Construction Cost Overrun Causes in Ichalkaranji City

Priyanka Jadhav¹ & Dadasaheb Desai²
¹PG Student (Construction Management), Dept. of Civil Engineering, Dr.J.J.Magdum College of Engg, Jaysingpur, Maharashtra, India
²HOD & Associate Professor, Civil Engineering Department, Dr. J. J. Magdum College of Engineering, Jaysingpur, Maharashtra, India

Abstract: Construction industry is a most complicated and dynamic industry which is constantly facing uncertainties. These uncertainties make the cost management difficult for the stakeholders those results into construction cost overrun. Many factors are responsible for these cost overruns such as underestimation of cost to make the projects more viable, addition of scope during later stages of project planning and even during construction, changed conditions etc. This paper signifies the study and analysis of causes of cost overrun in Ichalkaranji city. A questionnaire survey is carried out among consultants and contractors of Ichalkaranji to get root causes of cost overrun in construction industry of the city. This paper includes analysis that helps to trace responsibilities and improve the work process of both contractors and consultants. It also gives a solution for management of construction cost by minimizing the probability of cost overrun in building projects.

1. Introduction

Construction cost is comprises of direct and indirect costs of construction. When these costs of construction are more than the budgeted cost of any project, it represents the occurrence of cost overrun. This may lead to loss as well as disputes between parties involved in the project. The causes due to which this overrun takes place can occur pre-construction and during construction. Knowing these causes in advance can reduce the chances of budget overrun in future projects by taking precautionary measures.

Ichalkaranji is known as Manchester of Maharashtra and it situated on the banks of panchganga river. The city is rapidly growing and now merging with neighbouring Jaysingpur town. Ichalkaranji is famous for textile industries that are producing various types of cloths. As the city is developing day by day in fields like industrial, educational and infrastructural, the problem of construction cost overrun is common now days. The main objective of this study is to identify & study the root causes if cost overrun in Ichalkaranji city. A process of data collection along with questionnaire survey among consultants and contractors has given the root causes of construction cost overrun in Ichalkaranji.

2. Collection of Causes

Collection of cost overrun causes was carried out through international literature study and also discussion with local consultants and contractors working in Ichalkaranji. A number of international literatures were studied to collect these causes. Also a brief discussion with some consultants and contractors was carried out. From both sources 67 independent causes are obtained after applying Expand-focus method to the total collected causes. These 67 causes are responsible for cost overburden worldwide. These 67 causes then further divided as per the project life cycle and a questionnaire was designed.

3. Questionnaire Design

The questionnaire was designed carefully to obtain required data from respondents that serve to achieve research objectives. The main data required for this research is divided into 3 categories. First and second category is related to the information about respondent’s category, their involvements and performance of the project. While third category includes questions related to cost overrun causes that were collected earlier and respondents answered these questions according to severity of these causes on a five point scale The third section contains 67 cost overrun causes which has divided in to three stages i.e. Feasibility and early planning, project planning and main procurement, Contract execution, Monitoring and control.

The questionnaire was headed by an introduction about the research topic and its aims. It also encourages the respondent to honestly participate and to respond as soon as possible considering him/her as a partner in the research and the main beneficiary from the research outcomes.
4. Analysis of Questionnaire Survey

For analysis of the causes of cost overrun, ‘Relative Importance Index’ (RII) of each cause calculated by using following formula:

\[
\text{Relative Importance Index} = \sum \frac{W}{A \times N}
\]

Where, \(0 \leq \text{RII} \leq 1\)
\(W\)= weighting given to each cause by respondent ranges from 1 to 5 where ‘1’ is not significant and ‘5’ is extremely significant.
\(A\)= Highest weight i.e. ‘5’ in this case
\(N\)= Total No. of respondents

4.1 Participation in Questionnaire Survey

The questionnaire was distributed to consultants and contractors working in Ichalkaranji. The subject got a great interest from the concerned contractors and consultants because it attempts to investigate a problem they are facing in their projects and they are the main beneficiaries from the research results and as a result an overall participation of 90% is achieved. The questionnaire was distributed to 19 consultants and 20 contractors out of which 16 consultants and 18 contractors submitted questionnaire with their response.

4.2 Experience of Respondents

As per survey, about 45% of contractors are working in construction industry for more than 15 years. Also about 69% of consultants are having experience more than 15 years.

4.3 Projects with Cost Overrun

Analysis of questionnaire shows that according to experience contractors faced cost overrun in 49% of projects and consultants faced 44% projects with cost overrun. In total about 46.5% of projects affected by cost overrun as per the respondents experience.

4.4 Severe Causes of Cost Overrun

The questionnaire includes the cost overrun causes to which respondents were asked to give score according to scale from 1 to 5 depending on contribution of these causes. After collection of responses from consultants and contractors these causes are ranked combining the resulted RII of consultants and contractors, then a list of these causes according to this ranking is formed. From this list top 15 causes that are responsible for cost overrun in Ichalkaranji are as follows-

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Cost Overrun Causes</th>
<th>Total Score</th>
<th>RII</th>
<th>Overall Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Changes in material types &amp; specification during construction by client</td>
<td>106</td>
<td>0.624</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Changes in design by client during construction</td>
<td>102</td>
<td>0.6</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Delay in progress payments by clients</td>
<td>97</td>
<td>0.571</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Reworks due to the errors during construction by contractor</td>
<td>94</td>
<td>0.553</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Frequent changes in material prices</td>
<td>92</td>
<td>0.541</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Low skill of manpower</td>
<td>89</td>
<td>0.524</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Shortage of manpower</td>
<td>88</td>
<td>0.518</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>Poor supervision of contractor</td>
<td>87</td>
<td>0.512</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>Inadequate experience of contractors</td>
<td>87</td>
<td>0.512</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>Shortage of materials</td>
<td>86</td>
<td>0.506</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>Slowness of decision making process by clients</td>
<td>85</td>
<td>0.5</td>
<td>11</td>
</tr>
<tr>
<td>12</td>
<td>Low out turn of labours</td>
<td>84</td>
<td>0.494</td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>Delay in payments of labours by contractors</td>
<td>83</td>
<td>0.488</td>
<td>13</td>
</tr>
<tr>
<td>14</td>
<td>Poor site management of contractor</td>
<td>83</td>
<td>0.488</td>
<td>14</td>
</tr>
<tr>
<td>15</td>
<td>Severe sub-surface conditions (e.g. soil, high water table etc.)</td>
<td>82</td>
<td>0.482</td>
<td>15</td>
</tr>
</tbody>
</table>

From above table it can be seen that client is responsible party for construction cost overrun in Ichalkaranji as causes related to clients ranks at first, second and third position. The changes in design and changes in material types & specification during construction by client are major cost overrun causes that affect total budget of construction projects in Ichalkaranji significantly. Also reworks due to faulty works by contractors also result in construction cost overrun that leads to disputes between parties. This causes possesses 4th position in the list of severe causes of cost overrun as per the consultants and contractors in Ichalkaranji.
5. Conclusion

Cost overrun in construction is a world-wide problem. The high risk nature of construction projects has led to many cost overruns in the history of construction. Therefore, all the parties should use a systematic approach to manage risks on a project. Identifying the reasons is usually the first step when addressing a problem and then corrective action can be taken. This identified reasons supplement control systems in analyzing the cause-effect relationship for an engineering process. This analysis helps trace responsibility and improve the work process. With the categorized reasons, the owner, consultant and contractor can have common understanding of cost change so the change order can be issued and settled. According to response from contractors and consultants top 3 causes with high score are-

1. Changes in material types & specification during construction by client
2. Changes in design by client during construction
3. Delay in progress payments by clients

This result shows that according to both the parties, client is the main element due to which cost overrun takes place in Ichalkaranji while as per the client’s response changes in material prices and shortage of material also responsible for cost overrun. Sudden changes in design and material types leads to large cost overrun in construction industry. Awareness about this fact and a study of construction activities by clients can reduce the percentage of cost overrun due to these causes.

For clients it is necessary to understand that the changes carried out in material types during construction can delay their project and also there is a large probability of cost overrun in the project. So as to reduce this possibility they must depend on professional’s advice for any doubts instead of neighbours and relatives. A good study of market conditions and available different material is useful for clients to take the decisions so as there will not be any alteration required during construction.

To minimize the cost overrun due to design changes during construction, consultants and contractors have to make efforts so that clients trust them and their work. Contractors and consultants both are required to give brief view of cost overrun in construction that may cause due design changes so that clients can take a firm decision. All designs and drawings must be done after discussion with client and according to their requirement. A good knowledge of construction work is useful tool for clients. After the discussion golden mean of client’s requirement and professional’s knowledge must be taken so that in later stages possibility of design changes is minimized.

A good knowledge of own budget and keeping in view second financial source for possibility of future risks can minimize the cost overrun caused by delay in progress payments by clients. This also will not affect the worker’s efficiency and project can be completed within scheduled time period without any loss. Clients are unaware about the fact that their delay in payments can lead into loss in their project. So, it is necessary to make them aware to avoid cost overrun due to this cause.

Since all the causes considered for this research have direct influence on the cost of project, this finding seems very reasonable. The findings of this study can help construction companies and parties related to construction industry in Ichalkaranji to understand and prevent the root causes of cost overrun in their future projects.

6. References


