2000000.						
c. 32 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 4.5.						

Source: Primary Data

Table-2 elucidates the results of Chi-square Test Statistics for GF, CF, TF and CSMF. The Chi-square value for GF is 54.862^a, CF is 62.228^c, TF is 66.503^d, and CSMF is 55.834^e all of the variables (GF, CF, TF) are significant at 0.02, .001, .012 and CSMF is insignificant at 0.261 which is >.05. Therefore, the hypothesis is partially accepted. The attributes considered under the variables, GF, CF, TF are significant and attributes under CSMF are insignificant. Attributes under GF range from deficiencies in coordination, communication delegation of authority to controlling measures, attributes under CF include planning, budget, design, materials etc., attributes under TF; time management factors with different perspectives such as time, delays, causes of delays etc. and CSMF factors considered are site management

issues ranging from procurement, supervision and controlling measures.

6.2. Impact of Variables:

H0: General Factors (GF), Time Factors (TF) and CSMF (Contractor Site Management Factors) doesn't have any impact on Cost Factors

Table-3: Model Summary of Impact of GF, TF, CSMF on CF									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.586	.598	.564	.47983	.479	21.985	3	36	.000
a. Predictors: (Constant), PP, PM, CF									

Table-3 presents the model summary of regression, where R^2 change indicates that the impact of GF and TF on CF is about 47.9 %.

Table-3: Coefficients of Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.698	.389		4.876	.005
	GF	.456	.089	.765	6.534	.000
	TF	.423	.078	.746	6.321	.000
	CSMF	.451	.083	.678	6.502	.056
Dependent Variable: CF						

From the Results presented in Table-4 clearly elucidates that GF and TF have impact on CF at 0.000 which is $<.05$ and CSMF is insignificant at 0.56 which is >0.05 . Therefore, the factors considered under GF and TF have an impact on Cost Factors whereas CSMF factors don't have any impact.

7. Suggestions:

Attributes under GF range from deficiencies in coordination, communication delegation of authority to controlling measures, attributes under CF include planning, budget, design, materials etc., attributes under TF; time management factors with different perspectives such as time, delays, causes of delays etc. are significant and have impact on the Cost factors. Similarly, CSMF factors considered are site management issues ranging from procurement, supervision and controlling measures are statistically insignificant and doesn't have any impact on Cost factors. Researcher suggests to the developers that planning, budgeting, design, materials used play vital role and are to be managed well along with time factors too.

8. Conclusion

Researcher intended to identify the sources of the cost escalation in developing residential projects and identified the factors such as general, cost, and time and contractor site management factor. The statistical evidence indicates that general factors, cost factors and time factors considered are significant and have impact on Cost factor.

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