



Correlation among Construction, Safety, Accident, and the Effectiveness Construction Industry Development Board (CIDB) Green Card Training Program: An Initial Review

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ABSTRACT

The objective of this study was to show the correlation between construction, safety, accident, and the effectiveness Construction Industry Development Board (CIDB) Green Card Training Program. This paper was based on a literature review to get an explanation. This study can be used for reference for informing the need in taking care of possible risks and safety in the industry.

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1. INTRODUCTION

The construction industry plays a big role to contribute to the country's development and indirectly contributes to improving the quality of life for locals (Stephen & Festus (2022)). This construction industry can consume and connect with local raw materials (Patil et al., 2022; Irawan et al., 2021). This construction can be also encouraged in the educational field (Babalola & Omolafe, 2022a; Babalola & Omolafe, 2022b).

The industry provides job opportunities for approximately 800,000 people in this country. It requires high numbers of manpower from locals and foreigners together to keep the industry moving as required by the Malaysian government. Undoubtedly, the construction site is one of the most dangerous workplaces in Malaysia. The construction workers deal with hazardous sources, situations, and activities most of the time. Perilous activities such as scaffolding, excavation, working with machines, and electrical-related equipment have become common for construction workers. Based on the SOCSO report, within these five years, the number of major accidents that occurred in Malaysia has slightly increased. Most of the report concludes that the root cause of the accidents was due to human error for example slips, trips and falls from height, being struck by an object, electrocution, and being caught in machinery. To increase awareness of safety and health among the workers of the industry, laws, and regulations have been set up not only to minimize these accidents but also to reduce the severity. One of the laws and regulations provided by the national agency is the safety training program. It is considered a preventive program that functions to protect the construction workers. Safety Training is a paramount preventive program where it provides awareness of safety to the local and foreign workers. At the same time, its objective aims to reduce the number of accidents in the workplace. From the safety training program, the workers will be able to understand the impact of conducting safety habits and safety acts at the construction site.

Aristotle once said that "We are what we repeatedly do. Excellence, then, is not an act but a habit ". By taking the quote that we must develop a safety habit if we want to be safe. Unsafe acts and unsafe habits among workers can be reduced directly by safety training which can control the accident rate. Cost of compensation, workplace stress, regulatory fines as well as productivity lost indirectly can reduce

Safety issues have always been a major problem in the construction industry. In Malaysia, the highest rate of fatal accidents comes from the construction sector. The fatal accident that occurred in the construction industry shows that construction is a high-risk industry. The Green Card Training has been implemented for almost 20 years in Malaysia. Construction Industry Development Board (CIDB) should be complemented for reducing the number of accident cases reported. However, the number of accident cases reported is still increasing even though training has been given to foreign workers. Therefore, this study aims to determine the effectiveness of the green card training program for foreign workers in Ndayu's construction site.

The research objectives are to review the correlation between construction, safety, and the effectiveness CIDB Green Card Training Program. This study aims to understand gather the feedback among foreign workers and site management staff (engineer, project manager, and site safety supervisor) about the CIDB Green Card program. The study also reveals the impact of the Green Card Training program before the training session and the results after the training. The knowledge gained from the training can be implemented in their daily work. Thus, improving the safety at the construction site.

2. METHODS

We used a literature review for obtaining the data. The data were then summarized to get an explanation. Several references were used, including [Anger et al. \(2009\)](#), [Endroyoa, et al. \(2012\)](#), [Ge Gervais \(2003\)](#), [Jafari et al. \(2014\)](#), [Juárez-Carrillo et al. \(2017\)](#), [Huber \(2016\)](#), [Pinto et al. \(2011\)](#), [Tam and Fung \(2012\)](#), [Tovar-Aguilar et al. \(2014\)](#). We also used some literature on websites, such as <http://www.dosh.gov.my/index.php/en/occupational-accident-static>, Retrieved on 1 January 2018.

3. RESULTS AND DISCUSSION

Accidents involve substantial losses, human resources, finances, and even worse the morale of organization members. Finally, losses disrupt an organization's productivity. So far, the construction industry in Malaysia scored the highest number of accidents. By referring to the statistic published by the SOCSO report, the number of incidents in construction industries still fluctuates without significant proof of its reduction (see **Figure 1**).

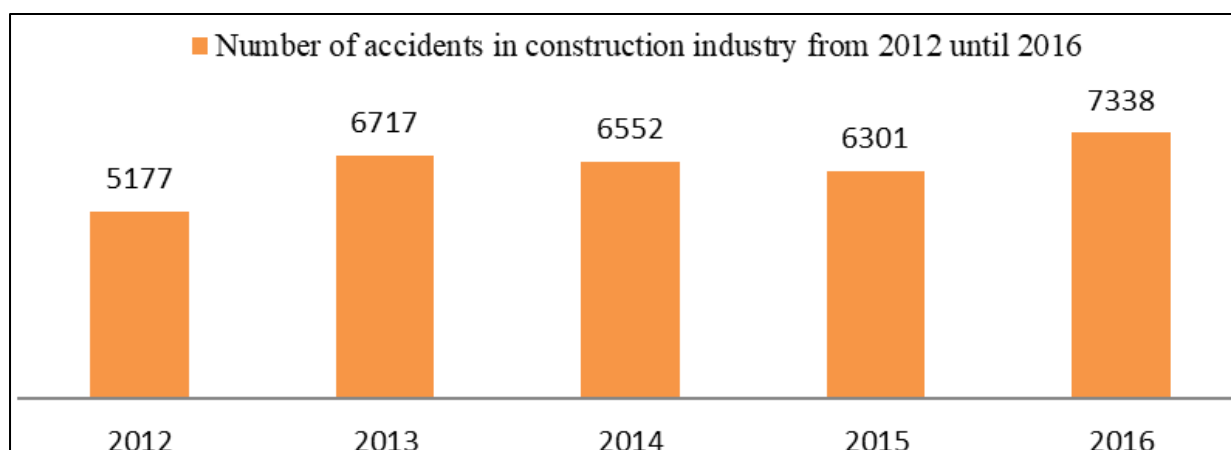


Figure 1. The statistic of an accident in the construction industry year 2012 - to 2016.

In 2013, the number of accidents that occurred in construction increased by approximately 30%. In 2014 and 2015, the number reduced by only 2 and 4%. However, in 2016, the number slightly increased to 16%. The statistic indicates that the possibility of the statistic of the accident increasing in the coming years is highly possible if the future prevention plans and the core problems are not defined and investigated.

Table 1 shows the data of death accident cases reported by the industry from 2013-to 2017. By referring to **Table 1**, the highest score recorded for the deathly accident is from the construction industry, followed by the manufacturing, agriculture and the last is the transportation industry. By looking at the trend in the record from JKKP statistics total deathly accident is led by the construction industry compared to other industry every year. This accident rate must be reduced to aim for zero accident rate at the construction site by doing improvement in various aspects including, management, workers, training, and education.

Most of the time, an accident occurs due to human carelessness, failure of weather materials, equipment, and machinery, and lack of knowledge of work done. According to [Pinto et al. \(2011\)](#) for safety training, the main cause of the accident is due to lack of safety training by management. Hence it leads to poor safety performance.

Table 1. Report of death accident cases by industry (department of occupational safety and health, 2017)

Sector /Year	2013	2014	2015	2016	2017	Total
Manufacturing	58	45	46	72	46	267
Construction	69	72	88	99	63	391
Agriculture, Forestry, Logging and Fishing	33	42	31	25	18	149
Transportation & Storage	8	15	22	13	9	67

3.1. Construction Industry Development Board (CIDB)

In Malaysia, there is one statutory body known as the CIDB, which is given authority by the government to guide Malaysia's construction industry. CIDB was established under Act 520 in July 1994. The CIDB will ensure Malaysia's Construction Industry will be able to cope with producing high-quality workmanship in construction works.

CIDB introduced a safety program to ensure safety and health, in which these factors are the top priority in construction. Since construction was highly developed in the 90s. CIDB Green Card program started in 1997 as a construction registration program to comply with Section 33 of Act 520 (1994). This program is conducted by a qualified trainer and the module was upgraded by using SICW module training by NIOSH. After attending the one-day session, a green card will be issued to the participant. This not only proves that they have successfully attended the induction but also provides the participants with good input.

The objectives of this program are to ensure that the construction workers are aware of the importance of a safe and healthy working place, to provide basic knowledge of safety and health at the construction worksite, and to inform construction workers of the legal requirements concerning safety and health.

The induction is conducted through training in the classroom and the number of participants is limited to 40 per session. The participants must attend the entire module and complete the session to obtain their Green Card. Participants are well aware that failure in attending the complete sessions does require them to attend another whole new session. The written attendance of participants with signatures during 6-hour sessions will be recorded, collected, and documented as proof of their presence in class. Those who attended the training will be automatically covered by Insurance Scheme that ensures the construction personnel against death and accidents. This coverage is not only limited to the accident at the workplace but also a 24 hours protection. The amount of coverage is listed in **Table 2**. The insurance acts as additional coverage for the construction workers for recognizing their contribution to the development of the construction industry in Malaysia.

Table 2. Scope and amount of coverage covered by insurance scheme (CIDB Malaysia, 2016).

Scope	Amount Coverage (RM)
Death (due to an accident)	21,000.00
Death (due to sickness)	3,000.00
Burial Expenses	500.00
Permanent handicap (due to an accident)	Maximum of 18,000.00
Permanent handicap on the whole body (due to sickness)	3,000.00
Hospitalization Benefits (due to an accident)	25.00 per day (Maximum 30 days)

Figure 2 shows the statistic for the Green Card training program taken for foreign workers from the year from 2012 to 2016. The record obtained from CIDB Malaysia shows an increase in foreign workers who are following the Safety Green Card training program every year. This is due to the enforcement and regulation implemented by the Malaysian government which has made it compulsory for all those individuals who are working in the construction sector to attain the Green Card. **Table 3** shows the number of accident cases among the foreign workers reported by CIDB who have already attended CIDB Training. From the year 2012 to 2013 there is a slight increase of 17.01%. However, in 2014 and 2015 there is a steep increase of 51.23% and 57.22 %. In the year 2016, the accident less than 1.59% and become 55.63 %.

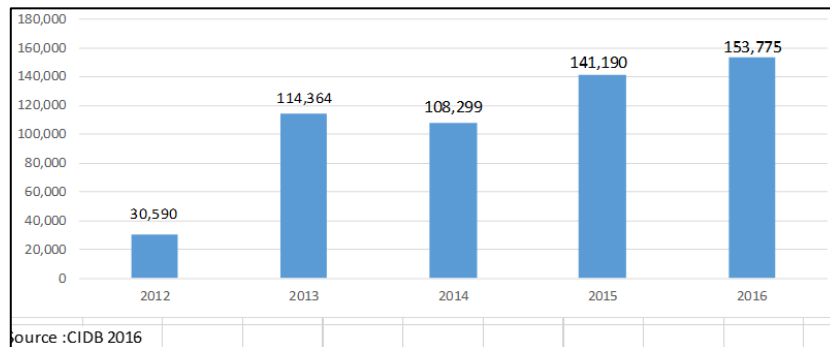


Figure 2. The CIDB green card holder 2012 - 2016 (foreign workers).

Table 3. Scope accident cases by foreign workers.

Year	2012	2013	2014	2015	2016	2017
Accident	864	1011	1529	2404	3789	5897

3.2. Case Study at Nadayu Construction Sdn. Bhd

Nadayu Construction Sdn. Bhd is a construction company formed in 1995 and since then has been actively involved in the construction industry. The company undertakes projects for both government and private sectors. Over the years, Nadayu Construction Sdn Bhd has been involved in a wide range of construction projects such as building maintenance, building roads and bridges, infrastructure works, water storage, water supply project (such as reservoirs), water treatment plants and pipe laying works mechanical and electrical works. The study has used Nadayu’s site located at Subang Bestari to complete the research objectives. The site is still under construction and aims to build 2 blocks and 26 stories tall buildings. The site consists of 220 general workers of various backgrounds.

3.3. Scope and Limitation of the Research

The scope of this study is to focus only on the Class A contractor, Nadayu Construction in Subang Bestari. The project title is “Cadangan Pembangunan 2 Blok Pangsapuri 26 dan 31 Tingkat di atas Podium Tempat Letak Kereta 5 Tingkat”. The total cost of the project is 200 Million which is located at Jalan PU Apollo, Subang Bestari. The main focus of the study is the safety of general workers. Based on the data given by Nadayu Construction Sdn. Bhd, the population of workers on site are from Indonesia 25%, Bangladesh 20%, Myanmar 10%, and Pakistan 10%. The sample for this study consists of 55 participants who have been evaluated before and after enrolling in the CIDB Green Card Program. They have been evaluated based on questionnaires that have been given out before the training and after the training. The

evaluation was conducted based on on-site performance by referring to the following documentation as NCR (Non-compliance Report), Memos, First Aid, and Number of Penalties. To validate the data from the above documents, interviews with engineers, project managers, supervisors, and site safety supervisors were conducted and their observations have been recorded in regards to the safety improvement at the construction site after training had been given to their general workers.

It is expected in this study to have some barriers in conducting the research as the results may not precise and might affect the outcome of the research.

- (i) **Lack of response from respondents.** The respondents are from different levels ranging from managers to general workers. Therefore, there may be a lack of cooperation during the interview. The answers from the response to the questionnaires might not be accurate or as expected.
- (ii) **Language Barrier.** One of the barriers in this study is language. Most of the general workers do not understand English and Bahasa Melayu. Thus, responses to the questionnaire are not accurate.
- (iii) **Cooperation with Contractor.** Cooperation with all contractors is a major problem as mostly there are delays in receiving the response from them and some are not interested to participate in the research. Some of the contractors refuse to reveal all the relevant documents as it is private and confidential, and they should not be disclosed.
- (iv) **Honesty and sincerity.** The response from the questionnaires may not be accurate due to the lack of honesty of the respondents. Thus, answers to the questions cannot be determined or quantified.

3.4. Conceptual Framework

The conceptual framework of this study highlights that before starting the training, the basic knowledge of participants will be identified based on their experience or previous job by using the questionnaires provided. Once the training has been conducted, the same questionnaires are distributed, and the participant will answer the questionnaires again with new knowledge gained during the training session. Safety improvement can be tracked by the documentation and record taken at the site. Important documents such as the Number of NCR, memos, first aid, and many penalties can be used as a source of evidence if there are some improvements on safety issues at the site. The successful reduction of these documents proves the effectiveness of the CIDB Green Card training program (see **Figure 3**).

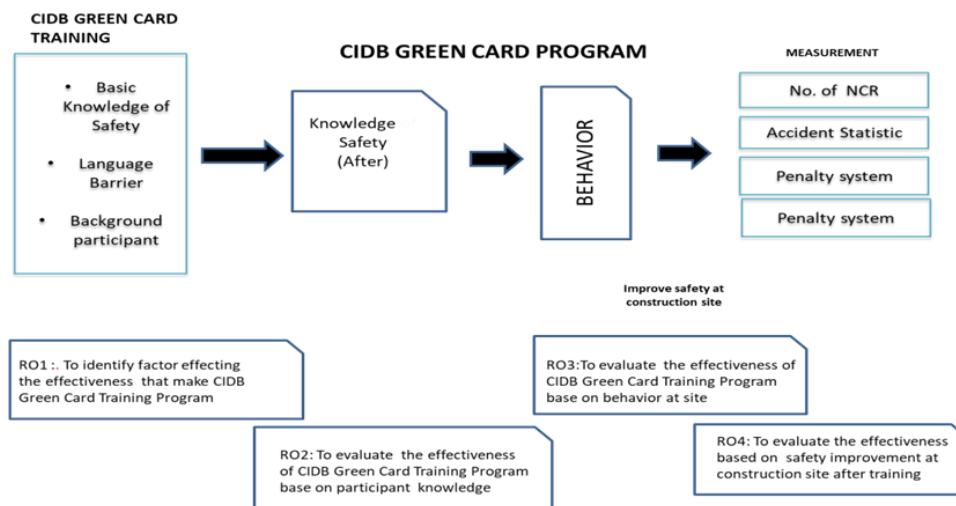


Figure 3. The Conceptual framework.

3.5. Terms and Definitions

Some of the terms used in this study require a detailed and clear definition. The descriptions of the terms in these definitions are very important because a common understanding of the definition with what is being used in this study may be different. The terms are used in this study are as follows:

- (i) **Accident.** According to the Occupational Safety and Health Act 1994 (Act 514) an accident is an event arising out of or related to the job that resulted in a fatal injury or non-lethal injury. Accident in the context of this study refers to unplanned, unexpected events and conditions, occurring in a single sequence of events or through a combination that is in construction.
- (ii) **General Workers.** Someone who does a variety of jobs that do not require any special skill or training.
- (iii) **Safety Training.** Procedures and arrangements which are mandatory such as site-specific induction training and other necessary training through the duration of the contract should be identified and agreed upon.
- (iv) **Behaviour.** Behavior consists of an organism's external reactions to its environment. From psychological aspects, such as emotions, thoughts, and other internal mental processes, it does not usually fall under the category of behavior. Behavior may be modified according to positive or negative reinforcements from the organism's environment or according to self-directed intentions.
- (v) **Knowledge.** Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.
- (vi) **Safety Performance.** Quality of safety-related work and its improvement in the organization can increase its resistance or robustness and lower the risk of accidents.

4. CONCLUSION

In Malaysia, every person who wants to work in the construction industry must attend this mandatory CIDB Green Card Training course to obtain a green card before entering site work. The concept of a green card training program provides awareness to general workers on basic knowledge, legislation, and regulations of safety. Training is part of safety knowledge and it is an effort to mitigate behavior and attitude in reducing accidents.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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