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Importance of Coordination in Construction Industry

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Abstract—*The building industry is facing coordination problems because the number of participants in construction projects have increased during last couple years, owing to the complexity in projects. The current scenario demands better coordination among team members, for the success of the project. The team members include the Client, the Designer/Architect, the Contractor, the Consultant and the Project Manager. This paper identifies two potential areas for increasing coordination in construction industry. These issues have been identified as Team integration and Regular review meetings. A discussion on these issues is presented in this paper. The present scenario in construction industry is examined with the help of online survey conducted for architects in Indian construction industry, and is presented in this paper. The paper highlights that integration of contractors is not widely accepted by other team members especially at initial stage of the project. The regular review meetings are also not widely conducted at initial stages of the project. The paper aims to emphasize upon the importance of integration and regular review meetings for better coordination in construction industry.*

1. INTRODUCTION

The construction industry is facing many challenges because of increase in technology and highly specialized projects coming up and lack of coordination is one of the biggest challenge. There is an emergent need to assess the problem and find solutions to it so that the coordination increases and results in the success of the project in all terms such as; minimized delays, increased productivity, less ambiguity, prevent economic losses, controlled schedules, reduction in lawsuits etc.

Perhaps the key to increasing coordination lies in the early integration of all team members in the project i.e. the Client, the Designer/Architect, the Contractor, the Consultant and the Project Manager. The number of stakeholders have increased in the construction industry due to technological advancements in the industry. Every participant has his own specialization and role to play. Coordination acts in binding them all together for the success of project. The need for Project Managers introduction in the project has been realized by industry because of this reason only. But unfortunately, the industry has still not realized the importance of team formation at an early stage of project. The Design bid Build approach restricts the entry of contractors at initial stage of design. There is a need to implement the idea of team integration at early stage so that all team members can contribute to the success of project and their suggestions can be incorporated at all stages of work. This is possible with the help of regular review meetings and freedom for all participants to attend and deliver their suggestions. This will help in utilization of specialized skills of all members at initial stage of project and reduce the problems encountered at later stages.

2. LITERATURE REVIEW

Coordination in construction industry has been a topic of discussion among researchers since a long time.

Crichton (1966) mentioned in Tavistock studies that the activity of coordination is carried out in an informal manner in the building industry. He further adds that coordination is not generally spoken off on record. It does not appear in the handbooks or formal reports [1]. O'Connor et al. (1987) suggested that inter organizational communication should be encouraged and planned, for particularly between designers and Contractors [2]. While defining constructability and total quality management, Russell et al (1994) analysed that commitment is require from all personnel i.e. from executive level to the level of the construction craftsmen at site. This process requires teamwork as an important tool [3].

Coordination has also been defined as effective harmonization of planned efforts for accomplishing goals. It is the most important and sensitive issues of management. Coordination acts as a bridge in and fills up the voids created in various departments by changing situations in system, procedures and policies [4].

A paper by Carr et al. (2002) analysed the importance of coordination during design phase of the project and highlighted that the inter personnel interaction is important. This helps in integration of various components of the design. They further added that various professionals must interact

with one another in order to bring together the various components of the project in a coordinated fashion [5]. The multi-tier sub-contracting system makes project communication and coordination difficult [6].

Number of communication problems in the construction industry occur because of low coordination low efficiency, poor quality and adverse attitudes. It was further explored that Design and Build projects lead to better communication in the project team because all the team members work under single entity. All the parties are working for the same interest hence the communication is better. The working environment is productive and collaborative because the designers and contractors work in simultaneously for single goal to provide the best solution to the client [7].

It can be safely concluded from the studies that coordination is not formally planned nor kept on records. Teamwork is realized as an important tool for improving coordination among team participants. Early team integration is expected to result in better coordination. More number of participants also results in more communication problems. The interaction of participants in a friendly atmosphere and at early stages of the project, may help in reducing the coordination problems in the construction industry.

Itami & Roehl (1987) identified integration as an "invisible asset" [8]. The process of schedule development should involve an interdisciplinary team expert and well represented by construction personnel. The experienced construction personnel should be available on a continuing or timely basis so that they can give their inputs to the design team. Construction expertise can also help in identifying potential areas where standardization can be applied in the design [2]. Timely review of project by construction personnel can also minimize accessibility problems on site and hence improve the working.

Reviews should be conducted by all team members at regular intervals to ensure the smooth working of the project and avoid any hindrances. Such meetings should be conducted at all stages of the work; the conceptual planning stage, the design development stage and field operations stage.

O'Connor and Miller (1994) identified certain barriers that do not allow early involvement of Contractor, which can be stated as contracting practice, teamwork and culture. There is a lot of resistance because of the prevailing culture of adoption of Contractor after the design has been finalized [9]. The construction manager should be involved as soon as possible in the project, so that he can bring advantage to the project through his expertise during early stage of design [10]. It is generally accepted that project performance can be enhanced when interaction occurs on a regular basis, beginning at an early stage in a project, in an open and trusting environment [11].

Early involvement of Contractor in design allows the contribution of construction knowledge and experience to design. Direct involvement of Contractor gains better cooperation between the Contractor and other participants throughout the design and construction process [12].

Team integration and regular reviews by all members of the team especially the contractors, are identified as important issues for better coordination and enhanced performance of the project. This also helps in minimizing the delays of the construction projects.

3. DATA COLLECTION AND ANALYSIS

An online survey was conducted to analyze the scenario in the construction industry. A total of one hundred and six architects were surveyed through an online survey and data regarding team integration and review meetings was collected. Some of the important questions were;

- Who are the team members at design development stage of the project?
- Are the Consultants involved at an early stage of design?
- Are the Contractors involved at an early stage of design?
- Are there regular Review meetings on site?
- When is the review meeting done by the project team members?
- Is the Contractor a part of team at review meetings during Design Development Stage?
- Is the Contractor a part of team at review meetings during Project execution/ Field Operations Stage?

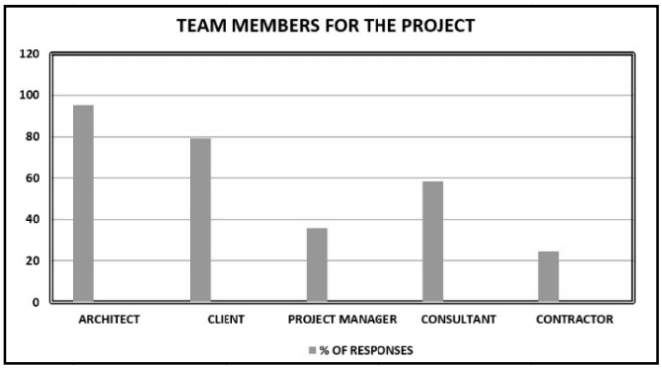

Figure 1: Proportion of team members in project

The respondents were asked to respond against the name of each member's designation, whether they are the team members in the project or not. According to the responses collected and presented in Figure 1, the team formed for the project comprises of Architect in 95.3%, Client in 79.2%, and Project Manager in 35.8%, and Consultant in 58.5% and Contractor in 24.5% of the cases. This data represents that Project managers and contractors are very rarely involved in the design and construction projects. The Consultants are engaged in projects not to an extent so that their services can be involved at an early stage of design. The Client is also not

involved in all the responses. This may be because in some of the cases, the Client hires the services of either a Project Manager or an Architect to take care of the project and transfers the responsibilities. In such cases, the finished project is handed over to the Client and all-important decisions are taken by the team member who has been assigned and authorized by the Client.

The consultants are involved at an early stage of design in 62.3% of the responses and the contractors are involved at an early stage of design in 18.7% of the responses only, as shown in Figure 2. This identifies that the team integration is not encouraged in the construction industry because a team is said to comprise of all the five members, whereas the contractors are not integrated in 81.3% of the cases responded.

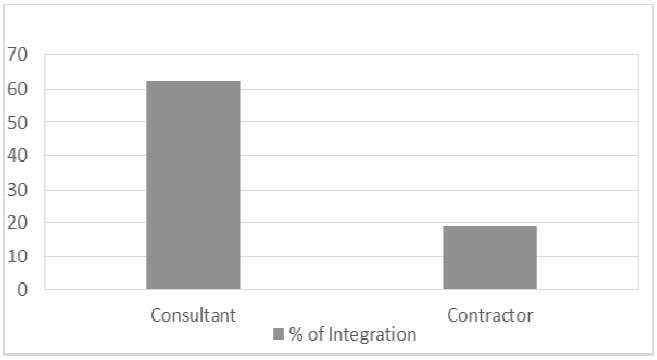

Figure 2: % Involvement at initial stage of project

The respondents agreed that there are regular Review meetings on site in 95.4% of the responses, which is after the execution of the work has started. On further investigation about stages at which these review meetings are conducted by the project team members, it was observed that such review meetings are widely accepted idea at conceptual planning stage in 41.7% of the responses only. Meetings are conducted at design development stage in 71.3% of the responses, as shown in Figure 3. However, regular review meetings are accepted to be conducted as 82.4% by the respondents, generally.

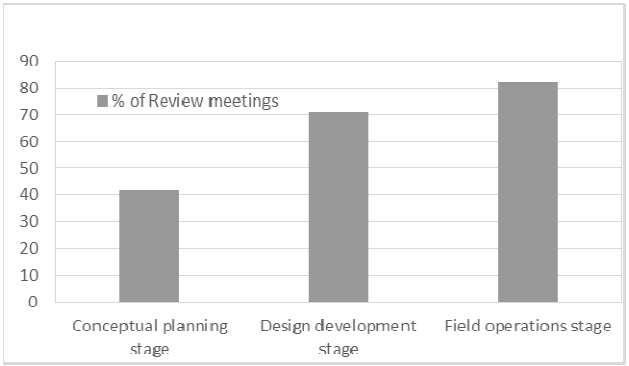

Figure 3: Review meetings conducted

This verifies that the acceptance of such meetings is high at the execution stage of the project, which is the normal practice and seems logical from the point of view of respondents. But the importance of review meetings and inclusion of contractors in meetings is not generally realized at initial stages of project. The Contractor is not a part of team at review meetings during Design Development Stage in 68.2 % of the responses whereas he is a part of team at review meetings during Project execution/ Field Operations Stage in 95.4% of the responses.

4. CONCLUSION

The participation of all team members is important at all stages of the project. But unfortunately the acceptance of contractors is observed to be minimal in team integration. This may lead to coordination problems at later stages of work, especially field operations stage. The Design bid build approach of handling construction projects is also responsible for this disintegration to great extent. Regular review meetings will be performed without satisfactory team formation and hence the project shall be deprived of the valuable suggestions from the construction personnel. It is always recommended to have all the team members; the Client, the Designer/Architect, the Contractor, the Consultant and the Project Manager from the initial stage of work.

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