A Study On The Factors Influencing Effective Communication In The Construction Industry

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Abstract - The construction industry of India is an important indicator of the development as it creates investment opportunities across various related sectors. Most common reason for construction disputes is breach in communication and expectations. Concerted effort is necessary to facilitate communications between the team members. Good communication within an organization and between organizations contributing to the construction project can improve the productivity. Increasing the productivity eventually leads to the minimisation of cost. Communications’ effectiveness is a function of matching communication patterns to the nature of the project team task. Communication problems can be minimized only when their causes are identified. All requests for information, change order requests, and directives to and from the Client should be introduced in writing and addressed through proper channels to ensure issues are responded to by the right party without delay. Poor co-ordination and communication of design information lead to design problems that cause design errors. The objective of this study was to identify the major causes of communication problems occurring in construction. This study was carried out based on literature review and a questionnaire survey. The factors influencing communication has been identified and this has been used for preparing questionnaire. The data for this study will be gathering through a detailed questionnaire survey. The questionnaire is prepared for three categories of people namely workers, site engineers and contractors separately. This categorization was done because it was identified that major communication is among these three categories of people based on the literature review and expert opinion. The questionnaire form is forwarded to various construction industries through email and in personal.

INTRODUCTION

1.1 GENERAL

Communication can be viewed as a metaphorical ‘pipeline’ along which information is transferred from one person to another. Communication within project-based environments presents special challenges. This is especially true within the construction industry, where interaction tends to be characterised by unfamiliar groups of people coming together for short periods before disbanding to work on other endeavours.

Many of the problems that develop in construction projects are a result of both the temporary and inter-disciplinary nature of project teams. This complicates an already problematic communication environment in which technical language, an adversarial culture and noise/distraction all combine to prevent straightforward information flow from one party to another. Successful implementation of a construction project usually requires huge funds.

Construction conflicts affect the interests of many stakeholders in connection with big investments; they reduce profits and are therefore very expensive and unprofitable. However, the stakeholders become increasingly dissatisfied with the legal methods of construction conflict resolution. As a result, the existing confrontational culture often determines a reduction in labour efficiency and an increase in production costs. In the construction industry, conflicts sometimes seem inevitable due to high differences in interests among the participants of construction projects.

The construction industry operates primarily as a system of sub-contracting and purpose built alliances to bring a program to fruition and manage it thereafter. There is a wide spread of stakeholders involved in conceiving a building project through typical stages such as design, finance, build, manage, upgrade and, ultimately, replacement. There is therefore a major need for communications to be systematic, understood by all stakeholders and intelligently applied.

In a construction project, it is natural that different team members strive to achieve their own objectives. There is a constant struggle between “mutual interests” and “individual interests” of the different parties. Based on these two types of interests, inter-organizational relationships could be cooperative, competitive, regulating or conflictive. The traditional owner–contractor relationship is mainly competitive in nature which leads to a low degree of objective alignment.

In the context of construction conflicts, it should be noted that the parties to a construction contract agreement are bound by the contract. Their activities and relationships are regulated by the contract and law.

Vaijeyanthi. (IJ0SER) February - 2015
1.2 OPEN AND EFFECTIVE COMMUNICATION

By ensuring a culture of effective communication at the client, designer and constructor level, an environment of open and flexible communication for all parties is created. This enhanced communication regime is not only beneficial to building the relationship between the management team, but also to the project as a whole. A lack of effective communication, while it hinders the relationships of the management team, also has for further implications. It is important to create an environment for effective communication and the risk of insurance claims is reduced when good communication is affected.

A lack of effective communication between the designer and constructor leads to time delays. A project team needs to understand the value of effective communication in order to excel in safety. Communication will be more effective when participants take a proactive approach ability to take initiatives by exhibiting goal-directed behaviour. Despite this, a proactive approach does not always guarantee effective communication.

Indeed, as a communication chain becomes longer, it is more open to ‘noise’, i.e., forgetfulness, laziness and prejudices. Although often not intentional, this ‘noise’ has the potential to lead to differences between the expectations of clients, designers and constructors. These differences have the potential to have negative impacts on the construction process by affecting team members’ attitudes, perceptions and objectives. It is also important to note that, while team members can have good intentions regarding communication, the methods and channels used can sometimes hinder these efforts.

For communication to be truly effective, mutual understanding and collaboration between the sender and receiver must exist. A proactive approach employing a two-way symmetrical model of communication is suggested as a means to facilitate congruency between the project team. It also allows a free flow of information back and forth between parties, thereby assisting with the development of positive relationships. For the client, designer and constructor to achieve this, all three parties must agree on chosen means of communication. To enhance effective two-way communication flow between the client, designer and constructor, efficient communication channels must be employed. These channels should be as short as possible in order to achieve noise minimisation. This could be facilitated through face-to-face discussions, workshops, emails or tele/video conferencing. Although email is regarded as a useful communication technology, the ability to convey the meaning via body language, cadence and tone are lost, with the potential for content to be misconstrued. For these reasons, face-to-face communication is better.

Promoting shorter distances between communicators will lead to more efficient feedback and enhanced spontaneity. A positive correlation exists between groups working in a face-to-face situation and the achievement of greater team orientation. Thus face-to-face communication allows the development of project-specific goals and objectives.

Construction projects are, for the most part, constructed in situ. Even with the increased use of off-site fabrication and the wider use of pre-fabricated components, the final product is normally assembled and completed in the required site location. This necessitates the employment of an itinerant workforce, which can move from one project location to the next. This transience of location and the temporal nature of project teams poses many problems for workers such as longer working days, more expense in travelling to work and managing work/life balance issues, since their families may not be as mobile.

1.3 IMPORTANCE OF EFFECTIVE COMMUNICATION
The importance of effective communication to individuals, teams and organisations cannot be overstated. Virtually every text on how to manage people will contain important principles of how to communicate effectively with the workforce. Similarly, the management of organisational processes also demands that robust and effective communication channels are developed which enable their various components to be conjoined appropriately. The importance of communication to organisations is succinctly summarised by Armstrong (2001: 807):

- Achieving coordinated results – organisations function by means of the collective actions of people, but independent actions lead to outcomes incongruent with organisational objectives. Coordinated outcomes therefore demand effective communications.
- Managing change – most organisations are subject to continuous change. This, in turn, affects their employees. Acceptance of and willingness to embrace change is likely only if the reasons for this change are well communicated.
- Motivating employees – the degree to which an individual is motivated to work effectively for their organisation is dependent upon the responsibility they have and the scope for achievement afforded by their role.
- Understanding the needs of the workforce – for organisations to be able to respond effectively to the needs of their employees, it is vital that they develop an efficient channel of communication. This two-way channel must allow for feedback from the workforce on organisational policy in a way that encourages an open and honest dialogue between employees at all levels and the top-level managers of the organisation.

**PAST RESEARCH WORK COMMUNICATION IN CONSTRUCTION PROJECT**

Mitkus S., et.al (2014) demonstrates that product of communication between the parties-contract agreement (differently interpreted by the parties). It means that the most frequent cause of construction conflicts is unsuccessful communication between the parties to a construction contract agreement. Due attention to the drawing up of construction contract agreements would create strong immunity against pandemic conflicts and disputes. Other causes of conflicts in the construction industry identified in this article include unfair behaviour of construction participants and psychological defence mechanisms. Participants of the project should think that every person involved in the project are responsible for proper communication.

Zulch B. (2014) concludes that project team members need to collaborate, share, and integrate information and knowledge to realise project objectives. A project manager does not communicate with language only, but also with character, which includes attitude, behaviour and personality. Allowing team members to take responsibility for their work and sharing the vision with team members will enhance the formal flow of information in all directions, namely upward, downward, horizontal, diagonal and lateral, resulting in successful feedback. Thus, project managers who allow the team to take responsibility for their work will attain more from team members and communication will be more effective. The results indicated a people-orientated approach towards the management of a project.

**FACTORS IDENTIFICATION**

### 4.1 IDENTIFYING FACTORS INFLUENCING EFFECTIVE COMMUNICATION

From the literature survey and the experts opinion, various factors influencing communication are identified. They are

- Improper interaction
- Mistakes in agreement
- Problems in communication other than drawings
- Controversies with other parties
- Misinterpretation of drawings
- Flow of information
- Mistakes in the drawings
- Type and size of the project
- Not assigning the responsibilities properly
- Delay in making decision

These are common factors and for designing the questionnaire, factors relating to the three categories were separated. There are many methods in distributing the questionnaire form. The prepared questionnaire forms are distributed by post, email and in person. In addition to this, comments, suggestions are received from the respondent through the discussions with them.

- If new techniques are adopted in a project, and if the workers are not properly trained, there will be a lot of communication problems.
- Since different companies may work in a single project, misunderstandings between them will greatly influence the success of the project.
- If the participants are of different mindset and are of opposing nature, problems will arise.
- The flow of information should be proper without any interruptions.
- If the participants of the project don’t have trust on each other, they will not be willing to communicate properly.
- If the project participants don’t interact properly with each other, ideas or information cannot be conveyed or understood properly.

Construction is a process with the following key players: client, contractor, subcontractor, designer, construction technical
supervisor, workers. However, the analysis is focused on conflicts between the parties directly participating in the construction process, i.e., among the workers, supervisors and contractors.

4.2 COMMUNICATION BETWEEN CLIENT AND CONSULTANTS

Communication between the client and the consultants is a continuous process from the inception of the project till the final completion. The client is the initiator and financier of the project and the project must be executed to suit his needs and requirements. The first communication in this stage is the client’s statement of requirements. It includes information about the size, nature, availability of funds, functions and time limitations of the project. The client’s communication should be clear in this case as many stakeholders participate in development of his requirement functions. The architect or quantity surveyor after carrying out feasibility studies with other consultants who have been appointed to establish that the project is feasible, functionally, technically and financially, prepares a general outline of client requirements and communicates it to the rest of the members of the design team for collective action. The development of the client’s brief is a collective effort of all the consultants who in the course of granting approval for such work communicate any alterations and modifications they want effected in the project to the consultants. This procedure continues until the design of the project is completed and the consultants jointly present their design report to the client to confirm that it is a clear translation of his brief. The design report must be detailed to include all relevant information required and presented in a manner to be understood by the client (Ayeni, 1986). The interviewees of this study found that in Indian context, this is a crucial problem. Most of the times, there is a communication gap in understanding the client’s needs by the consultants and on the other hand, in understanding the planning and technical details reported by the consultants to the clients.

4.3 COMMUNICATION BETWEEN CONSULTANTS

This involves effective exchange of ideas and information among the professionals within the design team to advice the client on smooth running of the project. During this phase, the documentation for tendering and contracting the physical construction or for procuring equipment is prepared. There is also a need for architectural, structural and service drawings to be required by the quantity surveyors. The specifications must be clear, definite and concise so that when read with the drawings, they set out the quality of materials and the workmanship or standard required in the project to enable the quantity surveyor to prepare his bill of quantities. During the progress of the work, all of architect or engineers’ instructions intending to alter the original scheme of work are sent up to the quantity surveyor and must be detailed enough to enable him establish the cost implication of the project and give professional advice. The changes in the designs also need an approval of the client and the important stakeholders of the project. Most of the interviewees pointed out that, a proper flow of communication from the client to design team, from design team to client and then after evaluation, from consultants to contractors should be followed. If any step of this flow is ignored, it generates a series of conflicts and misunderstandings. Regular design and specification review meeting is one of the important features of this stage of the project. Arranging the documents of the construction contract, negotiating with the qualified design professionals, providing the qualified design professionals with the needed information, updating and reviewing design documents, negotiating contract price with qualified contractor, interpreting and clarifying ambiguities in the contract documents etc. are important communication activities in this stage.

4.4 COMMUNICATION BETWEEN CONSULTANTS AND CONTRACTOR

All emphasis in this stage has been laid on consultants’ planning, carrying out studies into areas that might affect the success of the proposed project and exchanging information between the planning team and client. In this stage, the communication network is extended to a very important member of the construction industry, the contractor, who translates all efforts of the consultants into reality which should correspond with the client’s requirement. The idea of tender for a project is first communicated to contractors through public advertisements or invitation letters depending on the tender procedures adopted. The quantity surveyor examines the bill of quantities and communicates his findings and recommended actions to the client through a tender report for the purpose of selecting the most suitable contractor. The same procedure is used to select specialist sub-contractors. Consultants regularly communicate and follow up with the contractors to ensure that the contract provisions are applied. There is also an interim evaluation wherein exchange of information between the contractor, quantity surveyor and the design team happens. The interviews were of the opinion that the communication between the consultants and the contractor is a crucial stage. They pointed out that the consultants have to provide clear information to contractor without any ambiguity which facilitates the smooth functioning of the construction project. In large-scale construction projects in India, different consultants work together. Their location might be scattered. At times some of the members of design team are of foreign countries and in such cases communications between them and the Indian contractor firm plays an important role in proper execution of the project. If this is not done properly, project execution doesn’t happen as planned. The effects of communication problems in this stage as per the interviewees were wrong constructions, delays, cost overruns etc. which might occur due to improper communication between the consultants and the contractors.

4.5 COMMUNICATION AT SITE

The construction site is a place where the entire efforts made by the design team in visualizing the client’s requirements will be put into practice and hence communication on site involves all parties responsible for the project. The interviewees selected for
this study were of the opinion that it is the most important communication stage of all stages. They pointed out different processes where role of efficiency in communication is very important at this stage. As per them, apart from the formal communication between the contractor and the consultants in form of drawing, specifications, schedules and the bill of quantities which shows the extent of the work to be done, the contractor is also in close contact with the consultants during site meetings. Generally, site meetings are the regular meetings held on the construction site to discuss the progress of the project till date and the difficulties and delays which arise during various stages of the project. This gives the contractor and his principal sub-contractors a good opportunity to sort out their issues with the design team. The site meetings are expected to establish a good link between all the parties involved. The biggest communication challenge in on site communication as per the interviewees is the information about variations in designs and other specifications. If these changes are not communicated formally and in written form, it can spoil the project construction activities and disputes might arise out of this. Another important form of onsite communication is weekly reports and monthly reports. They are a valuable document for the consultants as these keep them informed about the daily activities on site. It also serves as a reference when dispute arises at a later date. Communication within the contractor’s organization includes communication between work area, control points and storage areas. Communication between the store team and the execution team is most common. It is a link between manpower and materials. This aspect of communication is really very important as the work force is an essential part of the industry. This is because unless labour receives regular flow of materials and also is informed of what to do with them, work will definitely not happen no matter how good the management is. Another important communication in this stage happens between control points and work area where managers and supervisors are in close contact with the work men via verbal or written information. The project manager prepares communication plan at the beginning of the project and coordinates with various participants to successfully implement the project.

The interviewees said that the communication with labourers is again a very crucial thing on construction sites. Especially, in a country like India, where labourers from different states, different communities, and speaking different regional languages come together, communicating with them becomes a critical issue. The communication between the construction managers, site supervisors and the project managers should essentially be able to communicate efficiently with them understanding their problems for the smooth functioning of the site operations.

Almost all interviewees were of the opinion that on-site communication failures generate a series of problems in project execution. Various problems occur in information management which includes the lack of maintenance of site records defects in many constructed works etc. Poor co-ordination and communication of design information lead to design problems that cause design error.

4.6 ALLIANCE CONTRACTING

An alliance contract offers clients and contractors a practical solution to overcome the recurring problems encountered in the traditional design-and-construct-style contract. Such contracts take the form of agreements binding the parties together with respect to targets, risk and reward mechanisms. The entire alliance entity is therefore at risk of failure should something go awry, a feature which essentially alters the group dynamics, motivation and cohesiveness between the alliance members vis-à-vis those of a traditional contracts. In this way, alliance contracting has the ability to recognize conflict and ensure timely and collaborative resolution of issues. Traditional contracts place responsibility and risk on the constructor, which can potentially lead to conflict, contractual disputes and expensive claims. An alliance contract, however, can potentially distribute risk throughout the alliance team. A limitation to this contracting method is a lack of multidisciplinary skills on the part of the client, designer and constructor, which may limit the scope of communication between them. However, if mutual interaction, effective communication and the sharing of resources is promoted, the complementary expertise of team members can overcome these barriers. Novice or unprepared team members may also pose a possible limitation to this style of contract since they might find the concept too challenging, or else may not realise the value of high-level collaboration.

RESULTS AND DISCUSSION

5.1 DATA ANALYSIS

Totally for five companies the questionnaires were given. The questionnaires were given for eight workers out of which five responded. Hence for workers the response rate is 62.5%. The questionnaires were given for six supervisors out of which three responded. Hence for supervisors the response rate is 50%. The questionnaires were given for five contractors out of which two responded. Hence for contractors the response rate is 40%. The results obtained were given in bar charts for the three categories separately.

5.2 WORKER:

<table>
<thead>
<tr>
<th>type of communication</th>
<th>indirect</th>
<th>direct</th>
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<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>4</td>
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<td>2</td>
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Fig. 5.1 Responses from workers

**INFORMATION:**
The average percentage was taken for analysis of workers. It is seen that direct communication is the best way of communication. It is also seen that experience and training have a greater impact on communication, and the language problem varies according to the site. Interaction with owner is very rare.

**5.2 SUPERVISOR:**

![Diagram showing responses from supervisors]

**INFORMATION:**
The average percentage was taken for analysis of supervisors. It is seen that direct communication is the best way of communication. It is also seen that experience and training has a greater impact on communication and the language problem varies according to the site. They interact with owner rarely and with the worker often.

**5.3 CONTRACTOR:**

![Diagram showing type of communication]

**INFORMATION:**

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Vaijeyanthi. (IJ0SER) February - 2015
Fig. 5.3 Responses from contractors

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It is observed that controversies with client is high and mistakes do occur in the agreement. It is also seen that experience and training has greater impact on communication and the language problem is low. Type and size of the project influences communication greatly.

**CONCLUSION**

In the construction industry, the impact of communication in productivity and budget is not considered seriously. Hence this study will help in identifying the impact of communication. This will help in inducing the participants of the construction project to consider communication problems and also to obtain solution for it.

Based on the literature review and opinion of the experts, some factors like misinterpretation of drawings, controversies with the other parties, etc., have been identified as that influencing effective communication. For the first phase, there are only few responses. Hence analysis is done using excel sheet. From the people responded, it has been identified that direct communication is more effective than indirect communication. Also there are controversies with the clients and mistakes in agreement between owner and contractor which are not considered significant.

For the second phase, analysis will be done using SPSS software. SPSS is an analytical software, used to perform data entry and analysis and to select the specified factors. Based on the responses and analysis done, suggestion and recommendation will be given to enhance the construction industry.

**REFERENCES**


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