The Significance of Communication to Manage Construction Projects Safely: A Case Study of a Residential Construction Project

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Executive Summary

Improper communication in construction sites is somehow fatal, due to informal and inadequate communication between project management and project team, however proper communication between all project team and workers should be enhanced for a safer project.

This report is going to analyze improper communication problem lead to fatal consequences and give a methodology to properly communicate between project team with the different Types of Organizational Communication, and how a project manager can plan communication for a safer project, distribute the information and control the project communication.

Introduction

A professional project manager is a great communicator; in projects communication is one of the most important aspects in any project success, as Herbert A. Simon a Nobel laureate said “Communication is absolutely essential to organizations” (Schuster, 1997). One of the biggest issues in work places is communication, false information; improper communication and misunderstanding between project team can lead any project to failure.

Occupational Safety and Health Administration report ((OSHA), 2012), indicated that 4,628 workers were killed on the job in 2012 (3.4 per 100,000 full-time equivalent workers) – on average, 89 a week or more than 12 deaths every day.

This report is going to define a communication problem related to safety in construction site and give an example on how improper communication in a project lead to fatal consequences and analyze this problem to give methodology to overcome this issue.

Definition of the problem

In construction projects risk is high in all aspects whether cost, time, quality or safety. The problem in this report is how improper communication management can lead to accidents and unsafe work place.

Workers get hurt, injured or even die because of lack of safety supervision, unsafe conditions, inadequate training and in lots of cases communication mistakes. Improper communication between project management and project team is sometimes fatal. This
This report is going to emphasize the importance of proper communication and how dangerous it can be if it is not well managed.

This report case study is about an accident that occurred in a 137M US Dollars project when two workers died, one rescued and one was survived, and the main reason of this accident as per HSE, project manager, consultant, and the municipality reports was a communication mistake. This mistake cost the company 2 lives, site was closed for one month, and moreover fines were issued.

The project is four 23-story residential buildings, consisting of the following:

- Developer: Project manager and 4 Engineers.
- Consultant: Resident Engineer and 3 Civil Engineers
- Subcontractors: 43
- Main contractor

<table>
<thead>
<tr>
<th>Management Role</th>
<th>Responsibility</th>
<th>Number of Engineers</th>
<th>Assistants/Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Construction Manager</td>
<td>Tower A,B,C,D</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>Construction Manager 2</td>
<td>Basements, parking levels</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Construction Manager 3</td>
<td>External Works</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Safety manager</td>
<td>Safety of the site</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Technical manager</td>
<td>QAQC and Design Departments</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>MEP Manager</td>
<td>MEP Coordination</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Whole Project</td>
<td>13</td>
<td>43</td>
</tr>
</tbody>
</table>

Table 1 the Main Contractor Staff
Figure 1 The main Contractor Organization Break down Structure

Time of the accident in the project Life Cycle:

The accident occurred within the execution process, at the peak to be precise, when most activities are in progress and risk is high. Please see Figure 2 Accident time with the project Life cycle when the number of workers exceeded 1700 workers.

Figure 2 Accident time with the project Life cycle
Accident overview:

On Thursday which is one day before official holiday in the United Arab Emirates, the Sr. Construction Manager prepared the list of work for next day which is Friday. The work description was to remove a platform in level 17th staircase shaft in Tower C to allow precast stairs to be installed; Project Engineer of Tower C was absent in the day of issuing this work. The Sr. Construction manager then instructed the charge hand to do this job.

In next day 4, workers started to do this job without foreman supervision. As they started this work, they faced concrete patch so they got jack hammer to break the patch; one worker left the site to get water when the platform collapsed from the level 17 to level 7. Two workers died immediately and one worker managed to hold on to scaffold standard and was rescued by his fellow workers.

Responsibility and reasons

After Investigation 3 members were found guilty for this accident that is:

1. Sr. Construction Manager
2. Safety Manager
3. Charge hand

As per QHSE (Quality, health, safety and environment) report, the reason for the accident was not proper communication by Sr. Construction manager when he instructed the foreman to do a dangerous job in the shaft of staircase without notifying the safety officer responsible, and without notifying or consulting the engineer for such risky job. Moreover the sr. construction manager didn’t provide a supervisor or engineer on Friday, which is also a very high risk day since supervision is too low during holidays. In Figure 3 Sender/Receivers of the order, Red highlight indicates missing receivers. This illustrates how the Sr. Construction Manager informally communicated directly to the charge hand, missing other staff who should have communicated, and ignored the work permit reports which should have been issued from the safety department. “Note: Red color boxes indicate the missing individuals who have been missed to be informed by the Sr. Construction Manager”.

The project manager noted in the report that “It is obvious that there are a number of breakdowns of communication and following proper procedure for the activity; more assessments of the task should have been carried out prior to commencing the work to come up with a safe method of execution” he said.
Analysis of the problem

Types of Organizational Communication

Communication is one of the main issues that appear in organizations, yet it is one of main aspects for a successful one. In the construction field improper communication between management and project team can lead any project to fail; a delay in message delivery can lead to fatal consequences. Communication in organizations has four patterns which are order, consultation, registration and report. Herbert Simon in his book “Administrative behavior” (Edition, 1997) discussed the two types of communications in organizations which are formal and informal. He defined Formal Communication as any process whereby decisional premises are transmitted from one member of an organization to another. However (Businesscom, 2013) discussed the difference and variety of formality between vertical and horizontal communication in organization. See Table 2 Horizontal and vertical communication differences in organizations.

<table>
<thead>
<tr>
<th>Differences</th>
<th>Horizontal Information</th>
<th>Vertical Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning</td>
<td>When information send through a person holds same position in an organization</td>
<td>When communication happen between superiors to subordinates</td>
</tr>
<tr>
<td>Purpose</td>
<td>To coordinate the activities between departments</td>
<td>To provide required instructions or orders to subordinates in downward direction and receive feedback from subordinates in upper direction.</td>
</tr>
<tr>
<td>Information Flow</td>
<td>Information flow between people have same status</td>
<td>Information flow from superior to subordinates and vice versa</td>
</tr>
<tr>
<td>Degree of Formality</td>
<td>Greater degree of informality</td>
<td>More formal</td>
</tr>
<tr>
<td>Method of Communication</td>
<td>Through oral media</td>
<td>Through written media like memos, letters, manuals etc.</td>
</tr>
<tr>
<td>Possibility of distortion</td>
<td>Low possibility of distortion</td>
<td>Higher possibility of distortion</td>
</tr>
</tbody>
</table>

Table 2 Horizontal and vertical communication differences in organizations
Methodology

(Stanton, June 13th, 2013) Discussed in his article “Communication is key for construction safety” the three essential elements for a safer project which are; planning, communication and accountability. That is, if we concentrate on them, safety for any project would be improved. (Stanton, June 13th, 2013) Added since these days projects size has been changed, the need for expanding communication tools is essential where in old times contractors used to rely on face-to-face communication. (Richards, 2014) Agreed with Stanton that face to face communication is not enough in these days projects as a result the need of new ways of communication was important whether it is verbal, visual and nonverbal communication tools.

In this case study the Sr. Construction Manager verbally instructed the foreman and the foreman verbally instructed the workers one day before the execution of the work supposed to do. However the foreman did not visually teach them how to do the work and since the safety officer did not receive the order, the safety department could not inspect the site nor supervise the unsafe condition. Yet a safety permission report was not conducted.

Interactive Communication

(Institute, 2008) PMBOK stated that to ensure common understanding by all members on specific topic, use of interactive communication is required like meetings, phone calls, video conferencing...etc.

As per figure below Professor Claud Mayfield stated that sender sends a message to a receiver and the receiver becomes a sender and sends a message to the original sender. Moreover it has “Field of experience” which includes cultural background, geographic location, travel, and general experience.

Figure 4 Interactive model of communication by the Communications Professor Claud Mayfield at James Madison University
In our case study the Sr. Construction manager failed to send the message to the engineer and safety manager. As a result there was no feedback from them; moreover it was one way communication to subordinates informally.

**Top down Approach**

In the top-down approach, which is called downward communication as well, all project team should be accountable and know their responsibility towards their decisions. When superiors deal with subordinates, and since this report is studying communication related to safety, vertical communication is required, and since it is related to people lives, formal communication is important.

**Plan Project safety communication**

(Institute, 2008) stated in PMBOK that it is the process of determining the project stakeholder information and defining a communication approach. Furthermore it responds to the information and needs of stakeholders; that is, we need to ask ourselves who needs the information and how will it be given and by whom, moreover (McNamara) emphasized in his article to plan communication in organizations formally and informally.

Communication plan helps a project manager to communicate effectively which information is provided in right format, time and with right impacts. A project manager should work with HSE department to create an HSE plan for a project which includes programs of work that have potential risks and need to be managed properly, assignment of responsibilities for health and safety to site team and safety department, and setting standards for health and safety targets for a project. Moreover a project manager should arrange rules and regulations.

**Control Projects Safety Communication**

(McNamara) Stated emphasis on communication supervision by the project manager; that is, a project manager should watch his team communication through:

1. Having employees provide weekly written reports.
2. Holding meetings with staff regularly.
3. Having supervisors meet with their direct reports in one-on-one meetings.

(Institute, 2008) PMBOK stated that a reporting system by the project manager is a standard tool to capture and distribute information to the stakeholders, and they give examples like visual reporting, spread sheet and presentations.

In addition a project manager and HSE department can control communication between site team and HSE department by arranging verbally, visually, and non-verbally the following:

1. Regular coordination between site team on site.
2. Consultation with the workforce.
4- Coordinating with design changes during construction.
5- Information exchange between HSE and site team.
6- Site security/access arrangements.
7- Site induction.
8- Sub-contractors management.
9- First aid arrangements.
10- Inadequate accidents and incidents reporting system.
11- Creating and approving method of statements for unsafe jobs.
12- Fire evacuation plan.

**Recommendations**

Any project manager aims to close his/her project on time, within budget and with best quality. Therefore the project manager should follow the procedures and process of management in order to guarantee the best outcome.

Safety in projects needs to be maintained and in order to maintain it, a project manager should use proper communication methods among site team, use the right way of distribution information formally and informally, use the communication tools for safe activities, and coordinate effectively with safety department. He should emphasize vertical communication, and make sure orders are sent to the receivers properly and adequately, making sure feedback from subordinates is received. Moreover safety planning is essential and safety must be controlled throughout the project by implementing site safety rules and regulations verbally, visually and non-verbally.

**Conclusion**

One of the most important qualifications in a project manager is communication. As a leader a project manager should maintain proper communication between project team to ensure proper progress, less costs and better quality of work.

This report defined how improper communication in construction projects can lead to deadly consequences. It gave a real situation problem and introduced a methodology to communicate between teams and management. It defined the organizational communication types, whether formal or informal, and the differences between vertical and horizontal communication. In addition this report emphasized formal communication related to unsafe work, and how accountability and responsibility should be shared by all project team to keep them alert. Moreover this report emphasized that in order to communicate better for a safer project, we should use verbal, visual and non-verbal tools.

Finally it discussed how a project manager should plan and control communication between project team members in order to maintain a project safely and on time.
Bibliography


Stanton, J. (June 13th, 2013). Communication is Key For Construction Safety. Safe Build Alliance.
About the Author

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Ramaz S. Issa is a Civil Engineer, is studying for a Master of Science degree in project management at the British University in Dubai, and is a PMP candidate. Ramaz is a Civil Project Engineer in Dubai, UAE. He has participated in managing three multi-million dollar projects which include, complex of four residential buildings, container terminal works building package that includes offices & various Industrial buildings, and a four stars hotel. Ramaz earned his bachelor's degree in civil engineering from the University of Sharjah and aims to finish his MS degree in project management from the British University in Dubai in 2016.

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