RELIABILITY OF SAFETY PERFORMANCE INDICATOR: COMPLIANCE AND EFFECTIVENESS OF SAFETY PROGRAMS IN CONSTRUCTION SITE

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DEDICATED TO

My parents,

My bros,

&

Vidhya (the best girl ever)….

LET THIS BE A MOTIVATION TO ALL

Special thanks to those who challenged me and to those who thought I cant do it....

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ABSTRACT

Construction sector is one of the high risked industries among other industries with regard to its occupational safety and health concern. This study is composed of elements of safety programs and sub-element safety programs, the compliance of each safety program and its relative important index which determines the rank level of importance of each safety program through questionnaire thus ultimately reflect the reliability of safety performance indicator in the construction site. The study concludes Relative Importance Index for compliance of safety program in construction, it is notable from the RII Ranking table above that Comply Safety and Health Program Requirements rank the highest RII of 0.9588 in construction site to be Always Complied from the Subcontractor's Management whereas the least compliance of safety program in construction site is ranked at last RII of 0.8294 to Update with New Information during Safety Task Briefing. Relative Importance Index for effectiveness of safety program in construction, it is notable from the RII Ranking table above that the most highest rank on the RII of 0.9294 indicates that it would be Very Effective if the Safety Committee Involvement in the Safety Inspection process in construction site whereas the last yet important ranking RII of 0.7647 in the effectiveness of safety program in construction site is the Frequency of The Safety Task Briefing in construction site.

Keywords: safety programs, compliance of safety program, effectiveness of safety program. With these elaborated keyword literature review, it is expected to support and explains the process of how this study is preceded.

ABSTRAK

Industri pembinan adalah antara sector yang paling tinggi risiko dibanding dengan industry-industri lain dalam aspek berkaitan dengan keselamatan dan kesihatan pekerjaan. Kajian ini merangkumi elemen program keselamatan dan program sub-elemen, tahap pemakaian program keselamatan dan *Relative Importance Index (RII)* untuk menentukan kebolehpakaian penunjuk prestasi keselamatan dengan menentukan rank kepentingan untuk setiap program keselamatan melalui kaji-selidik justeru mengambarkan keberkesanan penunjuk prestasi keselamatan in tapak pembinaan. Kajian ini akan menyimpulkan untuk pematuhan program keselamatan di tapak bina, *RII* yang tertinggi adalah untuk pematuhan program keselamatan iaitu 0.9588 dari pihak pengurusan sub-kontraktor dan yang *RII* paling rendah untuk pematuhan adalah *RII* 0.8294 dimana keperluan untuk mengemaskini dengan pengetahuan baru semasa di perjumpaan keselamatan ditapak. Manakala *RII* untuk keberkesanan yang paling tinggi *RII* ialah 0.9294 yang memberi petunjuk bahawa ia adalah sangat berkesan jika penglibatan jawatankuasa keselamatan dalam pemeriksaan keselamatan ditapak, dan yang paling rendah tahap keberkesanan adalah *RII* sebanyak 0.7647 iaitu untuk kekerapan perjumpaan keselamatan ditapak.

Kata kunci: program keselamatan, pematuhan program keselamatan, keberkesanan program keselamatan.

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LIST OF SYMBOLS AND ABBREVIATIONS

I	-	Relative Importance Index, RII
Wi	-	The weight assigned to with response (1, 2, 3, 4, 5 respectively)
Xi	-	Frequency of the response given as percentage of the total responses for each factors.
RII	-	Relative Importance Index
SPSS	-	Statistical Package for the Social Science
et al.	-	et alia; and others
α	-	Cronbach's Alpha Coefficient
≥	-	More than or equal
>	-	More than
<	-	Less Than
≤	-	Less than or equal
(M)	-	Malaysia
DOSH	-	Department of Occupational Safety and Health
RM	-	Ringgit Malaysia
G7	-	Class of Contractor
N	-	Number of item
%	-	Percentage
Comcare	-	Worker's compensation insurer for the Australia Commonwealth Government

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

The construction industry is one of the largest and most dangerous industries in Malaysia. It is ranked third highest in the number of work-related injuries and fatality, following behind mining industries and agriculture industries. Statistics by DOSH (2013) shows Occupational Accidents Statistics for Construction Sector on 2013 was 69 deaths which is the highest fatality rate among other industries. Hui-Nee A (2014) says improvement in occupational safety and health requires actions from all parties namely employees, employers and the departments from the government. Accidents at the workplace can be prevented with the cooperation from both management and employees on top of regular enforcement from the relevant government agencies.

In year 2012, DOSH indicated that number of death in construction sector show an increase of 51 cases in 2011 as compared to 67 cases in 2012 which is the highest for the occupational accident by category of fatality.

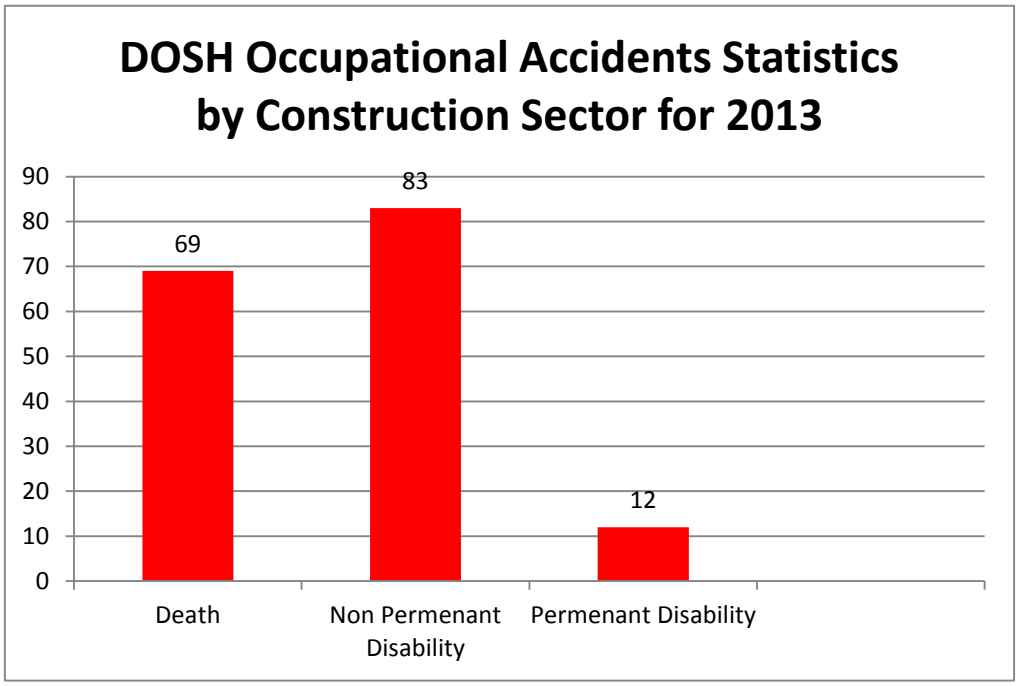

Figure 1.1: DOSH Construction Occupational Accidents Statistic for 2013

According to Findley *et al*.(2004), they noted effective safety program development and compliance can reduce site accidents. Effective safety programs can substantially reduce accidents as it helps the management to create safer working environment of operations and create safe working method for the workers (Rowlinson, 2003). However, it is uncertain as to which policies are the most effective program in achieving improved safety performance. The query of how to successfully the development safety programs put into actual actions has gained considerable attention in the modern-day workplace.

1.2 Problem Statement

In Malaysia, most of the construction sites frequently reported their construction site has positive safety performance indicator. But does it truly indicative that the construction site will not have any accidents at all and the all potential hazards

are being controlled to acceptable conditions. Even with positive safety performance indicator as reported, accident still does occur. For example Mass Rapid Transit (MRT), a mega project that concerns the public interest with a good safety policies and many safety programs introduced to provide a safe working environment to the workers and to the public which always closely monitored directly by CIDB but yet since the project started, more than 4 deaths have been reported for the year 2014 and most recently on 2 deaths on 27th February 2015 and on 24th May 2015. Does this equate the safety performance indicator as reported is not reliable. A good safety performance indicator is a construction site with good safe working environment with low or zero rate of accident.

The last thing we need is reactive measures instead proactive measures. When we mean proactive measures is to avoid it from occurring, one way to measure the reliability of the safety performance indicator. A good indicator means all the safety program introduced must be educated and being enforced on site. The level of compliance reflects the effectiveness of the safety performance indicator to conclude that a construction site is safe to work instead just presenting in paper the site is good and in safe condition. No matter how good the safety programs are, but if it was not complied, the construction site is exposed to safety complications.

1.3 Aim and Objective of the Study

The aim of this report is to study the reliability of safety performance indicator in Malaysian construction by reviewing the safety programs in order to propose improvement. To achieve this, several objectives are summarized as follows:

i. To review the safety programs available through published literature reviews.

ii. To determine the compliance and effectiveness of safety programs on Malaysian construction site.

iii. To propose improvement of safety programs to enhance the reliability safety performance indicator.

1.4 Scope and Limitation

This study was conducted to seek outlined objectives based on responses from construction companies which are currently working on several projects in Kuala Lumpur and Selangor. As such, this study is limited and only focused in Klang Valley.

The selected construction companies in Klang Valley were Class A contractors, with current project of RM20 million or above, or certified CIBG grade G7.

The targeted respondents are classified into few respondent, namely Engineer or Architect, Managers, Safety Committee, Supervisor and correspondents that has safety knowledge in construction site in their current company. The respondents are then categorized into two groups, namely project managers and safety representatives. A construction project manager is defined as a person with the highest authority in handling day-to-day activities and delivering the project, and who is responsible for managing the implementation of the safety program. A construction safety representative is defined as any individual, including any safety director, a safety manager, a safety officer or a safety supervisor, who is in-charge of arranging safety and monitoring for the construction companies.

1.5 Significance of the Study

Construction developers and clients face a variety of risks when they develop a construction project. Not only must developer be concerned with potential risks to their employees, residents, or its property, but they must also be concerned about the risks the contractor commits to. Safety is a critical item on all construction projects for multiple reasons including protecting the welfare of employees, providing a safe work environment and controlling construction costs.

Nevertheless, the importance of safety as a budget controlling measure is often disregarded by developer and contractors. As a means of reducing the risks connected with construction, safety can significantly impact the overall cost. A dedicated commitment to safety by both the developer and contractor helps ensure project success without delays and can impact the delivery of the project.

Clients should understand that all of the contractor's risks or in the event of threat will directly affect the construction progress. Any unwanted accident especially fatality during construction will only delay the work and tarnish the image of both the client and contractor for not having a proper work standard for safety. This will either add considerable cost to the contract or decrease the potential profit client and contractor.

Consequently, completion of this study perhaps will provide client or contractor the elements that needs to be more focused and prioritize the safety programs that needs enforcement in complying the safety programs for better effectiveness.

1.6 Methodology

The methodology is a work structure in describing the way a study is carried out. The summary of the overall study aim, objectives and adopts methodologies to achieve the objectives in this study is as shown in Figure 1.2 and Figure 1.3.

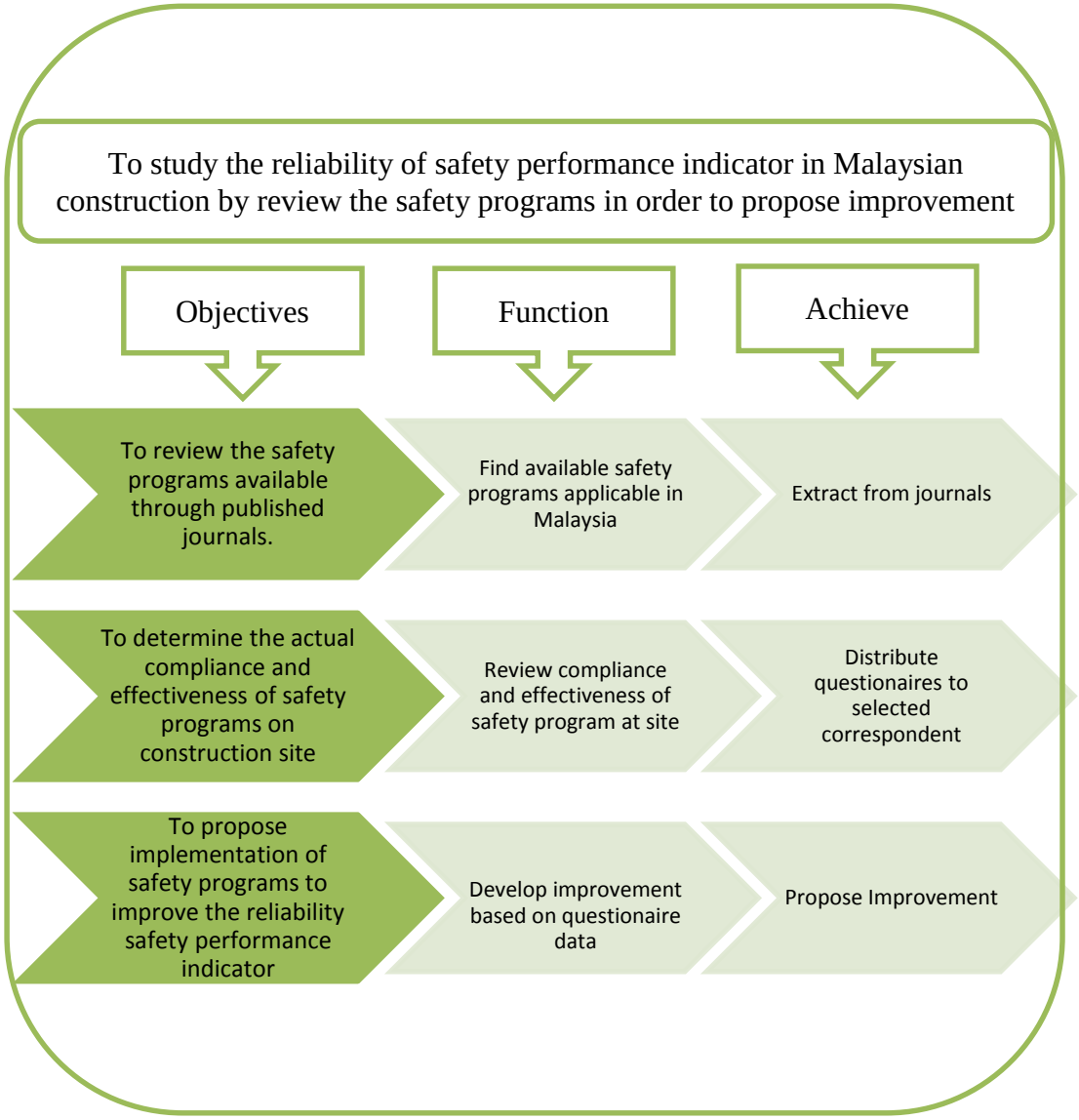

Figure 1.2: Methodology Requirement to achieve aims and objectives of study

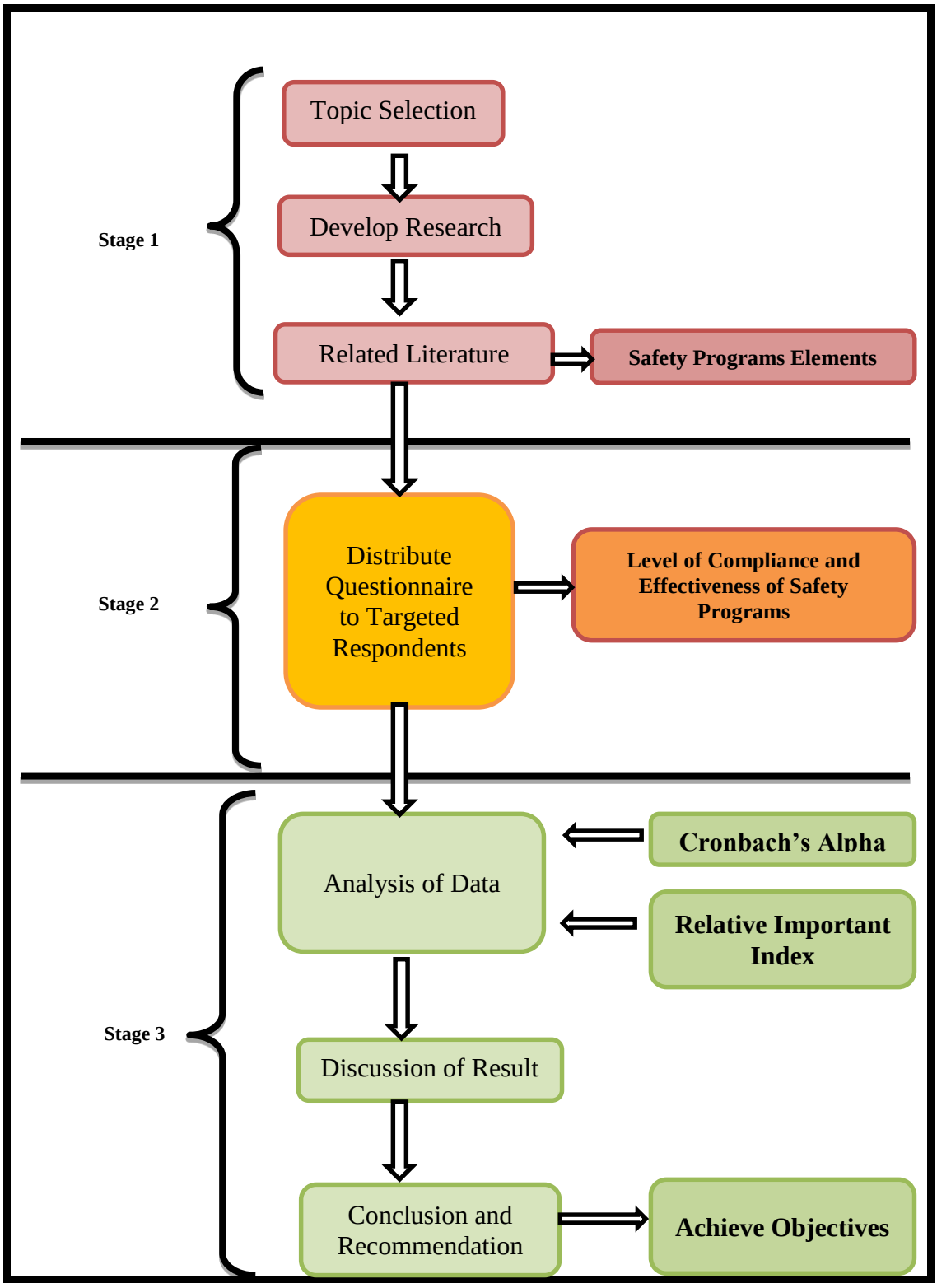

Figure 1.3: Process of Methodology

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