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REWORK FACTOR AFFECTING CONSTRUCTION PROJECT IN BHOPAL DIVISION

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Abstract - Cost and schedule overruns are common in construction projects. Overruns are exacerbated by rework. Reducing field rework is usually viewed as a good strategy to boost construction productivity, cost, schedule, quality, and safety. While there are current rework reduction programmes and a lot of literature on the subject, there is always a need for more research and ongoing enhancement of rework reduction approaches to improve project performance. The goal of this study is to identify, rank, and assess rework elements in construction projects, as well as to determine overall rework costs. An onsite questionnaire survey was conducted to rank these rework factors, and the data obtained was analysed using multi-criteria decision and relative importance methods to determine the relative significance of these variables, after which the rework cost was calculated. In this study, we discovered that the most responsible factors in construction projects by the global matrix are poor construction technique, scope, and design change. The entire cost of rework is about 15-20% of the total project cost.

Keywords— rework, cost management, project management, cost, analytical hirarchy process

1. Introduction -

India is still a developing country. India's building industry is rapidly expanding. There are a lot of multibillion-dollar development projects in India where a halt or cessation of operations for any reason is insufficient. Many rework factors emerge in this rapidly evolving construction business, affecting the success of building projects. Rework is a factor that was incorrectly implimented at the first time or activity that was done more then once.The fundamental difference between the two, according to "Determination of cross-functional collaboration in the project implementation process" is that the second definition combines the" perception of success as a win metric." Whether the owner, planner, expert, contractual worker, or administrator, success on an initiative means that particular wishes for a certain member were realised. "Success modelling: An introduction," .Project success was characterised as "having everything come out as desired, anticipating all project requirements, and having enough resources to resolve challenges in a timely manner" by a strategy for developing a winning project team. "Rework success criteria for building projects," . However, these expectations may differ for each member, and research on rework success factors frequently seen as one of the most important ways to improve project delivery quality. "The Rework uccess Factors Affecting Construction Industry Performance" A successful project is one that is delivered on schedule and within budget. Quality, money, and time have all been identified as "three constraints" or essential variables in project successConstruction sectors are becoming increasingly convoluted and problematic these days. The industry is undergoing significant changes. The investigation of rework factors is thought to be a method of increasing the project's sufficiency. In any event, project success has remained roughly defined in the minds of development specialists.

Hwang et al. This investigation aims to identify Rework Factors in relation to the various project parties and their objectives in Singapore's construction sector. To achieve this goal, 32 rework variables were initially discovered and classified into four categories: contractual arrangements, project participation, project features, and interactive processes. The analytic hierarchy process (AHP) approach was used to create a hierarchy model of the components' relative importance at that time.

Peter E.d. love 2018 A successful project is one that is completed on schedule and within budget, quality, cost, and time constraints. For his calculations, he employed SPSS, person's correlation, and regression analysis, and the most important aspects in their investigation were time, cost, quality, environmental effect, and conflicts. All six rework factors studied are rework, providing experimental support for recognising them as variables influencing the success of public sector construction businesses.

2. objective-

A.ranking of rework factors and find most responsible rework factors in construction projects

B. calculate rework cost for most responsible factors.

3. Responsible rework factors in construction projects-

TABLE 3.1 REWORK FACTORS

SR NO.	MAIN GROUP FACTORS	SUB GROUP FACTORS
1	**Contractor field management**	Poor construction technique
		Lack of advanced equipment's
		poor construction material
		Poor supervision of material and equipment
		5.Lack of use of construction management standard
2	**Project management related factors**	Improper communication
		Decision making effectiveness
		Construction method
		Project monitoring
		Client satisfaction
3	**Client related factors**	Client emphasis on low construction cost
		New request by the client to improve standard during construction
		Client emphasis of quick construction
		Lack of client involvement
		Dispute B/w client & construction team
4	**Design management factors**	Poor coordination between design team members
		Design error due to many design tasks
		Lack of attention to detail
		Scope and design changes
		Insufficient data collection and survey before design
5	**External and Environment related factors**	Poor site conditions
		Shortage of construction materials/equipment's
		Effect of social and cultural factors
		Climate condition
		Change in government regulation

4. Methodology-

4.1 Rework factor ranking-

AHP METHOD is used to rank the rework factors. The relative relevance of each of the primary components and cofactors determines the analytical hierarchy process.

4.2 rework cost calculation-

The likelihood of rework in any construction project has an impact on the cost and schedule of project activities. Because the rework has the same cost and schedule impact on the project. This cost impact should be calculated, as it will help project managers reduce project costs that may be impacted by rework.

REWORK COST=REWORK AMOUNT*PROJECT COST

5. RESULT ANALYSIS-

5.1Ranking of factors-

In this reserch for rework factors ranking the total rework factors categorised in five group each group have 5 factors . in all five group take one factor whose most responsibe for rework for relevent group . then with the help of global matrix ranking these five factors and calculte these prioroty with the help of AHP method.

global weightage matrix

	Category	Priority	Rank
1	Poor construction technique	29.5%	1
2	Client satisfaction	21.1%	3
3	Dispute B/w client & construction team	16.2%	4
4	Scope and design changes	27.3%	2
5	.Change in government regulation	5.9%	5

5.2 Result analysis by probabilistic approach

In this research study Calculate the rework amount and rework cost, take an example for calculation of rework amount and rework cost . activity A,B,C,D,E and there duration and normal cost are show in example. And the network diagram of these activity are also shown

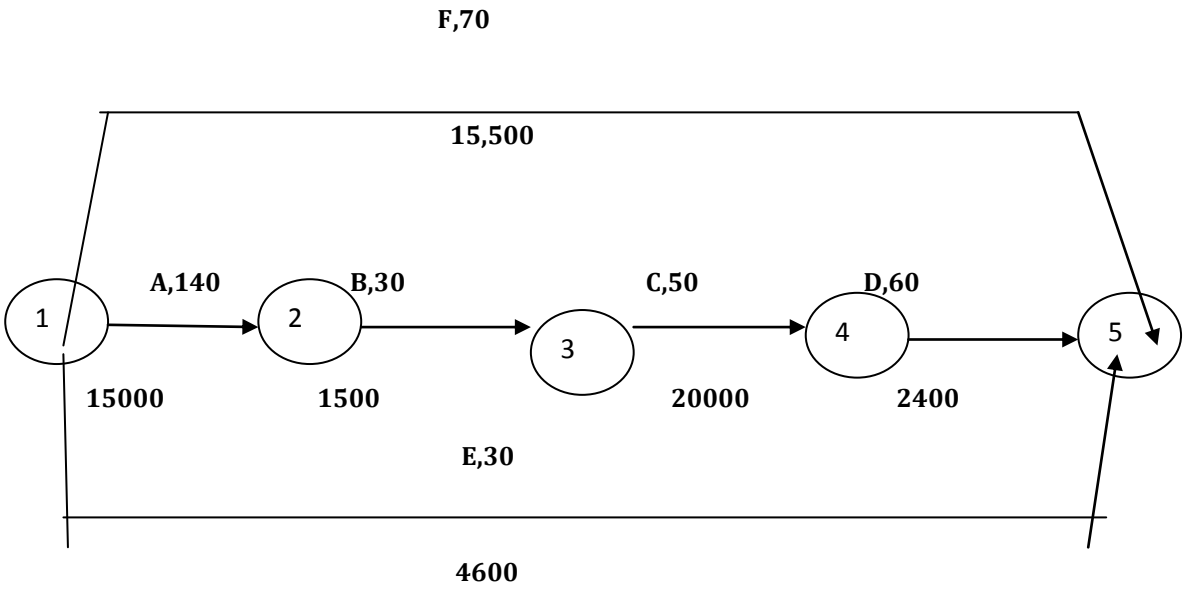

Table 5.1 budget for activity A

SR.	TIME DAYS	AMOUNT	PRIORITY*PERCENTAGE REWORK	REWORK AMOUNT %	COST FOR REWORK
Poor construction technique.	DAYS 140	15000	.295*.180	5.31	2250
Scope and design changes			.273*.180	4.91	736.50
Client satisfaction			.211*.180	3.79	568.5
Dispute B/w client & construction team			.162*.180	2.91	436.5
Change in government regulation			.059*.180	1.06	159

Rework for this activity 4149/-

Table 5.2 budget for activity B

SR.	TIME DAYS	AMOUNT	PRIORITY*PERCENT-GE REWORK	REWORK AMOUNT %	COST FOR REWORK
Poor construction technique.	DAYS 30	1500	.295*.180	5.31	225
Scope and design changes			.273*.180	4.91	73.650
Client satisfaction			.211*.180	3.79	56.85
Dispute B/w client & construction team			.162*.180	2.91	43.65
Change in government regulation			.059*.180	1.06	15.9

Rework for this activity 412/-

By this rework cost calculation mechanism the rework cost for all activity respectivily-

Activity A- 4149/-

Activity B- 412/-

Activity C- 3596/-

Activity D- 428/-

Activity E- 824/

Activity F- 2786/-

THE TOTAL REWORK COST FOR ALL ACTIVITY IS 12195/- OF TOTAL PROJECT COST 59000/-

6. CONCLUSION-

In this case study we have find that the rework is most responsible factor in construction project . in this study we have find that the most responsible factor in construction project by the global matrix so the most responsible factor respectively are poor construction technique, scope and design changes ,Clint satisfaction, dispute between Clint and construction team and change in government regulation.

According this study poor construction technique, scope and design changes and Clint satisfaction increased total construction cost is 15% and all these five factors increased total construction cost is 15%-20%. With the help of these factors the construction cost is decreased 15-20% of total project cost.

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