

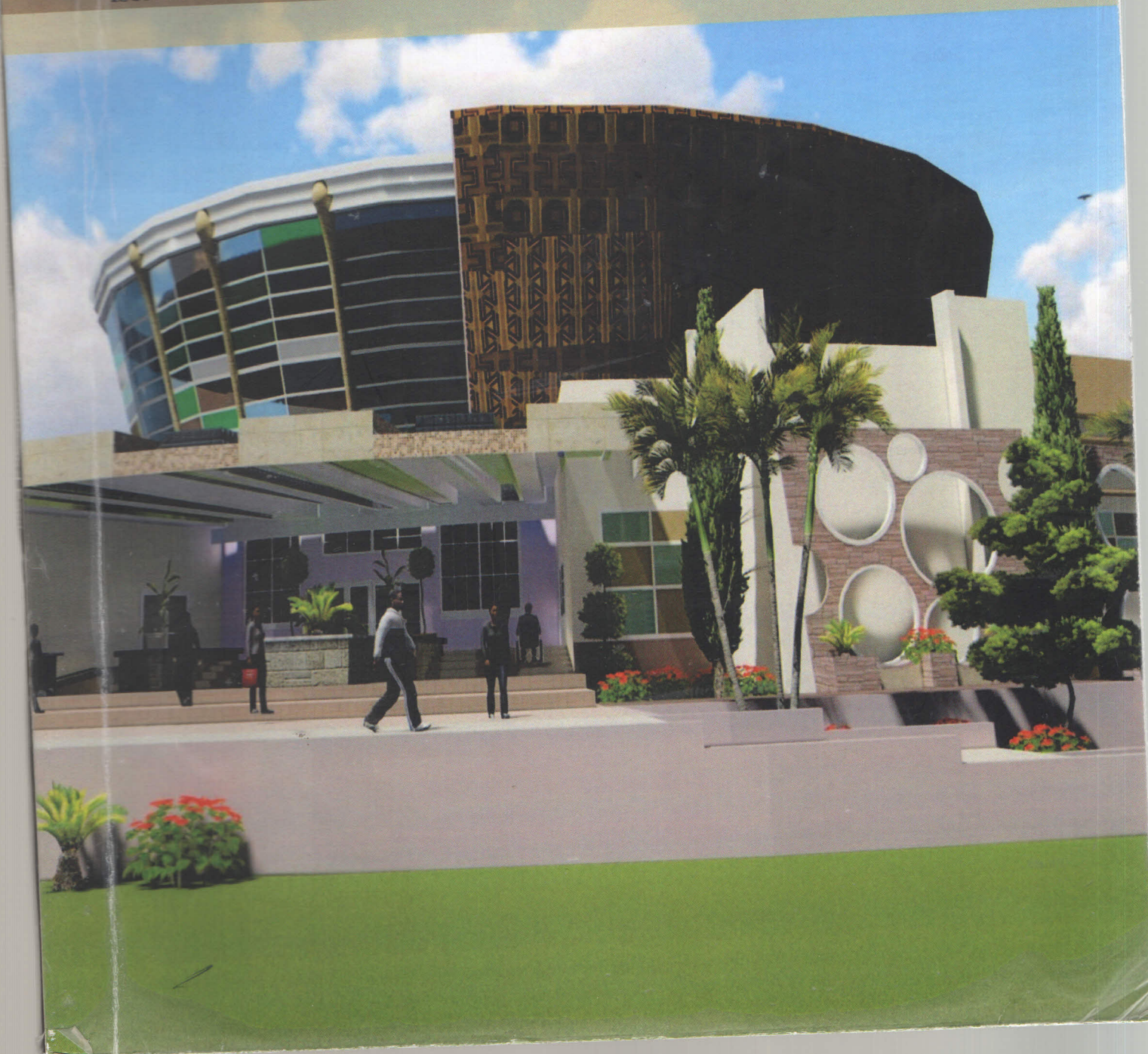
ARCHISEARCH

INTERNATIONAL JOURNAL OF ARCHITECTURE AND ENVIRONMENT

ISSN 2141-9019

2017

Volume 7, Issue 1





AN ASSESSMENT OF THE EFFECTIVENESS OF HEALTH AND SAFETY COMMUNICATION STRATEGIES IN THE CONSTRUCTION INDUSTRY

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Abstract

Accidents and injuries are growing problems on construction sites in Nigeria as well as in many other countries. The occurrence of accidents on construction sites usually leads to site closure for accident investigation, loss of man/machine hours, loss of output, loss of corporate reputation, payment of burial expenses/compensation/insurance claims for the dead. Previous studies suggested poor communication of Health and Safety (H&S) information among site personnel as one of the major causes of accidents on construction sites. These previous studies have made little headway in identifying the best strategy for effective communication of health and safety information between contractors and on-site personnel. Therefore this study will identify and assess the communication strategy used on construction sites in Lagos State. Lagos State was chosen as the study area because 60 - 65% of head offices of contracting organizations were located in this area. In addition, the study area is very active in terms of project/construction activities. A total of one hundred and forty-five (145) questionnaires were administered on contractors and site workers through convenience and snowballing sampling. A total of sixty-eight (68) properly completed questionnaires were analyzed resulting in an effective response rate of 47%. The mean score of each item was adopted to rank them in order of importance. The results of the study revealed that only nine (9) out of sixteen (16) communication strategies identified are actually important. The most significant five (5) strategies in order of importance are: training workshop; project briefing; safety induction; operating procedures and posters. It is recommended that the significant strategies identified from this study can be used to communicate H&S information on construction sites thereby reducing accidents on sites.

Keywords: Accidents, Communication strategies, Construction sites, Health and safety, Work environment.

INTRODUCTION

Construction health and safety (H&S) risks are a grave concern for both practitioners and researchers all over the world (ILO, 2005). ILO estimates that at least 60,000 fatal accidents happen in a year on construction sites around the world, which is one in six of all fatal work related accidents. Occupational health and safety statistics presented by different researchers revealed that the injury and fatality rate in construction projects is very high in comparison with other sectors of industry in the majority of countries (Lingard and Rowilson, 2005; Laryea and Mensah, 2010; Muiruri and Mulinge, 2014). In Europe, for example, construction is responsible for about 22.5% of all occupational deaths (Berger, 2000). In United State, it accounts for 20% of all fatal accidents, yet it employs only 5% of the total working population (Gorse, 2006). According to Ling *et al.*, (2009) construction accidents in Japan account for 30% - 40% of the overall total of industrial accidents, and 50% in Ireland. Ling *et al.*, (2009) also confirmed that construction accidents account for 59% of total accidents in all industries over Singapore. In Italy, the fatal accidents in construction represent 25% of the total accidents (Ejiugwo, 2013). Other researchers conducted in developing countries corroborate evidence of this relatively high proportion of accidents on construction sites. In Ghana, it was reported that the construction industry recorded 902 accident cases in 2000 (Dansoh, 2005). Furthermore, Kwofie, (2015) revealed a poor state of health and

safety on Ghanaian construction sites. According to Agwu and Olele (2014) the situation is quite pathetic in Nigeria because there is no existing functional legislation to that effect. In Nigeria though there is no reliable data on accident cases in construction, because contractors do not report accidents at appropriate ministry nor keep proper records on accidents (Adeogun and Okafor, 2013). The occurrence of accidents on construction sites usually leads to site closure for accident investigation, loss of man/machine hours, loss of output, loss of corporate reputation, payment of burial expenses/compensation/insurance claims for the dead.

Various studies were carried out to assess the causes of these accidents. Findings from research studies have pointed to poor communication of health and safety information as a major cause of this problem (Kirchsteiger, 2005; Smith *et al.*, 2006; Jung *et al.*, 2008; Ahadzie and Amoa-Mensa, 2010; Ibem *et al.*, 2011; Phoya, 2012; Kwofie, 2015; Akunyumu, 2016).

Vecchio-Sadus (2007) confirmed that communication is critical to achieving a safe work environment by giving and receiving information about hazards and risk controls. Through communication, project participants are informed and educated about protective action and warned about disasters and how to manage emergencies. Preece and Stocking (1999) observed that the communication strategies used on construction sites include photographs, diagrams, training,

handbooks, team briefings and toolbox talks. Vecchio-Sadus (2007) also acknowledged that different strategies are used to send H&S information on construction sites, such as: induction training, handbooks, team briefings, toolbox talks or supervision meetings. Ahadzie, Proverbs and Sarkodie-Poku (2014) emphasized that the communication strategies used during construction is crucial to attaining acceptable level of safety of workers. According to Zungu (2014) the way H&S information is communicated will influence whether people will accept or reject the strategy. Language used in communicating H&S information will often determine whether the strategy is understood and people will participate in the process (Zungu, 2014). This research examined the communication strategies of H&S information on construction sites in Lagos State, Nigeria. Lagos State was chosen as the study area because 60 - 65% of head offices of contracting organizations were located in this area (Babatunde, Babalola and Opawole, 2012). In addition, the study area is very active in terms of project/construction activities (Obamiro and Obasan, 2013).

LITERATURE REVIEW

Communication in Construction Industry

Concept of communication has been studied in business, sociology, anthropology, psychology and most recently in the field of organizational communication and this gives it a diverse

background (Dainty, Moore and Murray, 2006; Spitzberg and Chagnon, 2009). Communication remains a complex activity to define due to its broad application and practice in several domains (Dainty *et al.*, 2006). Communication can be described as a process of exchanging information and sending message to other people (Beard, 2012). It is a mutual exchange of facts, thoughts, opinions and emotions. The term has also been described as transmission of a message through a medium from sender to receiver to attain understanding (Velentzas and Broni, 2014). This requires presentation and reception, resulting in common understanding among all the parties involved. Communication as an indispensable management tool is a means by which individual uses to transfer meaning, ideas, feeling, emotion or attitude to others. Communication is critical towards attaining organizational goals, project success and improvement in relationship (Spitzberg and Chagnon, 2009).

It is, however, vital that everyone involved in a project can communicate. The inability to read safety information, method statements or warning signs on construction sites causes communication difficulties and can result in increased risks. This is because a significant numbers of manual workers' reading and writing skills are poor (Gibson, 2002).

Studies on communication in the construction industry have seen remarkable progress from the 1960s evolving from its importance to the sector,

exploring the role of Information Technology to communication in the construction industry, impact of communication to project performance and improving communication effectiveness and performance among the project team (Thomas, Tucker and Kelly 1998; Liu, 2009; Dawood, Akinsola and Hobbs 2002; Emmitt and Gorse, 2003; Dainty *et al.*, 2006; Gorse, 2006; Otter and Emmitt, 2007; Aiyewalehinmi, 2013; Bandulahewa, 2015).

Several studies that focused on communication in the construction industry and affirmed its importance to the sector further recommend studies on communication of H&S information (Liu, 2009; Xie, Wu, Luo and Hu 2002; Aiyewalehinmi, 2013; Bandulahewa, 2015).

Communication Strategies

A communications strategy according to Ejiugwo (2013), serves as a recommended framework and action plan for an organization's communications and outreach efforts. There are similar processes of communicating information on sites, though no one is the same. All communication strategies share a common mission: to disseminate information on construction sites. Vecchio-Sadus (2007) also acknowledged that different approaches are required for different organizations and deciding the strategy to use to communicate particular information depends of the type of information and the recipient of the information. On construction sites different tools can be

used to send information, such as induction training, handbooks, team briefings, toolbox talks, supervision meetings or other management meetings, specific or general instruction or training sessions and hands-on training (Phoya, 2012). Communication must be understandable by the audience and may require the use of photographs, diagrams or a translator. People in interaction with each other tend to communicate in different ways, either formally or informally (Bohrmann, 2000). Formal communication is communication that is spontaneous, structured, interactive and rich, conveyed through communication channels while informal communication is interaction between individuals without rules or hierarchy. The following strategies were highlighted by Vecchio-Sadus (2007), Ejiugwo, (2013) and Muiruri and Mulinge, (2014):

Organization Mission Statement, Policy and Strategic Plan

Organization mission statement and policy will assist to define and communicate the direction of the health and safety process and will provide a reference for making organization decisions. Organization strategic plan can communicate the objectives and priorities that are aligned with the overall business plan.

Organization Statistics

Construction organization can communicate its performance through graphs of lost time, medical treatments, workers compensation rates, severity and incident rates and performance indicators. These are used to

facilitate continual improvement and enhance the accountability of line management for meeting an organization's health and safety objectives.

Safety Induction

Information can be communicated through health and safety practitioners and supervisors on site rules and requirements, emergency procedures and incident reporting to enable new employees, visitors and contractors to carry out their duties in a safe manner from the moment they come on site.

Risk Assessment

Anyone can be at risk without realizing it. Some hazards such as heat, chemicals and moving parts communicate an immediate threat of injury. However, there are risks that are not apparent such as gases that cannot be perceived, e.g., carbon monoxide which is highly toxic and has no smell. A risk assessment can help identify workplace hazards that pose a risk to people and the environment, assess the magnitude of those risks and apply controls to mitigate risk.

Manuals, Checklists and Operating Procedures

An organization's safety manual consolidates the rules and requirements for working safely. Checklists can be used as checking tools or guidelines tools to help prevent incidents and miscommunications, increase hazard reporting, better operate equipment and make informed decisions about operation.

Maintenance logbooks provide a historical profile of plant and machinery. Operating procedures provide advice on acceptable and safe work practices. The lock-out or tag-out of faulty equipment or work in progress on sites can communicate potential danger (Vecchio-Sadus and Griffiths, 2004).

Hazards, Incidents and Near-Misses

Communicating the results of a hazard or incident investigation demonstrates management commitment in identifying and addressing underlying causes to prevent a recurrence. The involvement of employees in suggesting strategies to prevent a recurrence encourages ownership of the solution(s) and a desire to implement the recommendations. It is important to have on-going campaigns to encourage the reporting of incident and injuries as many employees will not report for fear of recrimination. Reporting near-misses ensures remedial actions are implemented prior to incident causing injury or ill health. Safety alerts draw attention to issues that may require immediate attention.

Training

Training is conducted to respond to gaps in knowledge, to target high-risk groups or areas, and to adjust perception of risk. Training in safe work methods should involve raising employee's awareness of their true values towards health and safety, include being able to work without injury so they can continue to provide for their family.

Health and Safety Website

With a vast amount of information available, it is essential that the critical information on health and safety is readily accessed and understood. A health and safety intranet can provide a one-stop shop that includes the safety manual, policies and fact sheets. The resources must always be available to keep the workforce informed so they are better able to respond to changing risk and to prevent incidents and injuries. For Health and safety website to be effective, people need to know of its existence, they need to be motivated to access the information and the information needs to be updated regularly.

Brochures, Posters and Videos

A wide variety of publications on health and safety matters are available. They can range from simple instructional leaflets on particular topics such as safe lifting, electrical safety, personal fitness, through to general items such as checklists and guides to legislation and sources of further information to more detailed reports and books. Small instructional leaflets can be suitable for general distribution and should be printed matter in several languages if the workforce is multicultural. All publications should be studied for suitability before distribution. It is possible to communicate health and safety through an organization's in-house newsletter. Posters can overcome language problems through the use of illustrations and symbols. To maintain attention, posters should be kept on a

special display board and changed at frequent intervals.

There are a wide variety of videos and films to raise awareness in the general health and safety area. An advantage with videos is that facilities are readily available to make screening easy. The advent of DVD video allows greater portability of the material as it can be viewed on a computer. This eliminates the requirement for a video player. Although there are a number of excellent international training videos with a universal appeal, employees are likely to better identify with the subject illustrated in local versions as there is a greater acceptance of material where the narration is in the native tongue. To have the maximum impact, videos and films on health and safety should convey a sense of reality. It may add value to follow a video or film with a slide presentation illustrating local examples or to structure a discussion to make it relevant to the particular workplace.

Safety Week

A safety week aims to promote a happier and healthier workplace by raising the level of awareness amongst employees and demonstrating commitment from management. Such events provide an excellent opportunity to showcase health and safety at its best, and it's where creative activities can be offered. Activities can include seminars, videos, health checks (e.g. cholesterol test, blood pressure check, hearing test).

Public Report

Many companies report on health and safety in annual Health and Safety Report that illustrates the range of activities and initiatives undertaken along with a review of performance standards achieved. Reporting health and safety in an annual report helps to demonstrate an organization's commitment, achievements, in workplace safety and employee welfare.

Health and Safety Conference

Health and safety conferences provide an opportunity to share broad information on health and safety and case studies from different organizations. They provide a forum for meeting with other health and safety professionals and managers.

To enhance effective communication on construction sites, efficient communication strategies must be employed. These strategies should be as short as possible in order to achieve noise minimization (Amami and Beghini 2000). This could be facilitated through face-to-face discussions, training, workshops, emails or tele-videoconferencing (Amami and Beghini 2000). Although email is regarded by Weinstock (2006) 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, Cheng *et al.*, (2001) preferred face-to-face communication. These authors stated that promoting shorter distances between communicators

will lead to more efficient feedback and enhanced spontaneity. A study undertaken by Hayward (2006) found a positive correlation between groups working in a face-to-face situation and the achievement of greater team orientation.

METHODOLOGY

The main objective of this study is to identify and assess different communication strategies used on construction sites in Lagos state. To achieve the objective, a comprehensive literature review was carried out to identify H&S communication strategies adopted on construction sites. The communication strategies identified were adopted as basis for questionnaire design. The target population comprises contracting organizations i.e. contractors and site workers within Lagos State of Nigeria. One hundred and forty-five (145) questionnaires were administered on contractors and site workers through convenience and snowballing sampling.

The questionnaire was structured and divided into two categories: the first category was designed to get information about personal data of the respondents such as education, profession, roles and year of experience in construction industry also involvement in H&S matters, and level of awareness of communication of H&S information.

The second set of questions was designed with the purpose of establishing the most important strategies used in communication of health and safety information. Respondents were asked to

rank what practices/strategies they thought would help overcome the issues in communicating H&S information. They were therefore requested to rate the importance of the 16 variables identified from literature review on a five point Likert scale from 1 = important to 5 = strongly agree. Respondents were also requested to state and rate other strategies considered not included in the questionnaire that are used to communicate H&S information on construction sites in the study area.

DATA ANALYSIS AND DISCUSSION OF RESULTS

A total of 68 completed questionnaires were analyzed therefore, resulting in effective response rate of 47%. A total of 42% of the respondents are contractors while the remaining 58% are site

personnel. The years of construction experience of the respondents are 1-5 years (18%); 6-10 years (11%); 11 – 15 years (22%); 16 – 20 years (28%); and 20 years and above (21%). In summary, about 78% of the respondents have more than 10 years construction experience. This observation suggests that the data collected from these respondents are reliable.

The contractors and site workers were asked to rate the communication strategies used during construction activities with respect to their frequency of usage on a scale of 1-5. The mean score ranking was adopted for analyzing this information. The results of the analysis are presented in Table 1.

Table 1 Mean rating of health and safety communication strategies in construction industry

Rank	Communication Strategies	Mean Score
1	Training workshop	4.78
2	Project briefings	4.70
3	Safety induction for operatives	4.56
4	Operating procedures	4.48
5	Posters	4.37
6	Safety manuals	4.11
7	Toolbox talks	3.96
8	Safety alert	3.80
9	News-letter/ bulletin	3.78
10	Operating checklists	3.70
11	Videos	3.56
12	Brochures/Handbooks	3.48
13	Written circulars	3.44
14	Health and safety conference	3.41
15	Safety week	3.38
16	Telephone calls	3.19

Findings of the Results

Table 1 shows the results of analysis of strategies used in communication of H&S

information on construction sites. Drawing from the illustration on Table 1, it can be inferred that only nine (9) out of sixteen (16) strategies identified are

actually important to be considered for communication of H&S information on construction sites. The five most significant strategies according to the magnitude of the mean rating in order of importance are: training workshop; project briefing; safety induction; operating procedures and posters.

Discussion of Results

It was found out from the analysis that training, safety induction and project briefings are the significant strategies to be conducted on construction sites as illustrated in Table 1. This is in line with the study carried out by Ejiugwo (2013), that training in safe work methods involves raising employee's awareness of their true values towards H&S, include being able to work without injury so they can continue to provide for their family.

According to the respondents, operating procedure is another important strategy to consolidate the rules and requirements for working safely and provide advice on acceptable and safe work practices on construction sites. To most respondents, posters can be used to overcome language problems through the use of diagram, photograph and symbols.

CONCLUSION

This study has identified the significant communication strategies for disseminating health and safety information on construction sites. Only 9 out of the 16 strategies identified are actually significant to be considered for communication of H&S information on

construction sites as illustrated in Table 1. The five most significant strategies according to the magnitude of the mean rating in order of importance are: training, project briefing, safety induction, operating procedures and posters. These are the most essential methods to address and solve risk and hazard issues on sites. The first four strategies were carried out by H&S officers and supervisors to explain to the workers on rules and requirements, emergency procedures and incident reporting to enable new workers, visitors and contractors to carry out their duties in a safe manner from the moment they come on site. Other than these, posters should be kept on a special display board and stand out from the background to attract attention on sites.

Retaining the correct and appropriate H&S communication strategies would help the participants in carrying out their responsibilities in the correct manner. Accidents could be avoided by using appropriate communication strategies by the team members.

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