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A Study of Health and Safety Management Practices of Contractors in Southern Vietnam

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***Abstract:** In spite of the socio-economic benefits of the construction industry, it accounts for many deaths, injuries and illnesses in many countries. In developing countries like Vietnam, the situation is even worse. Health and safety (H&S) management plays a crucial role in the efforts to improve H&S performance as it contributes to mitigating the risks of occupational injuries and illnesses. However, within the wider H&S literature in Vietnam, there is no insight into the current state of affairs of H&S management, particularly in terms of the management practices that need attention in order to improve H&S management across the construction sector. This study therefore presents the findings of an inquiry into the H&S management practices of contractors in Vietnam. The study employed a questionnaire survey which yielded 58 responses from contractors, particularly those operating in Southern Vietnam. Some commonly implemented H&S management practices by the contractors are: provision of personal protective equipment (94%), allocation of H&S supervisor on site (90%), and displaying of company H&S policy on construction sites, company website, and head/branch offices (86%). Some of the less implemented practices are: networking/engaging with other companies/institutions (e.g. government offices) about H&S issues (39%), rewarding workers for safe work behaviour (39%), reviewing and updating H&S plans (48%), and displaying regulatory H&S posters on site (45%). The findings have provided some insight into the current state of affairs of the H&S management practices of contractors in Southern Vietnam and could thus inform efforts by industry stakeholders to improve the aspects of H&S management that are lagging.*

***Keywords:** Construction, health and safety, health and safety management*

I. INTRODUCTION

The construction industry plays a vital role in a nation's economy and society. In both developing and developed countries, it is a driver of economic growth through the provision of employment, built facilities for development (e.g. utilities, roads, ports, houses, etc.) and generating income in different trades within the industry[1][2]. Despite its importance, the Vietnam construction industry still has many problems such as time and cost overrun [3][4], uncertain project quality [4], high amount of construction waste [5] and poor H&S performance [6][7][8]. H&S performance is one of the most important aspects in construction management due to its impacts on cost, time, and the loss of human life resulting from accidents [9][10]. Amongst the many other factors which affect H&S performance, H&S management is one of the most significant [9]. The research hence investigates the H&S management practices being implemented by contractors in the Vietnam construction industry in order to highlight areas that need improvement.

II. RESEARCH BACKGROUND AND CONTEXT

A. The Status of Health and Safety in Vietnam Construction Industry

The poor H&S performance in Vietnam is highlighted in a recent release of accident statistics by the Ministry of Labour – Invalid and Social Affairs for 2013 [11]. According to this report, the construction industry accounted for about 34.3% of industrial accidents, from a total 6,695 cases and 31.7% of industrial fatality (562 cases that resulted in 627 deaths). Acknowledging the significance of H&S, the Vietnam government initiated a 6-year national H&S programme to promote H&S management within construction and other high hazard sectors such as mining in 2012 [12]. Despite the potential of this programme, it has not provided adequate directions on some specific components of H&S management that need to be targeted for improvement. Within the wider H&S literature, there is also no indication of this for the Vietnamese context. This thus creates a knowledge gap which needs to be addressed.

In addition, all the documents and standards on H&S in construction in Vietnam mainly focus on technical aspects at the expense of the management practices that facilitate overall H&S system improvement. For instance, the highest legal document about requirements for safety on construction site (i.e. circular No. 22/2010/TT-BXD) attests to this [13], viz, there are no management systems/frameworks in this document. Given the significance of H&S management, the inadequate attention on effective H&S management could, therefore, be one of the reasons for the poor H&S performance in Vietnam. In order to advance H&S management in the Vietnam construction industry, there ought to be an understanding of the H&S management practices implemented by contractors to enable the identification of the aspects that need attention. The research question therefore to be addressed is: '*what are the H&S management practices implemented by contractors in the Vietnam construction industry?'*

B. Overview on Health and Safety Management System (HSMS)

HSMS has just been developed since 1990s [14]. The earliest efforts to prevent undesirable H&S outcomes

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mainly focused on solutions for safe physical environment, machinery guarding and safe equipment [15]. After that, experts recognised the role of individual behaviour as a contributor to the occurrence of accidents. Therefore, H&S programmes attempting to encourage positive safety behaviour became commonplace at this stage [15]. While these approaches effectively improved H&S performance, there is evidence that workplace organisational factors, i.e. H&S management activities, are the key in controlling H&S related incidents in the workplace. Hence, there is an increasing need for the systematic implementation of various H&S management practices [15].

The ability of a systematic H&S management to enhance H&S performance has been highlighted by many researchers [15][16]. Many H&S management models have been proposed, e.g. the H&S management models of HSE[17][18], BS OHSAS 18001:2007 by BSI [19], and the occupational safety and health management system of the International Labour Organisation (i.e. ILO OSH 2001)[20]. Of the models, the most widely used is the BS OHSAS 18001:2007 by BSI [21]. The BSI [19] model is closely related to the models by HSE [17][18]. These models were thus used to inform the empirical aspect of this study, through the identification of specific H&S management practices.

III. REASEARCH STRATEGY

A quantitative strategy was deemed the most appropriate strategy of inquiry for this study [22][23] as quantitative research is suitable for answering questions relating to "what" [24], which was the case in this research (i.e. *what are the H&S management practices implemented by contractors in the Vietnam construction industry?*). Compared to a quantitative strategy like experiment, a survey was more practicable in obtaining relevant data regarding the H&S management practices of contractors because it would not have been practicable to subject the contractors to an experimental setting in order to diagnose their H&S management practices. As a result, the survey strategy, particularly a cross-sectional survey, was used. Considering the size of Vietnam and time and resource constraints, it was resolved that it would be prudent to partition Vietnam into 2 parts (i.e. Northern and Southern) and then focus on the Southern part for this study.

The questionnaire was designed to collect contractors' demographic information and also data on their H&S management practices. The demographic information was necessary to make sound connections between the organisations' practices and their characteristics. The questionnaire items inquiring about the H&S management practices of the contractors were drawn from key elements of H&S management models by HSE [17][18] and BSI [19]. The items explored how the contractors plan, conduct, check and improve their H&S management.

Regarding data analysis, the intention of this research was mainly to have a generic view of what H&S management practices are being applied by contractors. Hence descriptive statistics to show how widespread a practice is, in particular frequency, mean, and standard deviation were used. The analysis was supported by Statistical Package for Social Science (SPSS) software and Microsoft Excel.

IV. RESEARCH RESULTS & DISCUSSION

A. Response Rate

A total of 350 questionnaires were distributed to contractors in Southern Vietnam. The questionnaire was accompanied by a letter requesting for a personnel in construction management related roles within the organisations (e.g. company director, H&S manager, site manager, project manager, and civil engineer) to complete the questionnaire. 58 responses were received giving a response rate of 16.57%. While this is lower than the response rate in some other H&S surveys (e.g. 81% in a study by Tutesigensi & Phung [25] in Vietnam, and 30.3% in a study by Kheni [26] in Ghana), it is not too far from what Takim & Adnan [27] describe as an acceptable response rate for surveys in construction (i.e. 20-30%). Furthermore, the 16.57% obtained in this study is even quite close to the response rate obtained in a fairly recent H&S study reported by Manu [28] (i.e. 18.7%). It is also even better than lower response rates that have been recorded in some construction management surveys (e.g. 8.82% response rate reported by Sutrisna [23]).

B. Respondent's Background and Company profile

The respondents' and their companies' demographic information is summarised in Table 1 below. The results show that all the respondents are in construction management related roles, and on the average are adequately experienced: the mean value is 6.31 years (with Std. Dev. = 4.739). Generally, 57% of the respondents have at least 5 years of experience in their current position. It can be concluded that the respondents generally met the surveys requirements with a majority of them being highly experienced as well as occupying roles that make it likely for them to be knowledgeable and aware of their companies' H&S management practices.

Regarding how long the companies have been established, more than half of businesses (60%) have been in existence for 10 years (Table 1). The mean age of companies is 17.28 years (with Std. Dev = 20.034 years). The minimum and maximum ages of the companies are 1 year and 100 years respectively. Most of the organisations have therefore been in operation for a reasonable period of time and so should have some experience of operation in the construction market. In terms of company size, the number of employees ranges from 5 to 1500 with the mean value being 211.03 employees (Std. Dev. = 305.811). Majority of the businesses (i.e. 43%) are small (i.e. less than 50 employees). It is followed by large companies (i.e. more than 150 employees) and then medium companies (i.e. 50 to 150 employees), with frequencies of 36% and 21% respectively (Table 1). It can be seen that 64% are small and medium size enterprises

(SMEs). This generally reflects the distribution of large firms and SMEs within the construction sector as is the case in other countries such as the UK [29].

Table 1: Respondent & Company Demographic Information

Demographic Information	Freq. (%)
Respondents role	
Site Manager	10.3
Project Manager	44.8
Company Director/manager	8.6
Site Engineer	34.5
Other (Site quantity surveyor)	1.7
Respondents experience	
Less than 5 years	43
5 to 15 years	52
Over 15 years	5
Age of Company	
Less than 10 years	40
10 – 20 years	26
Over 20 years	34
Company size	
Small (less than 50 employees)	43
Medium (51 to 150 employees)	21
Large (more than 150 employees)	36
Areas/Sectors of companies operations	
Public sector works	56.9
Private sector works	55.2
Buildings	72.4
Civil	41.4
Ground & foundation specialist	29.3
M&E works	41.4
Demolition	8.6

C. H&S Practice

The results of the H&S management practices implemented by the contractors is shown in table 2 and discussed below.

Policy: An effective H&S policy sets a clear direction for the organisation to follow [17][18]. The management system will not be effective if there is no clear policy which signifies top management commitment to protecting the H&S of workers and all those affected by their business. It is a positive indication that most of the businesses in the survey (74%) have a formal H&S policy. It is a good signal for construction H&S in Vietnam as having the commitment of senior management is very important for effective H&S management [30][31][32]. However, only 59% of the companies have a director with overall responsibility for H&S.

Risk assessment: This is an important component in the H&S management framework which enables the identification of hazards in work places [17][18]. All the practices in this element are implemented by over half of the companies. 66% of the contractors undertake risk assessment for each work package, 62% undertake overall project risk assessment, and a little over half review and update risk assessment during construction. These suggest that there is still a sizable proportion of contractors who have or take a reactive approach to dealing with H&S hazards and problems they encounter in the course of their work on projects.

Table 2: Level of Implementation of H&S Management Practices

H&S Management Element/Practices	Freq. (%)
Policy	
A formal company health and safety policy statement	74
A company director with overall responsibility for health and safety	59
Organising for H&S	
Providing health and safety supervisors on sites	90
Communicating health and safety information to workers through newsletters, leaflets, posters, etc.	62
Engaging with workers on health and safety issues e.g. health and safety meetings and suggestion schemes	74
Networking with other companies' / institutions' (insurance companies, government offices) about health and safety issues	38
Propagating health and safety practices to external stakeholders e.g. clients	67
A designated health and safety department	50
Assessing the competence of workers and subcontractors	74
Providing training programmes for safety manager(s)	53
Display of regulatory health and safety posters on construction sites	45
Open display of company health and safety policy on construction sites, company website, and head/branch offices	86
Providing training for safety supervisor(s) and site manager(s)	83
Provision of health and safety annual reports	62
A designated health and safety manager	50
Risk Assessment	
Undertaking overall project risk assessments before projects starts	62
Designing site rules and measures to mitigate assessed risks	72
Undertaking risk assessments for work packages/operations before they start	66
Reviewing and updating risk assessments during construction	52
Informing employees about hazards on sites before work starts	78
Planning and implementation	
Preparing health and safety plans for every construction project	69
Implementing site health and safety rules and measures	78
Amending and correcting health and safety plans during construction	53
Health and safety insurance cover for sites	78
Rewarding workers for safe work behaviour	38
Pricing to cover health and safety requirements for projects	62
Site inductions for workers	62
Training programmes for site workers	79
Carrying out site health and safety inspections regularly	84
Provision of sanitation and welfare facilities on sites (e.g. toilets, canteens, drinking water)	84
Provision of personal protective equipment	95
Provision of first aid equipment on sites	79
Preparing method statements	71
Setting health and safety performance targets	62
Disciplining workers for unsafe work behaviour	72
Assigning health and safety supervisor(s) on site	74
Conducting regular health checks for employees	62
Measuring and reviewing performance	
Measuring health and safety performance against set	67

H&S Management Element/Practices	Freq. (%)
targets	
Reviewing and updating health and safety plans after projects completion	48
Keeping incident records on every project	60
Investigating the causes of incidents, accidents and near-misses	69
Publishing or sharing lessons learnt from incident investigations across the company or on projects	72
Auditing	
Undertaking periodic safety management auditing	69
Use of external consultant for undertaking safety management auditing	12
Use of in-house personnel for undertaking safety management auditing	84

Planning and implementation: This aspect concentrates on how to plan and implement the H&S management practices on site or in practice [17][18]. The results indicate high levels of implementation in this category with some practices being implemented by more than 80% of the companies. These practices are: provision of personal protective equipment (PPE) (95%); provision of sanitation and welfare facilities on sites (84%); and carrying out site H&S inspections regularly (84%). However, the number of contractors who reward workers for safe work behaviour is low (only 38%). There is rather a greater emphasis on punishing unsafe behaviour (i.e. 72%) than incentivising/rewarding good safety behaviour. It would thus be worthwhile for the companies to have a good balance between rewarding good behaviour and punishing bad behaviour [33]. Also, reviewing and amending H&S plans during construction duration is a practice that is not widely implemented (53%) and so ought to improve amongst contractors.

Measuring and review performance: Assessing the effectiveness of a system so as to draw lessons from its strengths and weaknesses is an important element of a management system [17][18]. All the practices in this component are adopted by more than 50% of contractors. Publishing or sharing lessons learnt from incidents across the company/project is the most implemented practice (i.e. 72%). It is followed by investigating the causes of incidents, accidents and near-misses; and measuring H&S performance against set targets (i.e. 69% and 67% respectively). Only reviewing and updating H&S plans after the completion of projects is implemented by less than 50% of the contractors. This appears to be lagging and should be improved so that contractors can document valuable H&S lessons learned during the course of projects.

Auditing: 69% of the contractors undertake periodic safety management auditing. A majority (84%) of the companies use in-house personnel for undertaking H&S management auditing. Very few (12%) of the companies use external consultants.

V. CONCLUSION

In the effort to improve H&S performance in Vietnam, the government has implemented many programmes and issued many standards/guidelines. However, they provide no direction as to which aspects/components of H&S management and indeed which practices within the various aspects/components should be targeted for improvement. This knowledge gap has been addressed to some extent by this research by focussing on the construction sector. By revealing which practices are commonly implemented and which ones are not, the research findings could alert relevant state authorities and key industry stakeholders (e.g. professional bodies/associations) in preparing awareness and training programmes which focus on the less implemented practices. The state authorities could also consider drafting and issuing guidance that incorporate provisions to help raise the implementation of some of the less implemented practices.

VI. LIMMITATION OF THE STUDY

A limitation of this study is that the data collection focussed on contractors in Southern Vietnam. The findings are thus not generalisable to the entire Vietnam construction sector. Nevertheless, the findings provide some useful insights into how contractors are managing H&S in Vietnam.

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