

Issues in Subcontracting Management in Residential Projects

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Abstract—Subcontractors are very important for successful completion of construction projects, yet many issues arise in subcontracting management. The objective of this paper is to examine and study issues in subcontracting management in residential projects. After an extensive literature study through the articles in various journals, research papers and books, a research gap has been identified. Based on the finding of research gap, suitable research problem has been formulated. The research design will include the collection of primary data i.e. by floating a questionnaire and secondary data i.e. the literature study. The primary data has been collected by administering a questionnaire to the organizations engaged in carrying out residential projects in Pune. Data analysis and data interpretation has been done using statistical tools. The results obtained have been used for testing the research problem and the findings of the same have been recorded. Based on the findings, necessary conclusions and recommendations have been drawn, highlighting the factors that will have a crucial impact on the selection and engagement of subcontractors in residential projects.

Keywords: Subcontractors, Issues in subcontracting management

1. INTRODUCTION

Construction projects have so much complexity and in those, raw materials, equipment's, technology, finance and the most important of all, human resources all are involved. Construction projects involve many parties like client, contractor, consultants, suppliers, subcontractors and so forth. The contractors normally sublet the work to the subcontractors to transform the risks. Subcontractors are specialist people who are doing their work with core competences, efficiency and completion in a timely by execution, supplying manpower, tools, equipment and designs.

India is going ahead with a large number of residential projects for development in that subcontractors constitute majority of the construction and installation activities and they play an extremely crucial role in the successful completion of the residential projects. Regardless of the general contractor's skills, portions of virtually every residential project will be subcontracted to firms that possess specialized resources, advanced technology and engagement with project.

Subcontracting is a way through which cost minimization, completion of project within a time frame and performance of the specific work increases. Procuring specialist works for residential projects, but it may also give rise to various kinds of problems. Such problems may originate from lots of reasons but here mentioned some of major reasons are characteristics of different type of work, co-ordination between contractor and sub-contractor, litigation, poor operation, finance, unavailability of resources and most important health and safety related issues. Subcontractors work constitutes majority of the construction activities and they play very important roles to lead to project success. Regardless of the general contractor's skills, portions of virtually every project will be subcontracted to firms that possess specialized skills. It is envisaged that more and more specialist work will be employed for enhancing performance and sustainability. Subcontracting is an economical way of procuring specialist works but it may also give rise to various kinds of problems. Such problems may originate from the characteristics of specialist works and from subcontracting as a procurement method.

Project claims are always unremitting issues that entails a lot of cares in records and documentation save-keeping. Subcontractor becomes entangled with main contractor or client when having disputed claims. The subcontracting issues studied include the timeliness of payment by the general contractor, the process of selecting the subcontractor, subcontractor bonding, construction insurance, safety on the construction site, partnering with various parties and productivity issues.

2. RESEARCH METHODOLOGY

The primary data has been obtained by administering a questionnaire. The questionnaire survey has been conducted by visiting various residential construction sites in Pune, a total of 30 responses were collected. The respondents are basically from such organizations those who are engaged in constructing residential projects in Pune. All questions in the questionnaire mainly deals with issues between subcontractors

and main contractors. The questionnaire also seeks general information about the respondents including the organization the respondent is working for, the project (or projects) the respondent is currently engaged in. The respondents were asked to give a rating to each factor contributing to the issues and challenges in engaging subcontractors in residential projects with the help of Likert’s Scale based on their experience and understanding. Secondary Data has been collected after carrying out the literature review. By literature review, a total number of 25 factor were identified which addresses the issues and challenges in engaging subcontractors in thermal power projects. The respondents were asked to give ratings to each of the factor. The questionnaire is based on a scale of five ordinal measures from one (1) to five (5) scale as per mentioned in Table No. 1. Once the data has been collected, both (the primary data as well as secondary data) are analysed and compiled and arrive at a logical findings which finally helped in testing the research problem.

Table 1: Five point scale

Option	Scale of measure
Major Factor	5
Serious Factor	4
Moderate Factor	3
Minor Factor	2
Not a factor	1

3. DATA ANALYSIS AND INTERPRETATION

Analysis of data is a process of inspecting, transforming, and modelling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. The contribution of each of the factors related to issues and challenges in engaging subcontractors were examined and the ranking of the attributes in terms of their criticality as perceived by the respondents have been defined by using Relative Importance Index (RII). Relative Importance Index (RII) to prioritize the factors. This has been computed using the Microsoft Excel Package by using the below formula

$$R = \frac{\sum W/A \times N}{N}$$

where, W—weighting given to each statement by the respondents and ranges from 1 to 5; A—Higher response integer (5); and N—total number of respondents.

4. FINDINGS OF RESEARCH

Organizations handling residential projects require effective and efficient subcontractor management process.

The level of competence in decision making about subcontractor selection can enhance the performance of the entire management system and thereby reduce the time and cost overrun.

Getting the job done by the subcontractor is not an easy task. There are many challenges involved in subcontracting. Thus successful and timely completion, subcontracting is very much necessary.

25 factors emerged from primary and secondary data collection, which were the included in a questionnaire survey. With the help of Importance Index the critical factors are categorized as follows:

1. Delay of works
2. Shortage of skilled labour with subcontractor
3. Neglecting the safety measures
4. Low labour productivity
5. Non adherence to contractual conditions
6. Poor quality of work by subcontractor
7. Slow mobilization of resources
8. Scope of work not defined properly
9. Non adherence to construction schedule
10. Absence of labour a site
11. Change in cost of resources
12. Shortage in supply of labour, equipments and spare parts
13. Variation in scope of work and change in specifications
14. Poor construction methodology
15. Frequent equipment breakdown
16. Late involvement of the subcontractor in the project
17. Efficiency in time management of the subcontractor
18. Subcontractor payment terms
19. Shortage of equipments and machineries of subcontractor
20. Exhausting the plant and resources of the main contractor
21. Lack of approach towards modern technology/equipment
22. Involvement of stakeholders
23. Equipment allocation problem
24. Involvement of subcontractor in many projects at the same time
25. Lack of proper communication with subcontractor

5. CONCLUSION

As the outcome of the analysis and testing, following major factors were identified which were the main reasons due to which conflicts arise between contractor and subcontractor which causes delay in projects leading to time and cost overrun

Delays of Work

All parties involved in the construction process (i.e., owners, contractors, subcontractors and suppliers) have a vested interest in on-time performance and on-time payment. Construction projects involve expensive equipment, tremendous overhead, significant manpower and large payrolls for owners and contractors alike. Due to the high costs of untimely performance, contractors and owners usually require well planned and often complex schedules.

Contractors commonly use completion date, bar chart and percentage of completion schedules to check progress, synchronize subcontractors and record delays. Owners may require more refined scheduling methods, such as Critical Path Method, Program Evaluation, Review Technique, or Precedent Diagramming Method, as a part of the contractor's duty.

Neglecting Safety Measures

Construction is one of the important industries employing a huge number of people on its workforce. A large range of activities are involved in it. Due to the advent of industrialization and recent developments, this industry is taking a pivotal role for construction of buildings, roads, bridges, power projects and so forth. The workers engaged in this industry are victims of different occupational disorders as well as psychosocial stresses. In India, they are considered in organized and unorganized sectors. It is true that a sizable number of the workforce is from the unorganized sectors — the working hours are more than the required hours of work — the work place is not proper — the working conditions are not suitable in most of the cases and involve risk factors. Their wages are also not sufficient, making it difficult for them to run their families. The hazards include handling of different materials required for construction, and exposure to adverse environmental conditions. On account of this, in adverse conditions, it results in accidents and adverse health conditions cause psychosocial strain and the like. They are victims of headache, backache, joint pains, skin diseases, lung disorders, other muscular skeletal disorders, and so on. The repetitive nature of the work causes boredom and the less earning compared to the requirements puts them under psychological stress and strain and other behavioral disorders. The Government of India has realized the importance of this industry and has promulgated an Act in 1996. The state government is being asked to adhere to this, still only a few states have partially imposed it. In this article, attempts have been made to review some of the important available articles for giving a brief idea of the problem .

Scope of work not defined properly

This is one of the major cause in delay of work by the client. Most of the time due to non-availability of funds or national slump in economy, change in company policy, etc. the client is left with only one way i.e. none other than to change to reduce the scope of work. During this process lot of changes takes place in drawings and specification which directly or indirectly delays the execution of projects. The changing scope of projects is known as 'Scope Creep' which means continuous growth or change in scope of a particular project beyond its original stated intent. Managers of all construction related firms encounter this problem every time a client demands. This scope creep many times leads to double or triple the workload of contractor. There are lot of reasons which leads to change in scope of work, but the damages to construction firms fall into three main areas

1. Increased Liability
2. Decreased Profitability
3. Damages Reputation

Low productivity of labour

The main factor now a day's construction industry is facing are declining rate of productivity and lack of productivity standards. There are various factors which causes the low labour productivity. These factors could be classified as;

1. Industry Related Factors
2. Management Related Factors
3. Labour Related Factors

Industry related factors are such as design factor, building codes, construction technology, laws and regulations, job factors (job duration, size and type of job), adverse, uncertain weather and seasonality and site location. Management related factors are such as change in upper level of management, change in policies, and change in organizational structure, etc. Labour related factors are such as personal issues of labour, lack of knowledge, inappropriate site conditions, fatigue, occupational deceases, safety issues, etc.

Poor Quality of work by subcontractor

Poor construction methods and workmanship is mainly responsible for the failure of buildings and structures. It is caused due to ignorance and inadequate quality control at construction site. The effects of some of the poor construction methods are : Incorrectly made construction joints, grout leakage, poor compaction, segregation, too high a water content.

Poor quality of work is done by subcontractors are divided into three main categories:

1. Technical related causes
2. Management system related causes

Staffing related causes

Technical related causes occurs due to insufficient technical support from head office, poor temporary work design, insufficient site office space, poor site layout, poor project program or phasing of work.

Management related causes occur due to unclear job duties, unclear communication path, insufficient authority for frontline staff, unclear accountability system, too much paper work.

Staffing related causes occurs due to frequent change of personnel, staff inexperience to coordinate technical administration work, staff inexperience to carry out site work, insufficient staff to carry out the work.

Shortage of skilled labour

Some of the contractors do not have skilled labour in proportion which is required as a result of that quality of work is not up to mark. Shortage of skilled labour heavily affects the productivity

6. RECOMMENDATIONS

Subcontractors should give special attention to the following factors:

1. Subcontractors are recommended to employ sufficient number of qualified technical staff with appropriate experience of the project and to prepare all required materials to be able to adhere to contract requirements and time schedule.
2. Subcontractors are recommended to propose suitable and reasonable prices that ensure acceptable margin of profit for them and then adhere to their pricing after awarding and implement the works without requesting any changes of prices.
3. Subcontractors are recommended to establish and keep good reputation in his relationship with the main contractor so that he can be selected by the main contractor in future projects.
4. Subcontractors are recommended to adhere to quality standards by employing experienced labours, good materials, supervision of materials and labours, implementing the engineers instructions and doing the remedial works.
5. Subcontractors are recommended to communicate with the contractor and the site engineers effectively and implement their instructions to avoid any problems.
6. Subcontractors are recommended not to accept contracts from financially weak contractors who cannot pay them on time.
7. Subcontractors are recommended to use all safety measures to protect the labours.
8. Subcontractors are recommended to use the modern techniques for management of labour and material and hence to improve the productivity.

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