

## **Communication of Safety-Related Information in Construction**

### **FRANCIS WONG**

Professor, Department of Building and Real Estate  
The Hong Kong Polytechnic University, Hung Hom, Hong Kong

### **ALBERT PC CHAN**

Professor, Department of Building and Real Estate  
The Hong Kong Polytechnic University, Hung Hom, Hong Kong

### **PAUL FOX**

Assistant Professor, Department of Building and Real Estate  
The Hong Kong Polytechnic University, Hung Hom, Hong Kong

### **KENNY TSE**

Doctoral Candidate, Demonstrator, Department of Building and Real Estate  
The Hong Kong Polytechnic University, Hung Hom, Hong Kong

### **ESTHER LY**

Research Assistant, Department of Building and Real Estate  
The Hong Kong Polytechnic University, Hung Hom, Hong Kong

### **Abstract**

In the attempt to improve the performance of construction firms, one of the most important areas for attention is that of safety. According to a previous research on safety practice in Hong Kong (Wong 2002), there are 5 major factors affecting safety on sites, namely **Communication, Safety Committee, Safety Training, Practice & Procedure, and Participation & Consultation**. Wong showed that **Communication**, which is subtle, pervasive and for which not much study has been done before, holds the key for preventing safety hazards. Thus **Communication** can prevent problems and is crucial between main contractors and sub-contractors, the focus of this study. In this context, the paper reports on a stage of the study which aims to find out the factors that affect communication and thus identify areas for improvement.

### **Keywords**

Construction safety, communication, main contractor, sub-contractor, Hong Kong

### **1. Introduction**

Among all the serious industrial accidents reported in Hong Kong, most of them happened on construction sites. In the past, the Hong Kong government adopted a laissez-faire approach in managing construction safety - the safety performance heavily relied on the industry voluntarily observing the statutory regulations. This approach had proven ineffective (Chan 2000). In 2001, the number of industrial fatalities in the construction industry was 28, lower than the average of the past ten years (49.4) by 43.3% (Labour Department 2002). Although the overall accident rate has gone down, the fatalities were still unsatisfactory. The Hong Kong government has been actively involved in combating the poor safety performance, and has introduced a series of safety programmes, which consist of both incentive and mandatory schemes in order to nourish a better safety culture in the construction industry.

## **2. Research Methodology**

Firstly, the study started from a literature review, by identifying the possible variables that affect the communication of safety-related information between main contractors and sub-contractors in Hong Kong. Altogether 56 variables were identified. Secondly, from this set of variables a questionnaire was compiled for the main contractors. Thirdly, the collected data was subjected to statistical “Factor Analysis” using SPSS<sup>1</sup> (Norusis 1988)

## **3. Literature Review**

The literature review from domestic and worldwide sources reveals that a total of 12 factors and their sub-factors affect the safety-related information communication between the main and sub-contractors. Briefly, they are as follows:

### **3.1 Industry Nature**

The construction industry has its unique nature that all construction projects are carried out under almost all sorts of weather conditions and stringent program in terms of time and completion. Moreover, the high mobility and dispersal of workforce over wide areas of construction sites, and generally low level of education of construction workers are the sources of communication difficulties.

### **3.2 Industry Culture**

It was noted that sub-contracting is a common practice for the construction industry in Hong Kong. Because most of the subcontractors’ workers are engaged on a day-work basis, without awareness of safety measures and appreciation of safety strategy and procedures, sub-contractor’s workers are prone to construction accidents (Wong 2000).

### **3.3 Organization Culture**

Safety is important in the sense that industrial accidents can induce direct and indirect costs, resulting in the loss of productivity, delays in completing projects, increased administrative time, and damage to the equipment (Levy 2002). Therefore, safety may have different implications to different organizations having different culture and values.

### **3.4 Client Type**

Client types can be broadly divided into public and private. Clients of the public sector are the Government bodies, like Buildings Department, Housing Department, Highways Department, Drainage Services Department, etc. (HKIE 2002). Private clients can be experienced developers of small to large scale or inexperienced clients who have never built before. These clients differ by their degree of control over contractors and the attitude on the monitoring of site safety. The Government bodies appear to have noticeably higher concern and expectation on site safety performance.

### **3.5 Organization Structure**

Fryer (1997) suggests that there are several factors that would affect the result of communications. They include hierarchy, downsizing, and centralization vs. decentralization, rigidity vs. flexibility, rules and procedures. Moreover, the direction of communication is also an important factor.

### **3.6 Relationship of Main & Sub-Contractors**

The adversarial relationship between clients and construction contractors is one of the major hurdles to the success of the construction industry (Chan et al 1999). In turn, this atmosphere spills over to negatively affect the main contractor/sub-contractor relationship. Partnering is one of the approaches to create an effective project management process between the involved parties, including the client, the main contractor, sub-contractors, suppliers and consultants. It aims to generate an organizational environment of trust, open communication and employee involvement. Chan et al reported that the survey of twenty contractors, by the “team approach to resolve project issues” was considered as the major benefit, whereas “commercial pressure comprised the partnering

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<sup>1</sup> SPSS is a useful analytical tool to reduce the data complexity in order to evaluate the degree of significance between the various factors.

attitude” was found to be the major problem in implementing the partnering concept. Partnering was considered by most of the project participants as a worthwhile initiative.

### **3.7 Communication Barriers**

Hicks and Gullett (1983) highlights that *Communication Overload* and *Inattention to Message* can be common barriers to communication. *Communication Overload* happens since people, including managers, might receive more information than they can adequately process. When it occurs the individual can respond in a number of ways. Omission, error, queuing, filtering, approximation are the common reactions that yield poor results.

### **3.8 Communication Means**

Communication technologies continue to emerge and traditional business tools quickly become obsolete. Although resistant to change at the beginning, most contractors eventually have computerized their communication systems. E-mail and Internet have revolutionized the world, forever changing the way contractors work (Park and Parson 2002). However, other traditional means such as fax, telephone, site memoranda, drawings, etc. would also be considered in this study.

### **3.9 Content of Information**

The content of information is an important factor that affects communication. The amount, accuracy and clarity of information, which may refer to as the method statements, working drawings or safety procedures, are also vital for the success of safety implementation on sites.

### **3.10 Values & Attitudes of Communicators**

Values and attitudes have been shown to be highly significant to the performance of the whole industry (Fox 1999). For example, many production personnel focus only on immediate problems, and view their top priorities as meeting the production schedule, quota and cost targets (Tam et al 2000). Only after achieving these objectives will they give some considerations to safety. Nichols and Stevens (1999) reinforced this idea. People in all phases of business need to feel to talk to their superiors and to know they will be met with sympathetic understanding. But too many superiors fail to listen, and often their subordinates withdraw from their supervisors. They fail to talk about important problems that should be aired for both parties’ benefit. Besides, Kwok (1996) notes that when comparing the causes of accidents, all of the respondents considered that the “Lack of safety knowledge” and “Careless working attitude” are the two most critical factors for industrial accidents on sites.

### **3.11 Provision of Continuous Training**

Training can create a vital awareness that alerts workers and supervisors alike to safety hazards. Communication as embedded within training programs can thus enhance awareness by removing perceptual barriers. Earlier research (Tam and Fung 1998) revealed that effective implementation of safety management strategies could improve safety performance. They found that safety training, the use of directly employed labour, the use of post-accident investigation as a feedback, and promoting safety practices by safety award campaigns and incentive schemes were the most effective tools in mitigating site casualties. New workers are most vulnerable (Levitt and Samelson 1994), therefore special attention and training should be provided accordingly. The improvement of safety knowledge is undeniable (Wong et al 2001).

### **3.12 Workers’ Attitude**

Chan et al (1999) reported that limited or even negative response of workers to the safety message is one of the problems in implementing safety works. It was noted that many workers have limited education and they even admitted that it is not their responsibility to comply with safety regulations for the main contractors. Also, due to the multi-levels of sub-contracting, many workers have no sense of belonging to the main contractors and supervisions on safety measures are inadequate. In reality, even if the workers recognize the direct correlation between unsafe working practice and accidents, they are still reluctant to join the safety training course because earnings will be deducted due to absence from work.

## **4. Conclusion**

This paper has shown that **Communication**, being an all-pervasive function within and between organizations, can be analysed into a set of 11 main factors in the context of the relationship between main contractors and sub-contractors. **Communication** can prevent problems and is crucial between main contractors and sub-contractors, the focus of this study. In this continuing study, the paper has reported on a stage of the study to find out the factors that affect communication and thus identify areas for improvement.

In all of the identified factors, communication is a moving target, which is leading to never-ending challenges to individual and organization as a whole (Orsini 2000). Nowadays, construction organizations in Hong Kong, in one way or the other implemented some safety programs, aiming to improve their performance in safety and health (Tam et al 2000). Clearly some of these factors are cultural. Unfortunately, few can actually create a form of safety culture. To inculcate a culture certainly takes a very long time. Likewise, to create a culture of safety and health in the construction industry requires a great deal of effort. Moreover, many construction companies, which have set up safety programs, indicated that they have to spend a lot of effort to overcome the resistance of their staff when they first introduced the programs (OSHC 1995). Organizational factors include adjustments such as downsizing, which has become popular since 1990s. It refers to the trend among many organizations to reduce their overall size, partly to create flexibility, so that they can respond more quickly to change. But it creates an ethical challenge for managers, who have to cope not only with redundancies but also problems of retaining loyalty, motivation and sense of security of the employees. Moreover, downsizing has in many cases resulted in real shortages of expertise. The content of information in documents is clearly important. Incorporating safety issues in contracts, as well as safety considerations in the planning stage, are usually neglected, but in fact vital for the ease of implementation of safety practice (Kwok 1996). Communication means have their part to play in linking stages of the process. For example, Anumba (1999) attributes the poor safety record of the construction industry to the inadequacies of the conventional construction process and procurement routes. This means that safety problems that could have been eliminated by design are often undetected until it is too late. In order to tackle the above difficulties, proactive actions to facilitate effective communication are needed from both microscopic and macroscopic levels.

## 5. Acknowledgement

This research is funded by the Research Committee of the Occupational Safety and Health (Research Grant No. 2001/05).

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