

SAFETY CULTURE ON CONSTRUCTION SITES

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*Specially dedicated to
Ibu, Ayah and Adik-adik*

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IN THE NAME OF ALLAH THE BENEFICIENT AND THE MERCIFUL

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ABSTRACT

The construction project is very unique by itself, complex and is always related to high risk working environment as compared to others. Creating a safety culture means that the employees are constantly aware of hazards including the ones that they create themselves. The aim of this research is to study safety culture on construction sites in Malaysia. To achieve this aim, elements and factors affecting the implementation of safety culture were assessed. In the present study, a survey was carried out using a detailed developed questionnaire. The questionnaire comprised the general information with a list of elements in safety culture and factors affecting the implementation of the culture on a 1-5 *likert scale* which was distributed to 50 safety and health officers, project managers and other project personnel. Over and above that, a few interviews with safety experts were conducted before and after the questionnaire were distributed for the purpose of validating the data extract from both literature reviews and the data collected from the survey. The data was then process using a Statistical Package for Social Sciences Version 10.0 (SPSS 10.0). The results revealed that safety policy, procedures and planning is not only the most important elements in safety culture, but also the most significant success factors in the safety culture performance. In the contrary, commitment seems to be the main barriers that need to deal with to ensure the effectiveness of safety culture implementation.

ABSTRAK

Sesebuah projek pembinaan mempunyai karakter yang unik dan kompleks jika dibandingkan diantara satu sama lain. Selain itu, industri pembinaan juga sering dikaitkan dengan persekitaran kerja yang berisiko tinggi berbanding industri lain. Membentuk budaya keselamatan bermaksud semua pekerja sentiasa sedar akan kewujudan bahaya termasuk bahaya yang dicipta oleh mereka sendiri. Penyelidikan ini dilaksanakan bagi mengkaji tahap budaya keselamatan di tapak pembinaan di Malaysia. Bagi mencapai matlamat ini, elemen-elemen dan faktor-faktor yang memengaruhi pelaksanaan budaya keselamatan di tapak bina telah dikenalpasti dan dinilai. Bagi menyempurnakan penyelidikan ini, satu tinjauan telah dilaksanakan dengan menggunakan borang soal selidik. Borang soal selidik ini mengandungi tiga bahagian iaitu maklumat am responden, elemen-elemen didalam budaya keselamatan dan faktor-faktor yang mempengaruhi budaya keselamatan dan soalan-soalan adalah berbentuk skala likert. Borang soal selidik ini telah diedarkan kepada 50 responden yang terdiri daripada pegawai-pegawai keselamatan dan kesihatan, pengurus projek dan personnel projek yang lain. Selain dari itu, beberapa siri temuduga bersama pakar-pakar keselamatan telah dilaksanakan sebelum dan selepas borang soal selidik diedarkan bagi tujuan mengesahkan data yang diperolehi dari kajian literatur dan borang soal selidik yang telah dijawab. Data-data ini kemudian diproses menggunakan *Statistical Package for Social Sciences Version 10.0 (SPSS 10.0)* Berdasarkan kepada hasil tinjauan, polisi keselamatan bukan sahaja merupakan elemen terpenting dalam budaya keselamatan malah ia juga merupakan faktor utama dalam pelaksanaan budaya keselamatan di tapak bina. Manakala komitmen merupakan kekangan utama yang perlu diatasi bagu memastikan pelaksanaan budaya keselamatan yang efektif.

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LIST OF ABBREVIATION

ACSNI	Advisory Committee on the Safety of Nuclear Installation
DOSH	Department of Occupational Safety and Health
HSE	Health and Safety Executive
OSHA	Occupational Safety and Health Acts
IAEA	International Atomic Energy Agency
IOSH	Institution of Occupational Safety and Health
SHO	Safety and Health Officer
SOCSSO	Labour Department and Social Security Organisation
SPSS	Statistical Package for Social Sciences

LIST OF SYMBOL

α Alpha

CHAPTER 1

INTRODUCTION

Construction industry is unique compared to other industries and the main characteristic of a construction project is that it very complex and one of a kind. Each project has a different nature of work, located at different workplace, employ different personnel and parties with different numbers and higher turnover, and produce different type of products. These variables are sufficient to cause the existence of continuous hazard at workplace throughout project life cycle.

In modern years, there are expected to be more large scale projects which normally involve the usage of high-level automation method of construction and more complex processes. The complexities of construction activities and the nature of working environment which constantly change contribute to greater and constant risks occurring at construction sites at all times. This scenario has made most people to view construction industry as a high risk working environment as compared to others. The construction industry remains one of the most dangerous industries in which to work (Carter, G and Smith, S.D., 2006).

Previous studies show that most of the accident at the construction sites is caused by an employee's behaviour and lack of safety culture. Selkirk, W (1995) indicates that all workplace injuries are attitude, behavior. High rates of accidents occurring in the construction industry is causing losses both to the health and safety of workforce and millions of ringgit worth of properties every year in the country (Alves Dias and Coble, 1996; Sing *et al.* 1999).

Some researchers state that accidents are inevitable. However, it is possible to control and mitigate all hazardous activities at a construction site by identifying and managing risks through the implementation of positive safety culture. The accident could be prevented if a culture of safety had been created (Diller, H. and Kleiner, B. K., 1996). According to Mohd Saidin *et al.* (2008), safety culture is an alternative for encouraging competition at any level in order to reduce number of accidents, fatalities and injuries that involves workers and properties.

An effective safety culture performance at construction site can benefits the organisation in many areas such as in term of time, cost and daily operation. In recent years, many construction companies have recognised this importance that the establishment of good safety culture can help in controlling and reducing construction costs and increase the efficiency of their ongoing operations in long term (Che Hassan, C. R. *et al.*, 2007).

Several industries are showing increasing interest in safety culture as a means of reducing accidents and the impact of positive safety culture on safety outcomes such injuries, fatalities and other incidents. Cooper, M. D. (2000) recognised many industries around the world are showing an interesting interest in the concept of safety culture as a means of reducing the potential for large-scale disasters, and accidents associated with routine tasks.

The safety culture approach to accident reduction in high risk industry emphasises the role played by social forces within an organisation that act upon its members with respect to safety (Clarke, 1999). Safety culture is about employees' safe behaviour and practices towards safety. Therefore, creating a culture of safety is to create an atmosphere in which employees are aware of the hazards in their workplace, are continually on guard against them (Ostrom, Wilhelmsen, and Daplan, 1993), and avoid taking any unsafe actions.

Changing an organisation safety culture would be difficult unless the organisation manage to identify and evaluate the existing safety attitudes, practices and environment that govern their organisation. Minter, S. G. (1991) stated that an essential task in changing company's culture would be first to determine what the real attitude and practices are regarding safety. Changes needed to be undertaken by the construction industry by establishing the paradigm of safety and health culture which may improve the safety and health level in line with the requirements of safety and health in the construction industry (Mohd Saidin *et al.*, 2006b).

In many modern organisations, it is to be expected that there are areas in which safety culture is not well developed due to its size and complexity. In addition to that, a desirable safety culture would take time to establish and develop (Parker, D. *et al.*, 2006).

1.1 Problem Statement

The significant number of accidents in construction industry reported and investigated from 2004 until 2008 as show in Figure 1.1 is sufficient to indicate the presence and quality of ongoing safety culture. It is inarguable that there was a decrease in number of accidents reported to Labour Department and Social Security Organisation (SOCSO) in those five years, but it was not that reliable to justify a positive safety culture by referring to the number of accidents reported, because accidents rates can be reduced for a number of reasons, such as not reporting the accidents in order to get the rewards offered by management.

In some cases, accidents might not be reported due to near miss. In addition to that, there is no indicator established to measure the level of safety culture at construction sites in Malaysia.

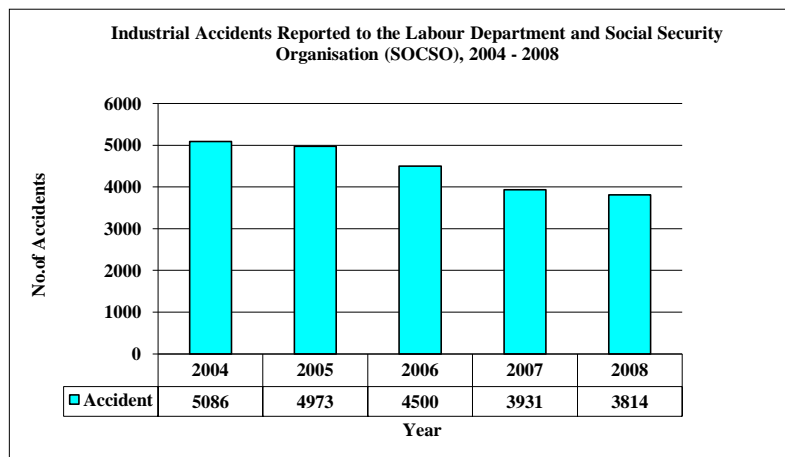


Figure 1.1 : Construction Accidents Statistic, 2004 - 2008 (SOCSO Annual Report)

Developing a proactive safety culture may take long time and spend large sum of money for planning, investigating and implementing into each level within the organisations (Fung, I.W.H. *et al.*, 2005). However, in order to make the implementation of that safety culture more valuable, it is vital for the organisation to setup the most appropriate safety culture that fit their situations.

There are always possibility that one specific construction organisation having difficulty and be unsuccessful to develop an effective safety culture due to its size and complexity. Given the size and complexity of many modern organisations, within one specific organisation it is likely that there are areas in which the safety culture is less well developed than in others (D. Parker *et al.*, 2006).

It is argued, without a doubt that most construction organisations do not possess the knowledge and skills on establishing and implementing safety culture. According to Cooper (1998), many of the organisations not really known as to establish a form of safety culture same as the culture of a country or society.

Basically, there is no any pattern for construction managers to follow in order to control safety in construction sites (Dejus, 2007). As such, this research is carried out to study the important elements and factors affecting the implementation of safety culture on construction sites and thus, propose a way to effectively practicing safety culture. This will subsequently assist construction organisations in defining areas where they need to progress in improving their safety state.

1.2 Aim and Objectives

The aim of this research is to study safety culture on construction sites in Malaysia as a means of reducing accidents and to improve safety. This aim can be achieved through the following objectives:

- i. To study the elements in safety culture.
- ii. To study factors affecting the implementation of safety culture.
- iii. To propose way to implement safety culture.

1.3 Scope of Study

This study is focused on safety culture on construction sites in Malaysia. Due to time constraint, the questionnaires survey were distributed to 50 targeted respondents amongst safety and health officers, project managers and other construction project personnel who had been selected randomly from different construction sites at Kuala Lumpur and Johor Bahru based on the fact that they were under construction at the time of the survey.

1.4 Significant of Study

This study is carried out as a response to the current issues relating to safety culture by Department of Occupational Safety and Health (DOSH) Malaysia. The importance of this study is to promote the establishment of effective safety culture on construction sites as a means to manage the risk of accidents which indirectly can assist in avoiding and mitigating the accidents.

1.5 Methodology of Study

This study has been carried out in several steps in order to achieve research objectives. Research methodology approach is adopted, to ensure that this study can be executed accordingly.

1.5.1 Preliminary Study

First and foremost, further understanding on the study must be done by identifying the problem. It is then followed by determination of aim and objectives, as well as the scope and limitations in implementing the study. In order to get an overview on this study, the exploration of the information through journals, books, and previous thesis has been done.

1.5.2 Data Collection

All raw data either primary or secondary data were collected by using a collective literature review, questionnaire survey and interview.

1.5.2.1 Questionnaire Survey

In this study, questionnaires have been distributed to safety and health officer, project manager and other project participants such as safety, health and environment manager in construction industry in Malaysia. The data collected from questionnaire survey is the primary data for this thesis.

1.5.2.2 Interview

Interviews were held with a few safety experts in order to acquire better understanding on the collected information from literature reviews and also to validate the data derived from questionnaire survey. The interviewee's point of view on the current scenario of safety culture on construction industry in Malaysia can help to conclude the results of this study.

1.5.3 Analysis and Results

Data collected from questionnaires are in the form of qualitative data. It will then be analysed using average index to form information that will be presented in tables, graphs and charts.

1.5.4 Conclusion and Recommendations

Conclusion and recommendations will be based on the results obtained from the analysis.

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