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Analyzing the Impact of Project Manager Strategies on Cost and Time Control in Construction Projects: A Comprehensive Study

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Abstract: *In the construction industry, cost overruns have long been a major source of concern as they can impede the profitability and financial sustainability of projects. It happens when real expenses surpass preliminary budget projections, resulting in monetary difficulties, hold-ups, and disputes among stakeholders. For many organisations, the ability to develop Data Frameworks (IS) projects effectively has given them an upper hand. Considering the need for ventures to progressively address cost and time accomplishment inside a foreordained degree, this study presents the Expense and Time Task The executives Achievement (CTPMS), a crucial measure in this context. Cost overruns are a significant issue that many contractors deal with because they reduce their margin on a project and create numerous other issues for all parties concerned. Effective cost-control strategies would be necessary to address those issues. Understanding cost- control strategies and how they affect cost overruns is crucial. A survey consisting of questionnaires was administered to contractors rated C1 through C5. Percentage analysis and weighted score analysis were used to analyse the data by turning them into quantitative values. The findings show which cost-controlling techniques are commonly employed and how crucial they are for minimising cost overruns, which lower overhead and overbudget expenses while maintaining projected profits. Lastly, it is recommended that CIDA (ICTAD) run awareness and training campaigns, among other things, to urge contractors to employ cost-controlling strategies. Additionally, it is recommended that certain ICTAD documents be required to be used.*

Keywords: *Cost Control, Time Control, Managing Strategies, Over Budget, Contractors.*

I. INTRODUCTION

Viable task the executives strategies are fundamental for finishing building projects on time, forestalling overspending, and ensuring positive outcomes. Viable asset distribution, quality control, change the board, and progress observing and control are fundamental strategies that assist with overseeing costs and forestall invades. Project productivity and partner fulfilment are expanded by the utilization of proficient methodology like booking, financial plan control, risk the executives, correspondence, joint effort, quality confirmation, partner contribution, and effect examination. The writing has widely archived these methodologies, showing their useful consequences for project achievement.

In the development business, cost overwhelms represent a serious danger to project productivity and monetary suitability. They emerge when genuine costs outperform the starter monetary projections, bringing about money related challenges, deferments, and disunity among partners. Broad exploration has analysed the connection between venture the executives systems and cost overwhelms, featuring the basic job that exact expense assessment, viable planning, and asset assignment have in relieving the last option. Besides, ongoing following, the early location of cost variations, and the use of convenient remedial activities to stop further acceleration are undeniably made conceivable by project observing and control frameworks.

Albeit past examination has yielded critical bits of knowledge, more examination is important to look at the exact effects of undertaking the board systems on cost overwhelms in development projects. The current group of information is upgraded by the relationship found between project the executives approaches and cost overwhelms in the structure business. The risk of cost overwhelms in development tasks can be extensively diminished with the utilization of successful venture the board systems.

Cost control and progress control are two parts of undertaking control. The essential focal point of this study was cost control. Different expense the board systems are presently being utilized by the structure business. Understanding the proficiency of cost control procedures according to the point of view of project workers and how to apply them to lessen cost invades is helpful.

Project cost administration is a difficult undertaking that requires mastery in the utilization of cost- controlling philosophies.

Thus, specialists in the development area should have hypothetical comprehension of cost-controlling strategies. The arranging

engineer, project chief, or some other important expert should be learned about the critical parts of an undertaking, including when to apply a procedure, how to pick a viable expense controlling strategy, and so forth. Subsequently, viable task cost overseeing will be vital for the present development area. To resolve this issue, by the by, the applicable specialists — ICTAD, the Service of Lodging and Development, and so on — have not yet made the fundamental rules or added the vital arrangements to their agreement terms. Thus, this exploration subject appeared to be suitable to resolve the issues raised previously. It was anticipated that this research will offer comprehensive knowledge on how to adhere to appropriate cost-control strategies and monitoring programmes in the building sector. As a result, this research topic seemed appropriate to address the issues raised above. It was anticipated that this research will offer comprehensive knowledge on how to adhere to appropriate cost-control strategies and monitoring programmes in the building sector.

II. LITERATURE REVIEW

Smith and Johnson (2020), carried out a case study analysis with a focus on efficient project management techniques for controlling costs and schedule. Their research emphasised certain strategies used in actual situations and how they affected the outcome of the project.

Turner and Muller (2019), examined project management techniques and how they directly affect performance in terms of cost and time. Their examination zeroed in on the connection between administrative techniques and the overall exhibition of building projects, featuring the meaning of key direction.

Chan and Kumaraswamy (2018), carried out a comparison analysis of building project time overruns in Hong Kong. Their investigation clarified the complex reasons behind delays and provided insightful information about the complexities of time management in construction projects.

Ibrahim and Bakar (2017), examined how well-executed time management techniques affected the outcome of building projects. Their conclusions emphasised how crucial time management is to reducing delays and improving project efficiency as a whole.

Li and Ruikar (2016), offered a thorough examination of managerial strategies for time and cost control. Their investigation examined a number of tactics, emphasising their effectiveness and versatility in a range of building project scenarios.

Wang and Faniran (2015), examined successful tactics designed especially to control expenses in building projects. Time management strategies were evaluated by Alaghbari and Abdul-Rahman (2014), who emphasised their importance in project execution.

Kaming, Olomolaiye, and Holt (2013), found factors impacting development time and cost overwhelms, giving significant information in regards to difficulties looked in skyscraper projects in Indonesia.

Turner and Huemann (2018), have contributed to a thorough understanding of project management dynamics by discussing developments in project management, performance measurement in the construction industry, and reasons behind construction delays, respectively.

Chan and Ho (2002), highlighted the advantages of strategic cooperation in the construction industry as well as important success criteria. Pinto and Mantel examined the reasons behind project failure and provided advice on how to reduce risks and enhance project results.

III. RESEARCH METHODOLOGY

This study depended on both subjective and quantitative information from a poll review given to specialists in the development area who stand firm on footholds as task directors, site chiefs, and so forth. Based on the data acquired from onsite interviews conducted as part of the preliminary survey, the questionnaire was created.

The information from the literature review was used to create the draft questionnaire. Based on the preliminary questionnaire, an open-ended interview was used for the preliminary survey. It helped to improve the final questionnaire and gain the specialists who work on building sites involved.

Over a thousand contractors in categories C1 through C10 are currently registered with the ICTAD. The study's parameters were set to collect data solely for grades C1 through C5. Following that, the example not entirely set in stone by considering the measurable techniques that are portrayed underneath, and at least 23 workers for hire were picked. Chi-Squared Appropriation is used

$$s = X^2 \times N \times P \times (1 - P) \div (d^2 (N - 1) + X^2 \times P \times (1 - P))$$

s = required sample size

X² = the chi-square table outcome (utilizing measurable tables) for 1 level of opportunity at the satisfactory certainty level is 3.8414.

N = populace size = 512

P = populace extent (the maximum sample size would be provided by an assumed value of .50). d = accuracy percentage as a percentage of its value: 0.2

Error margin = 20% Certainty span = 95%

$\alpha = 0.05$ and $v = 1$

Hence, Required example size =
$$\frac{3.8414 \times 511 \times 0.6 \times (1-0.5)}{0.2 \times 0.2 \times (511-1) + 3.8414 \times 0.6 \times (1-0.5)} = 22.976 \approx 22$$

In addition to being distributed at the interviews, the questionnaires were also provided via Google Forms.

Microsoft Excel was used to evaluate the collected data. Diagrams and bar graphs were made with the information got for each question. It was expected that the reactions from the individuals who addressed the biggest rate gave the most dependable responses in light of the fact that most of the outcomes were shown with the relevant number of reactions got demonstrated as a level of the general number of reactions.

IV. RESULTS AND DISCUSSION

The initial step of the survey was determining the backgrounds of the participants, including their years of experience and the quantity of projects they had worked on. It aided in guaranteeing the accuracy of the data gathered. The essential objective of the review was to learn the project workers' degree of cognizance of cost administration procedures. As per the information, as displayed in Figure 1, 66.9% of the workers for hire think they know over 75% about cost control frameworks.

Table 1: Contractors' Knowledge of the Cost Control System

| Cost control system | Percentage |
|---------------------|------------|
| 75%-100% | 66 % |
| 50%-75% | 34 % |
| 25%-50% | 0 % |

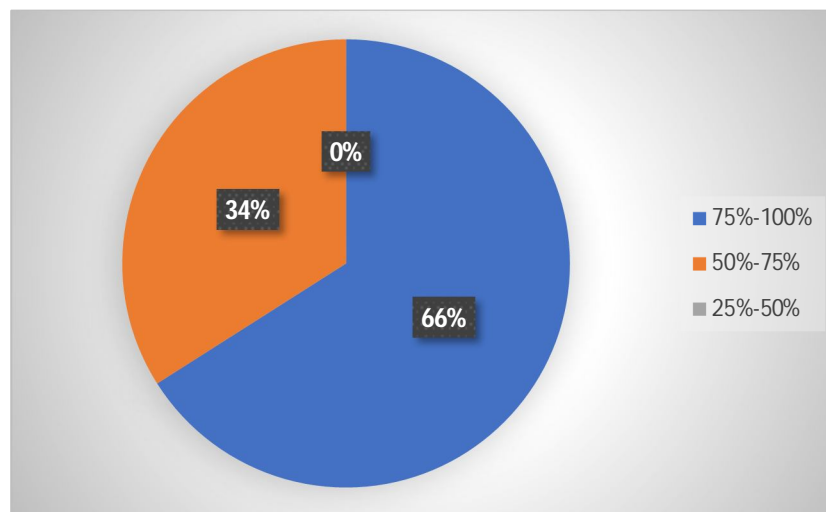


Figure 1: Contractors' Knowledge of the Cost Control System

The majority of contractors, according to survey results, are generally aware of the cost control strategies used in the construction business, even though it was not always clear how to apply them. The identification of cost control strategies as a tool for lowering cost overruns was made. The cost control methodologies that were viewed as being utilized by the contractors right now incorporate MS Venture, procure esteem the board, and everyday material and work managing. A survey of the cost control strategies right now being used is displayed in Figure 2.

The contractors concurred that the most crucial methods for cost reduction are earn value analysis and MS Project. Daily labour and material control have been employed as cost-controlling strategies, but this research does not include them. If the MS Project software can also take this into account, that will be very significant.

The characteristics that most impacted contractors who had already used these procedures were reported to be their ease of monitoring and user- friendliness. The two biggest things preventing contractors from employing them are a lack of experience and a lack of practices. Additionally, the contractors recommended that ICTAD hold frequent training sessions on these methods.

Table 2: Current Cost Control Technique Practices

| Cost Control Techniques | Current Percentage |
|-------------------------|--------------------|
| Performance Review | 0.1 |
| Variance Analysis | 12.4 |
| Forecasting | 12.4 |
| To-Complete | 0.0 |
| Earned Value | 16.2 |
| Daily Material | 54.0 |
| Ms Project | 91.9 |

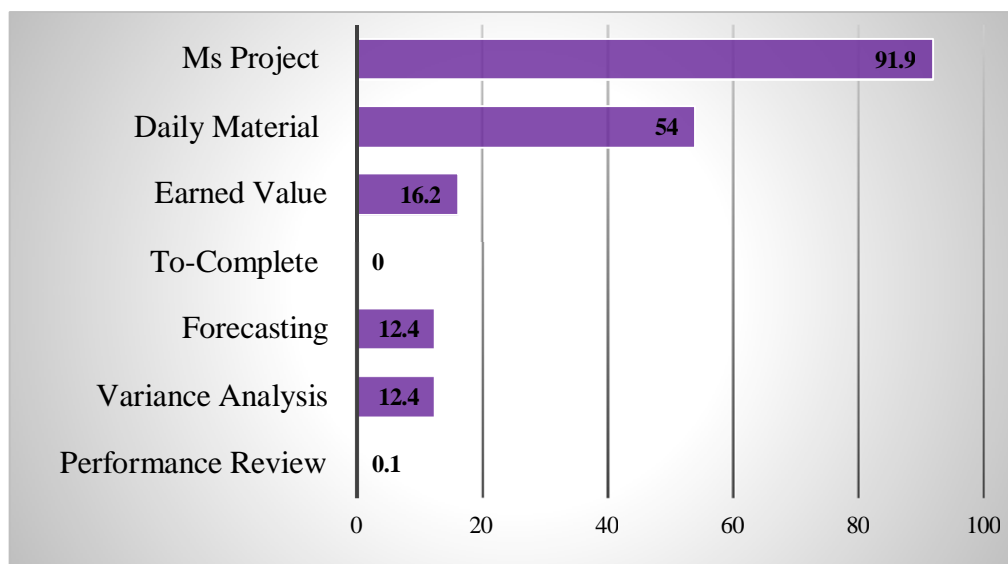


Figure 2: Current Cost Control Technique Practices

The survey's main focus was on contractors' knowledge of the ICTAD's cost-controlling rules. Less than half of the contractors, according to the statistics, are unaware of these rules. Notwithstanding, most of contractors feel that key papers that are at present included as ICTAD rules should be proposed in the details of the agreement. Table 2 shows the reactions that were gotten in such manner. The key components affecting cost overwhelms were found utilizing the Overall File approach. The essential element among them was the absence of labor supply, materials, or mechanical plants, which could be helped by applying the ICTAD administers recently portrayed. Figure 3 displays the responses that were received about these issues leading to cost overruns.

Table3: Issues Contractors Face With Cost Control at the Site

| Issues Faced by Contractors | Percentage |
|---|------------|
| Shortage of Material, Labour | 4.25 |
| Difficulty in Collection of Standard Data | 4.10 |
| Additional Costs to Carry Out the System | 3.92 |
| Qualified Expertise. | 3.84 |
| Duration of The Project | 4.10 |
| Ever-Changing Environment | 3.90 |

| | |
|--|------|
| Design Changes and Documentation | 3.90 |
| Poor Project (Site) Management | 3.85 |
| Fluctuation in Prices of Raw Materials | 4.00 |
| Improper Planning | 3.82 |
| Wrong Method of Cost Estimation | 3.85 |
| High Cost of Machineries | 3.70 |
| Inappropriate Government Policies | 3.30 |
| Lowest Bidding Procurement Method | 3.40 |
| Long Period Between Design and Time | 3.90 |

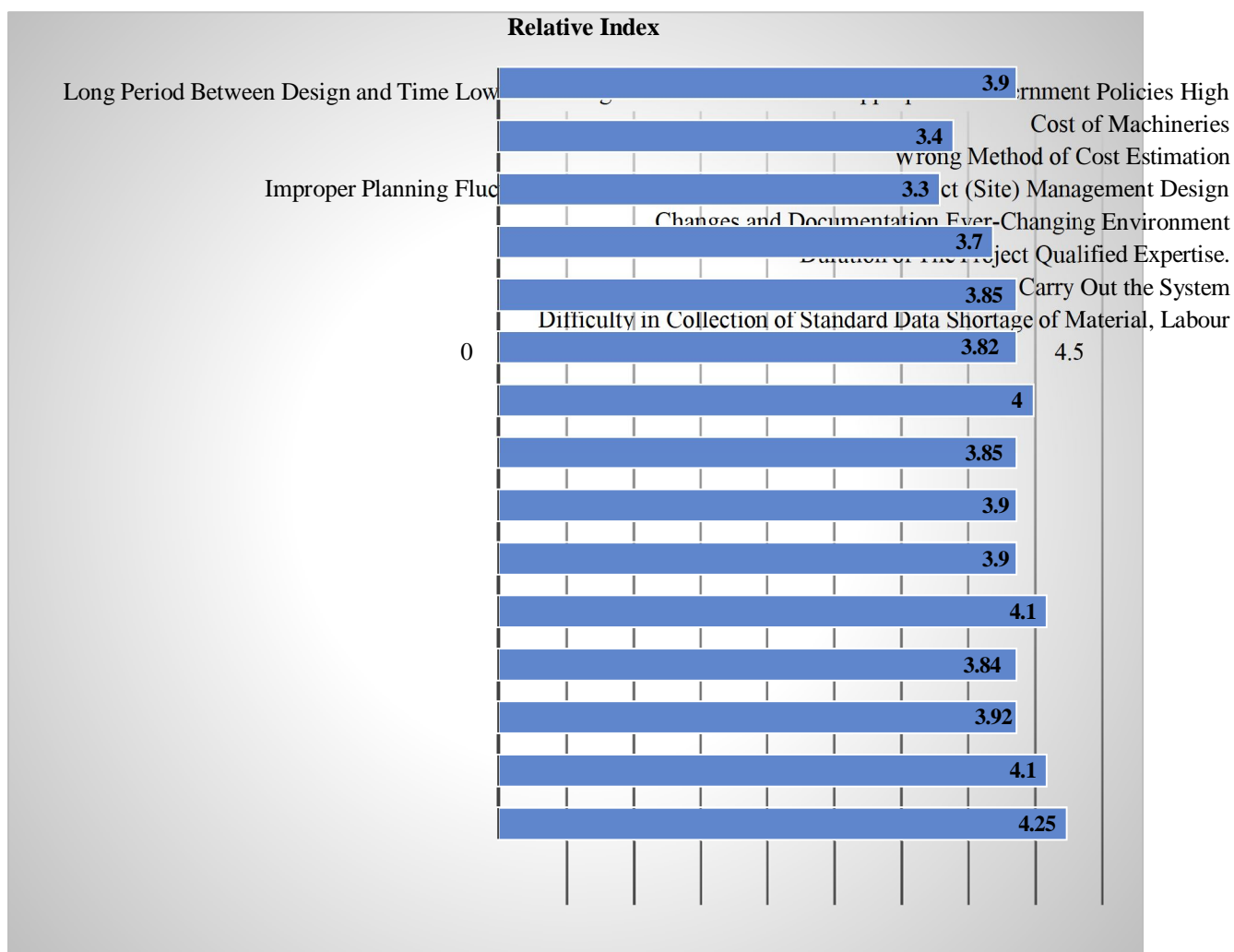


Figure 3: Issues Contractors Face with Cost Control at the Site

According to the majority of contractors, there are numerous reasons why their project expenditures are approximately 25% over budget (Figure 4).

Table 4:Over Budget Percentages

| Cost Control | Over Budget Percentage |
|--------------|------------------------|
| 100% | 0 |
| 75%-100% | 0.2 |
| 50%-75% | 4.5 |
| 25%-50% | 17.8 |
| 0-25% | 79 |

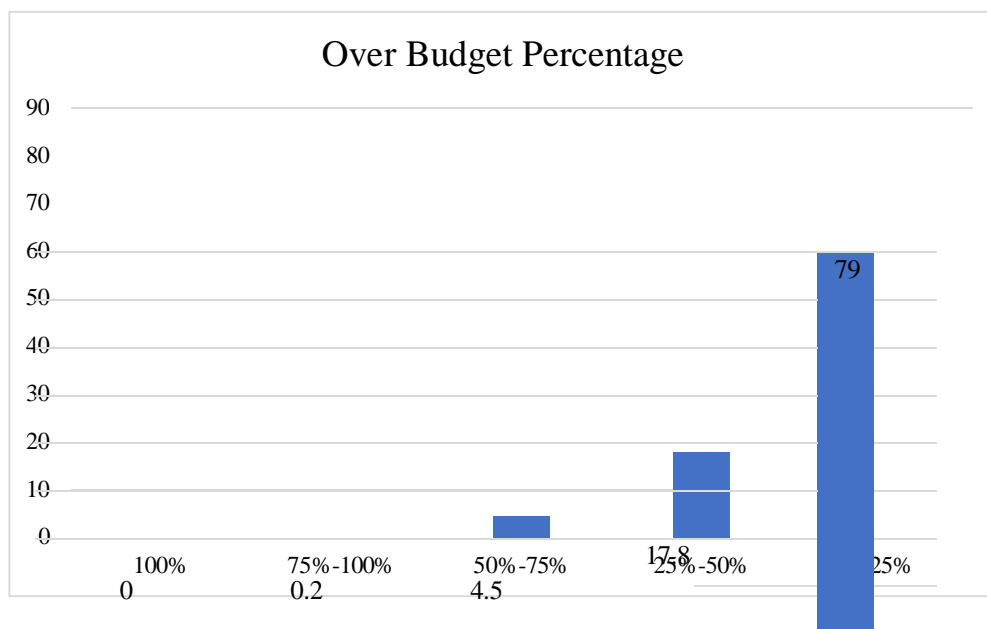


Figure 4: Over Budget Percentages

The absence of daily monitoring is determined to be the second most common reason, after material waste (Figure 5). This suggests that overspending can be considerably decreased with the use of appropriate project controlling tools.

Table 5: Cause of Over Budgeting

| Over budgeting Reasons | Percentage |
|---|------------|
| Lack of Daily Monitoring | 41.5 |
| Material Wastage | 66.5 |
| LaborMachine Idling | 37.6 |
| Tendering Inefficiencies (No Adequate Rates etc.) | 33.6 |
| Overhead Increase | 37.8 |

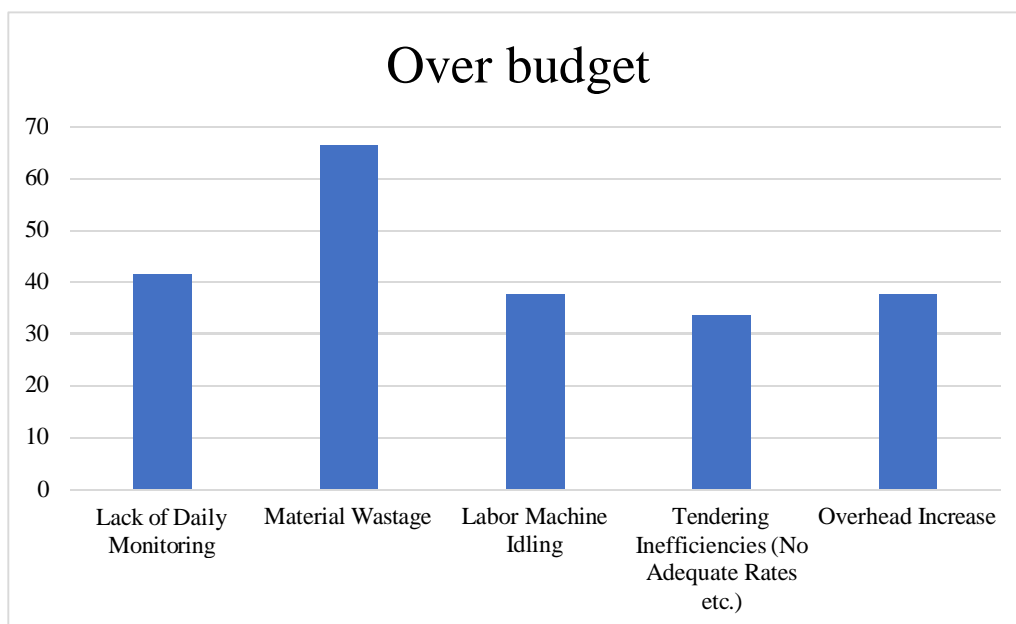


Figure 5: Cause for Over Budgeting

Remedial actions for project overbudgeting were determined. The respondents' responses were based on both their personal experience and the recommended strategies for resolving cost overruns. The majority of contractors recommended MS Project for daily progress tracking as the best approach (Figure 6). Since most contractors don't utilize project the executives systems, a significant number of them neglect to apply the examples they have gained from past undertakings to ensure the outcome of their ongoing ones. Thus, the past encounters couldn't be reported, and it appeared like they would start a pristine task. Some contractors, meanwhile, made successful use of their prior experiences in order to complete their current tasks.

Table 6: Remedial Actions That Have Budget Control

| Remedial Actions | Percentage |
|--|------------|
| Daily monitoring progress by using MS project | 55% |
| Following ICTAD forms of maintain cost records | 28% |
| Using earn value theory | 16% |

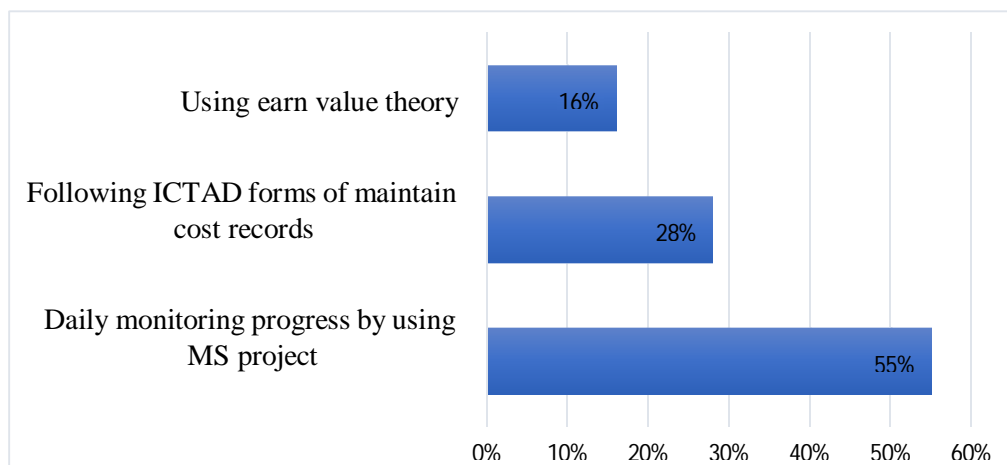


Figure 6: Remedial Actions That Have Budget Control

The information showed that the main component adding to an undertaking's expanded overall revenue is an absence of cost control techniques and observing. In this manner, bringing down the overall revenue requires worked on cost control. The following component for the expansion in net revenue is pay for the ascent in labour and material costs.

Most contractors feel that by utilising appropriate cost controlling measures, they can cut their overhead costs by approximately 50% based on their experience. Through cost-controlling systems, a few contractors have proactively decreased above by over half. Therefore, effective cost control can be regarded as a crucial element in the building sector.

V. CONCLUSION

The dismissal for squander costs during building is one of the significant defects in development the board. One of the confidential areas where clients give supporting is the structure business. Regretfully, our nation hasn't done any significant job in identifying cost waste or controlling costs. The primary cause of resource waste in construction is rework. Rework is now acknowledged in some situations as an essential component of construction projects. While striving to construct buildings of the greatest calibre, contractors and project owners sometimes overlook the means of achieving this calibre. Some activities are repeated as a result of mismanagement throughout the design and construction phase, and some deficiencies are discovered after the project is finished.

Several of the materials that ICTAD made available were deemed extremely significant by the contractors. Therefore, the authors recommend that the following materials be required reading. A monthly summary of expenses, cost sheet for hiring machines with weekly statement, direct labour cost sheet declaration for each week.

Coming up next are the most vital cost-controlling systems, according to the survey's results: MS Project, daily labour and material control, acquire proficiency in value management.

The obstacles that stand in the way of applying such strategies and the ways in which survey participants suggested overcoming those obstacles have already been elucidated. Below is a summary of the most significant solutions that the contractors offered in response to the ICTAD- mandated action (contract conditions). Teach individuals on the meaning of MS projects and obtain esteem the executives, consistently give refreshes through courses, studios, and different occasions, instruct the mindful specialists.

Additional investigation is warranted to corroborate the findings of this study, taking into account C6 to C10 contractors as well as all projects. The authors posit that contractors could successfully complete their projects by guaranteeing their expected profits if they adhered to the recommendations put forth in this paper.

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