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EARLY VIEW

Investigating Current Practice on Disincentive Program in Indonesian Construction Industry

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ABSTRACT

Much attention has been paid to practices and methods for improving the safety management of construction projects using an incentive approach, but limited studies have been found that focus on the disincentive program, particularly in developing countries such as Indonesia. This research aims to present the findings of current practice on the disincentive program by taking into account the perceptions of Indonesian construction stakeholders. This research uses a mixed-method approach through a semi-structured interview with stakeholders in the construction industry such as academics, associations & professionals, private and state-owned enterprise contractors. This

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research proposes a penalty in terms of the cost and duration of the suspension. Strategies for alleviating increased injuries may include training, regular communication, socialisation, education, repetitive briefing, and continuous supervision. This research indicates that laws and safety policies need to consider the costs suffered by personnel, families, and the ability of both small and large companies to manage such a disincentive program.

Keywords: Safety, Accident, Penalty, Construction, Duration of suspension

INTRODUCTION

Occupational safety and health (OSH) plays a significant role in achieving the scope, target costs, and duration of the initial and design stages of the project (Hasan and Jha, 2013). Although many attempts have been made to improve safety at work, more than 6,300 people have died every day in work-related accidents (International Labour Organization, 2017). The two most dangerous sectors are the mining and construction industries, which are said to be responsible for high levels of injuries and fatal accidents to their employees (United Nations Development Programme, 2015).

Academics believed that 90% of the deaths occurred in developing countries. The personnel in these countries often face three to six times higher mortality rates than other sectors such as manufacturing or other types of services (Gosselin *et al.*, 2009; United Nations Development Programme,

2015). This condition has also occurred in Indonesia, where construction services have substantially contributed to the national accident rate. According to the Social Security Administration Body for Employment (BPJS Ketenagakerjaan), the construction industry ranked first in accident rates at 32%, followed by the manufacturing sector at 31%. More than one hundred thousand occupational injuries and 2,382 deaths were reported in 2016. This accident report shows an increasing trend from the previous year, documenting 110,285 accidents and 2,375 deaths across Indonesia.

Death and injury losses have a negative effect not only on workers and companies but also on national economic growth. Literature suggested that injuries can reduce national gross domestic product from 1.8% to 6% depending on economic stability and other related domestic policy factors (Takala *et al.*, 2014). Occupational accidents in Indonesia amounted to approximately 4 per cent in 2015, with the industry forecasting a loss of US\$ 34.48 billion from fatal and non-fatal injuries.

Despite the insurance scheme improvement, which compensates for increased insurance costs in the event of accidents, a limited study was carried out to evaluate the optimum penalty provision in the Indonesian construction industry. This research objective is twofold. First, the research investigates Indonesia's current practice of disincentive programs by taking into account the perceptions of Indonesian construction stakeholders. Second, the research assesses the penalties that are applicable to the construction sector.

LITERATURE STUDY

Disincentive Program in Construction Industry

Companies in the construction industry have developed alternative practices and strategies to improve safety management and increase the overall performance of construction projects, taking into account traditional approaches or using advanced technology (Pinto *et al.*, 2011; Umer *et al.*, 2018). Client organisations use the incentive and disincentive program to deliver a targeted outcome on safety issues (Teo and Ling, 2009). Many countries and clients commonly adopt disincentive programs such as the provision of penalties as a safety management tool to ensure the project's safety performance.

Efforts to reduce accidents have been investigated by verbal and written punishment, official disapproval, strict regulation, penalty, and law enforcement (Hinze, Hallowell and Baud, 2013; Awwad, El Souki, and Jabbour, 2016). These strategies are designed to protect workers from injury and death during the construction phase (Demirkesen and Arditi, 2015; Hardison *et al.*, 2014). For instance, penalty attempts to address health and safety concerns by enforcing regulatory requirements (Li and Poon, 2015; Yu *et al.*, 2014). Rising penalty costs of about 10% may reduce occupational injury by 0.93% (Lingard and Rowlinson, 2004).

Penalty provisions are used by contractors to fulfil the client's goals and to achieve targeted performance without any safety concerns. It also serves as a mechanism to charge contractors for an unsafe act leading to fatal and

non-fatal accidents during the construction process (Hasan and Jha, 2013). Some parameters can be used to determine penalty provisions, including the quality of construction, human resources, and the availability of a safety toolkit (Stukhart, 1984). The basic principle of the disincentive policy is to investigate the inability of the contractor to perform safety measurements using independent construction auditors. Unlike the incentive scheme used as a preventive measure, the penalty mechanism serves as a corrective measure and becomes the last resort in case of an accident during the project activities.

The performance of incentive and penalty approaches in projects remains debatable. As part of a proactive approach, the incentive scheme provides more significant benefits due to the potential in promoting the use of financial and non-financial rewards that will increase project delivery in a secure manner (Ghasemi *et al.*, 2015). On the other hand, the disincentive mechanism is believed to significantly reduce the unsafe behaviour of contractors at the project site, particularly in developing countries. There is a growing body of research on the impact of the incentive approach in the construction industry, but little evidence of the disincentive program is presented in the literature. This study is hoping to fill these gaps.

Disincentive Program in Several Countries

Countries such as the United States, the United Kingdom, Canada, Singapore, Australia, and Malaysia have developed comprehensive penalty provisions in their national safety policy to protect workers from accidents at

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work. In the United States, the Occupational Safety and Health Act (OSHA) or the Williams Steiger Act determines the magnitude of the penalty in the event of an accident (Alston, Millikin, and Piispanen, 2018). OSHA will charge a penalty if one of the four types of infringement (voluntary, serious, non-serious, and repeated) is met (United States Department of Labour, 2018). Voluntary infringement is the intentional conduct of a company against the law. In contrast, serious infringement is misconduct, which can cause death or severe injury, and other-than-serious infringements, mostly involving minor infringements. OSHA charges US\$ 12,675 for either serious or other-than-serious violation. Willful and repeated infringements shall be charged a maximum of US\$ 126,749. Failure to recover from occupational injuries will also be charged US\$ 126,749.

The Department of Occupational Safety and Health (DOSH) is responsible for managing safety and health in Malaysia (Noraidah and Sarah, 2018). This department produced the Occupational Safety and Health Act, 514 in 1994, which categorises the duties of employers, designers, manufacturers, suppliers, and employees. The Act provides a penalty for the use of cash or imprisonment, or both, for any offence against the performance of duties (Laws of Malaysia Act 514, 1994). The penalty ranges from RM1,000 or US\$ 230 to RM50,000 or equal to US\$ 11,468. Subsequently, prison sentences vary from three months to a maximum of five years, depending on the level of compliance with the Regulation.

Canada regulates safety compliance through the Occupational Health and Safety Act, R.S.O. 1990. It categorises infringements based on personnel or a corporation (Nichol *et al.*, 2020). A person who fails to comply with the Regulation may be fined up to US\$ 19,683 or 12 months prison, or both. On the other hand, a corporation will be charged 20 times of penalty as an individual infringement or up to US\$ 393,662. In 2017, the court charged US\$ 118,100 to the window manufacturer for failing to provide a secure environment.

Singapore categorises a penalty similar to that imposed by Canada, either by personnel or corporate bodies (Tang, 2020). The personnel may be charged up to US\$ 150,404 for their first violation and US\$ 300,808 for their repeated violation. On the contrary, the corporate body may be charged up to US\$ 376,010 for its first infringement, and the following offence may be charged twice to a maximum of US\$ 752,021 (Singapore Statutes Online, 2009).

In addition, safety and regulation in Australia depend on the state or territory, and the penalty varies from one state to another (Liu, Li, and Hassall, 2019). In Western Australia, individuals and corporations must comply with the Occupational Safety and Health Act of 1984 (Chen *et al.*, 2020). The penalty charge rated by the Regulation from one to four levels depends on the level of severity and guilt of the injury (Government of Western Australia, 2019). Level one is for a violation committed by individuals other than the employee

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and the corporation. Employee offences shall be charged US\$ 3,845 for the first violation and US\$ 4,806 for the subsequent adverse action.

On the other hand, the offence of a person other than the employee shall be charged up to US\$ 19,224. It is followed by a US\$ 24,030 charge for the subsequent infringement. In addition, the corporate offence ranges from US\$ 38,450 to US\$ 47,715 for the following infringement. Levels 2 to 4 are allocated for individual or the corporation. The charge ranges from US\$ 76,898 to US\$ 192,244 for the first offence committed by individuals and up to US\$ 384,488 for the corporation.

On the other hand, Indonesia is still looking for the best strategies to support workers through robust safety regulations (Buranatrevedh, 2015). There are two main provisions exposing penalty, namely Law No 1, 1970 on occupational safety and Law No 13, 2003 on employment (Undang - Undang Pemerintah Indonesia, 1970, 2003). In the earlier law, one hundred thousand rupiahs (US\$ 7.5) or a maximum of three months in prison is charged for a company without safety measures and has not been renewed to date. In the following law, corporate failure to provide safety equipment is subject to administrative penalties. Some penalties in this law would be levied on a corporation ranging from US\$ 710 to US\$ 35,500 in respect of child exploitation and administrative compliance of foreign personnel, employee remuneration, paid leave and overtime.

The Indonesian government delegates the Social Security Administration Body for Employment (BPJS Ketenagakerjaan) to provide workers with the

death insurance program. It compensates death from occupational activities based on three components, 1) death compensation of 60% x 80 x monthly wages, with a minimum threshold of US\$ 1,418, 2) funeral fee of US\$ 709, and 3) periodic compensation paid in a total of US\$ 851 (BPJS Ketenagakerjaan, 2020). However, Law No 1, 1970, as the upper act of the ministerial regulation, does not raise the infringement charge from US\$ 7.5 to suit the current industrial context.

As a result, very few companies have ever been subject to an appropriate penalty in the country. Despite insurance covering deaths and workplace accidents, Indonesia requires strict regulation through a penalty provision to ensure the health of workers and promote better OHSMS in the construction industry. The comparison of the penalty for each country previously discussed is shown in Table 1.

Table 1. Comparison of Penalty in Various Countries

Country	Act/Regulation	Maximum Penalty	
		Original Currency	Converted Currency
The United States	Occupational Safety and Health Act	US\$ 126,749	US\$ 126,749
Malaysia	Occupational Safety and Health Act, 514 in 1994	RM50,000	US\$ 11,468
Singapore	Workplace Safety and Health Act, the Ministry of Manpower	S\$ 500,000	US\$ 376,010
Australia	OSH Act 2004 section 15	A\$ 500,000	US\$ 384,488
Canada	Occupational Health and Safety Act, R.S.O. 1990, c. O.1	CA\$ 500,000	US\$ 393,662
Indonesia	Law No 1, 1970 of occupational safety	Rp. 100,000	US\$ 7.5

RESEARCH METHODOLOGY

This research considers the perceptions of construction stakeholders to investigate the current practice of disincentive regulation in Indonesia. An in-depth interview was selected as a research approach because of its ability to extract detailed information from different individuals and use the insight to elaborate on the topic under investigation (Low, Man, and Chan, 2018). Some respondents were selected based on a set of criteria representing not only contractors but also academics, state-owned enterprises, and associations & professionals. These criteria include a minimum of 10 years of experience in construction health and safety, holding management positions, or participating in more than ten construction health and safety projects or above and located in Greater Jakarta. Earlier criteria have been widely used as minimum criteria for construction management research over the years (Cheung and Suen, 2002). On the other hand, geographical considerations were used to make communication more accessible and cope with the time constraints of research. The research excluded international experts to generate consistency and a similar understanding of law and regulation in the country (Berawi, Suwartha, *et al.*, 2018; Rahman *et al.*, 2018).

This research used a semi-structured interview to respond to the research objectives. This approach allows respondents to reply to questions on their terms and provide the flexibility of interaction due to the researcher's freedom to interact and validate replies on a particular topic (Mohd Suhaimi;

Zahira Mohd; Nur Emma & Mohd Salleh, 2012). In order to maintain a focus on specific topics or issues, it is essential to prepare predetermined questions or interview guidelines to generate similar feedback from respondents for analysis (Berawi, Nabila, *et al.*, 2018). The instrument of the interview is shown in table 2.

Table 2. Questionnaire Instruments

Question	Cue for Analysis
Regulation impacts on preventing accidents and protect workers in the construction sector	Positive impact (improve OSH, safety compliance both personal and company) Negative impact (problems, what to propose)
Strategies to reduce the number of accidents in the construction industry	Systematic steps, Components for improvement, Mitigation
The country should apply a proportional penalty system for those who violate safety and cause injuries/death	Percentage of cost or Rupiah per accident, attributes that should be considered
What is the amount and duration of the suggested penalty?	A range of cost, time suspension

In contrast to the quantitative method requiring random samples, a purposive sampling method was used to select respondents. The objective was to generate in-depth information from carefully selected persons in charge or deal with construction accidents and frequent safety cases (Amoatey *et al.*, 2015; Idoro, 2011). This research identified a preliminary list of 40 respondents collected through various sources of websites such as the Indonesian authorities (Ministry of Public Works, Ministry of Health and Ministry of Manpower), professional bodies, professional social networks (e.g., LinkedIn), and publications. Invitations were sent to these respondents, and

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10 of them agreed to participate in the research. The willingness of participants to assist the researcher plays a significant role in achieving research objectives, as they consciously cooperate in providing reliable and rich data.

In order to increase the number of participants, a snowballing approach through referral or recommendation was used when potential respondents remained limited during the identification process (Mohamed, Pärn, and Edwards, 2017). The initial invitation for respondents' participation is sent by e-mail or post to their institution, followed by phone calls whenever necessary to receive a response or feedback. Five of the 20 recommended interviewees are agreed to take part in this research. This approach generates data saturation based on respondents' balancing roles (academics, state-owned enterprise, private contractor, association & professionals). Data saturation defined as a certain point where new information is no longer be found in subsequent interviews (Guest, Bunce, and Johnson, 2006). Although there is no conclusive evidence on the adequacy of sample size in the qualitative research study, some academics believe that data saturation can be achieved when respondents are more than twelve (Galvin, 2015; Guest *et al.*, 2006).

The interview lasted between 15 minutes to 30 minutes, depending on the respondent's availability to collect sufficient data for analysis. Two surveyors accompanied each interview session to take notes because most respondents were not willing to be audiotaped. Notes from the surveyors

were cross-checked, among others, to minimise misinterpretation and increase the validity of the results.

The research analysed the feedback of the respondent in two ways. First, qualitative data was assessed by the keywords of regulation, human resources on safety and health, training, penalties, and others. Internal members have collected and interpreted the keywords selected from the expert's response through a contextual analysis to generate meaning and corroboration. Qualitative data set out the effect of regulation on the Indonesian construction industry, factors causing work accidents, strategies to reduce accidents, and proposed penalty system. Second, the quantitative data were evaluated using descriptive statistics to map the optimal penalties and time suspensions cost. The conceptual research model can be found in figure 1.

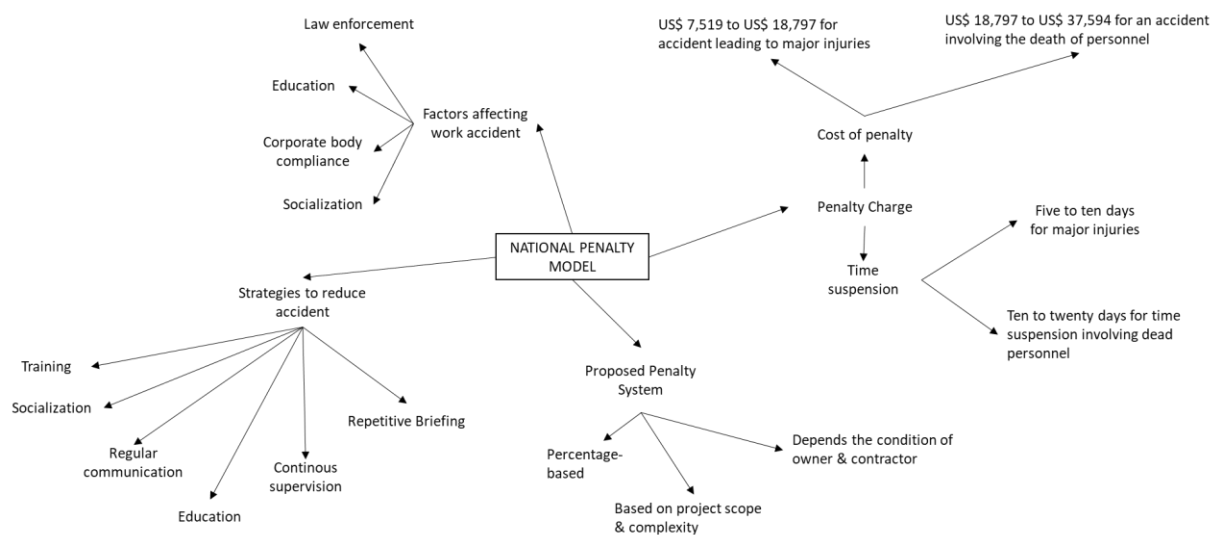


Figure 1. Overview of Research Model

RESULT AND DISCUSSION

Sampling and Data Collection

The respondents' background was categorised into four subjects, including occupation, education, role in the institution, and experience. Out of the 15 respondents interviewed, the result showed that 46.67% works in academia, 33.33% works in the state-owned enterprise of the construction sector, and the rest works in private contractors or associations & professionals. As far as respondent education is concerned, most of them (60 %) hold post-graduate degrees. The project manager and lecturer or researcher were 46.68 % and 40.00 % of the contributors, respectively. The respondents have more than ten years of experience in Indonesia's construction sector and safety health system. The demographics of the respondents can be found in Table 3.

Table 3. Demographics of Respondents

Occupation	Frequency	Percentage (%)	Respondent Role	Frequency	Percentage (%)
Academia	7	46.67	Project Manager	7	46.68
State-Owned Enterprise	5	33.33	Lecturer/Researcher	6	40.00
Private Contractor	2	13.33	Building Owner	1	6.66
Association & professionals	1	6.67	Chairman	1	6.66
Total	15	100.00	Total	15	100.00
Level of Education	Frequency	Percentage (%)	Years of Experience in construction	Frequency	Percentage (%)
Undergraduate	6	40.00	≤ 10	1	6.66
Master	4	26.67	11 – 20	6	40.00
PhD.	5	33.33	>20	8	53.34
Total	15	100	Total	15	100

Impact of Regulation on Occupational Injuries

The first question concerned the impact of the regulation on the prevention of accidents and the safety of workers in the Indonesian construction sector.

The interview session found that the health and safety conditions at work are alarming due to a high number of reported accidents.

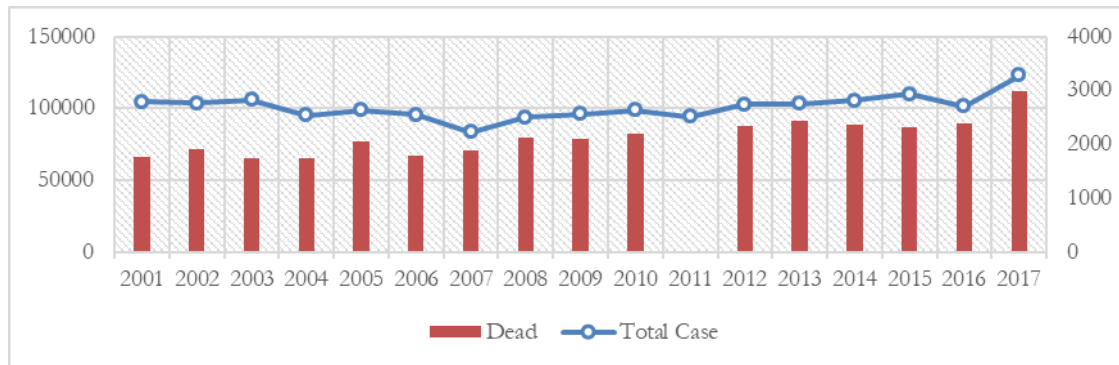


Figure 2. Case of Work Accident in Indonesia During 2001-2017
Source: Isafety Magazine, 2018

The number of accidents between 2001 and 2017 approximately reached 100,000 cases or equal to 12 cases per hour (Isafety Magazine, 2018). In the first quarter of 2018, there were 5,318 cases of accidents, with 87 fatalities, 52 disabled workers, and 1,136 other workers reported having been cured after receiving medical treatment. More than 100,000 cases will be the cumulative case of an accident at the end of the year with this figure. The case of accidents at work in Indonesia is illustrated in Figure 2.

Most respondents agreed that policy and regulation play a significant role in minimising serious injury in the construction sector (see the summary in table 4). However, the in-depth interview identified four significant issues that need to be addressed to improve the regulation's impact on the construction sector. It consisted of strict law enforcement, education, compliance of corporate bodies, and socialisation not only of a low-level organisation but also of top-level management.

Table 4. Respondents' perspective on the impact of regulation on the safety in construction

Questions	Interviewees				Significant	Not Significant	Undetermined
	A	SOE	PC	A&P			
Impact of regulation on the safety in construction	R1				✓		
	R2				✓		
	R3						✓
	R4						✓
	R5					✓	
	R6					✓	
				R7			
		R8				✓	
		R9				✓	
			R10			✓	
			R11				✓
		R12				✓	
		R13				✓	
		R14					✓
		R15					✓
	RESULTS (%)				66.67	6.67	26.66

Note:

- A = Academics
- SOE = State owned enterprise
- PC = Private contractor
- A&P = Association & Professionals

Strict government regulation will force companies to improve their OSH systems. Most of the respondents believed that strict regulations could protect the right to work of employees and regulate the penalty system when the infringement occurred. However, the regulation should also include the companies' rights obligations to reduce the misconduct of the safety system. Current health and safety legislation in Indonesia urgently needs to be renewed, as the penalty fee is comparatively low than other countries around the world and has not been able to cope with the current situation and practice. The perspective of respondents is as follows.

"The Regulation must guarantee the implementation of the OSH as a right for workers and regulate the system of penalties in cases of infringement"
(Academics in the Safety System)

"Regulation certainly contributes a great deal to the competitiveness of the construction industry, but punishment is mainly from the government's side. That is why our accident rate among the neighbouring countries is still high. (Manager of State-Owned Enterprise in Infrastructure)

Indonesia has safety regulations in the construction sector, but not all companies are aware or unwilling to comply with the regulation. Therefore, adequate socialisation and education by an authorised institution play a crucial role in improving safety performance. Persons or institutions responsible for the supervision of the infrastructure/project should also be included in the penalty system if the whole/part of the project has not been monitored. In addition, infringements of the regulations may relate to minimum supervision and the number of construction safety experts. The company that oversees the project needs to increase human resources to the acceptable number of personnel, and the government body should provide appropriate certification to experts in the construction industry. The perspective of the respondents is as follows.

"There are a lot of regulations, but not many people know about it. The socialisation of these regulations should therefore be carried out efficiently and consistently"(Academics in the field of building performance)

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"Compliance with government regulations is necessary for companies. However, in practical terms, many workers often neglect regulations, covering all rights and obligations. It appears that the company's system does not work in such a way that regulations are often seen to have a minimum role in the project. (Manager of Private Contractor)

Some of the respondents considered injuries associated with low worker awareness. Despite continuous training and constant supervision, some personnel tended not to use safety gear or follow a standard operating procedure (SOP) in handling specific activities. Based on the literature review, other countries such as Singapore and Australia distinguish between company-based and individual charging mechanisms. The investigation of a violation by the court for individuals will have a lower punishment than for the company side. Individuals may be charged between S\$ 200,000 and S\$ 250,000, while the company may be charged up to S\$ 500,000 for their first infringement. Both individuals and companies are subject to a gradual increase in the penalty for their consecutive infringement. One of the following respondents from the project owner generates insightful input.

"Regulations in Indonesia are partially taken from existing regulations abroad. The low level of education of local contractors often neglects regulation (Project Owner)

In addition, the respondents believe that OSH should be seen as an advantage for construction companies rather than as a trend in performing business as usual. The impact of regulation significantly improves the

competitiveness of the construction industry when related parties share similar safety and awareness. The view of one of the respondents can be seen in the following statement.

"Regulation should be seen as an advantage for the company when properly implemented. However, unlike large companies, low-level companies rarely comply with regulation due to their resource and project activities" (Manager of State-Owned Enterprise in Construction)

Employees in developing countries have a low awareness than those in developed countries. Specific building skills and safety awareness should be provided to construction workers in the United Kingdom. To join the construction company, they must have the Construction Skills Certification Scheme (CSCS) card and pass the construction skills test according to their expertise area. The UK Government has integrated the CSCS system with national insurance to facilitate supervision and monitoring. In the future, this concept can be implemented by the Indonesian Government as a benchmark for developing a comprehensive safety system in the construction sector.

Strategies to Reduce Construction Accidents

The in-depth interview identified strategies to reduce infringements in the construction industry consisted of training, regular communication, socialisation, education, repetitive briefing, and continuous supervision (see the detail in table 5).

Table 5. Respondents' perspective on strategies to reduce accidents

Questions	Interviewees				T	S	R	E	C	Rb
	A	SOE	PC	A&P						
Strategies to reduce the number of accidents in the construction industry	R1				✓	✓				
	R2						✓			
	R3						✓			
	R4						✓			
	R5					✓	✓			
	R6							✓	✓	
				R7		✓	✓			
		R8					✓	✓		
		R9						✓	✓	✓
			R10					✓	✓	
			R11					✓		
		R12				✓	✓			✓
		R13								✓
	R14					✓	✓		✓	✓
		R15				✓	✓			
	RESULTS (%)				20.68	24.14	17.25	13.79	13.79	10.35

Note:

- A = Academics
- SOE = State owned enterprise
- PC = Private contractor
- A&P = Association & Professionals
- T = Training
- S = Socialization
- R = Regular communication
- E = Education
- C = Continuous supervision
- Rb = Repetitive briefing

More than fifty per cent of the respondents argued that training is the most effective way to reduce occupational injuries. The literature study also shared similar findings where safety training was one of the critical success factors in improving the implementation of a safety program in the project.

However, repetitive briefing and induction should be more socialised than just an occasional training session to reduce injury at the construction site. Safety-minded personnel should also be planted, and a new work ethic should emerge. The perspective of low-level employees who consider safety

to be a burden in their work activities should be lifted. Continuous monitoring and evaluation of the repetitive briefing should also be the responsibility of the stakeholders involved in the project. Some of the arguments raised by the respondents are as follows.

“In my opinion, training is indeed less effective to mitigate accidents; in fact, repetitive briefing and induction are much more significant”

(Manager of State-Owned Enterprise in Construction)

“Training is not effective as it seems when it does not involved workers awareness of accidents” (Manager of State-Owned Enterprise in Construction)

“Training was not effective due to minimum standard training patterns for employees. First, you must have the OSH system, which is sometimes difficult for middle and low contractors. Secondly, you should have some teams restating the socialisation to the team members continuously” (Manager of State-Owned Enterprise in Construction)

Direct and indirect causes caused accidents. Occupational health can be improved if a direct cause such as an unsafe act is intervened by routine supervision and inspection. It should be carried out by the owner or general contractor, as there is a lack of supervisory personnel in the government. On the other hand, the owner also needs to tackle unsafe conditions and provide employees with a secure workplace. The indirect cause should be tackled by training and socialisation, whether from the government or the owner. Respondent's perspective was as follows.

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"Training is a way to overcome indirect causes such as educational failure and OSH management as well as direct causes such as unsafe behaviour and unsafe condition." (Academics in Safety Regulation)

Training should be more in practical activities than in theoretical knowledge. However, different awareness of safety among project respondents contributes to a higher level of accident occurrence. The project manager needs to ensure that the SOP is followed and that the engineering aspect is well documented to minimise the risk of injury. In addition, the levelling of safety and health awareness in the project is complicated.

It is because most low-level labour is non-permanent, and the staff turnover is relatively high. Companies need to carry out workshops or seminars for new recruiters, as they do not have the necessary skills and abilities in the construction industry. Academics also found that new labourers have experience of between 1 and 10 years, and most of them (84 %) have acquired their skills and knowledge through on-the-job training in formal education or previous experience (Ismail *et al.*, 2012).

"Training is essential but who is trained and in what stage they are trained are crucial. Mitigation strategies also important especially in the field of engineering planning and design" (Professor in Fire Safety)

"Project manager and supervisor need to know how to educate and train lower labours. They need to know the dangers if safety regulations and equipment are not complied with" (Safety Practitioner of the Association)

Training has often been proposed for intermediate and low-level employees (safety managers and staff). However, it seldom includes the company's top management. Unless potential workers are involved, training sessions tend to be provided for those who have more spare time. At times, the respondent attended a safety and health training session solely for administrative purposes rather than avoiding injury or death during occupational activities. Respondents who have taken part in training sessions can have different reasons, such as personal interests or their company.

Personal interest in attending the workshop depends on the employee's age, previous experience, and level of education. Married employees more prefer to abide by the rules on account of their duty as the head of the family taking care of their spouse and children, rather than those who are single. Blue-collar workers with minimal education and limited experience appear to need periodic education and training since they may have negative views of the safety program. In addition, the person who acts as a subcontractor or indirect employment has shown less commitment and control at the construction site. Most of them earned lower salaries than the full-time employees of the main contractor, had a higher workload, and had a minor career achievement. Improving the willingness of workers to engage in safety training should therefore be a priority concern for the Indonesian construction industry.

On the other hand, communication encompasses the transfer of information. It can be interpreted as a simple channelling involving a few individuals or a

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complex communication within a group or large organisation. The construction project has different people and backgrounds, and it would be difficult for respondents to interact at a similar frequency. It may be difficult for a project manager or someone with a higher education position to discuss with lower-level staff. Interpersonal skills and information transfer techniques are becoming critical in ensuring a similar understanding of safety management. The outlook from one of the respondents is as follows.

"Project manager must understand how to deal with workers in their "language" rather than formal communication. Otherwise, training will be useless" (Project owner)

Communication can be used either verbally or non-verbally in the project. Verbal through one-way communication, such as safety talk before the morning session, should be conducted to check the ability of employees to operate safety equipment. Two-way communication through meetings or focus groups generates extensive information sharing and requires leadership skills to ensure everyone complies with safety regulations. Media communication or visualisation, such as posters, notice boards, audio videos, and others, may increase awareness of safety and the consequences of accidents for employees and companies. Above all, the communication between related parties should be intense, and continuity will ensure that the safety deliverables are achieved.

Despite all the benefits, training and educating workers compromise the corporate expenditure. Larger contractors can certainly afford regular

training and provide competent instructors. On the other hand, small-scale contractors mostly have a tight budget, and routine training will be challenging to deliver. Therefore, the Government has proposed that capacity building be provided, particularly for small-scale contractors, so that their awareness of OSH can be significantly improved. The statement by one of the respondents on these issues can be seen as follows.

"Regular training may be possible for large companies, but not for small ones in the long run due to their limited budget and resources" (State-owned Enterprise Construction Manager)

Proposed Penalty Provision

The purpose of the penalty provision is to deter offenders, both individuals and corporate bodies. The intention to apply the punishment concept is based on two critical factors: the system readiness to prosecute a case from the victim's point of view and cultural behaviour. Building the system requires collaborative programs from all relevant stakeholders, such as contractors, government, associations & professionals, and academics. The summary of respondents' feedback on the proposed penalty in the Indonesian construction industry is shown in table 6.

Most respondents agreed that a penalty had to be levied and that each stakeholder had to comply with the regulations. The system must cover reward and punishment, the mechanism for reporting accidents and claims, as well as objective investigators to evaluate actors in the event of a

violation. Unlike many developed countries, such as the US or the European Union member countries, Indonesian prefer to apply the agreement to both parties rather than the legal system.

Table 6. Respondents' perspective on the proposed penalty system

Questions	Interviewees				Percentage-based	Based on project scope & complexity	Depends on the condition of the owner & contractor
	A	SOE	PC	A&P			
Proposed penalty system in the Indonesian construction industry	R1						✓
	R2				✓		
	R3				✓		
	R4				✓		
	R5				✓		
	R6						✓
				R7		✓	
		R8			✓		
		R9					✓
			R10			✓	
			R11		✓		
		R12				✓	
		R13					✓
	R14				✓		
		R15					✓
	RESULTS (%)				46.67	20.00	33.33

Note:

- A = Academics
- SOE = State owned enterprise
- PC = Private contractor
- A&P = Association & Professionals

When penalties and rewards are imposed, the government should ensure that the regulation applies to all parties. The mechanism should allow employees or families to file a lawsuit in the event of an accident. Occasionally, the investigation only occurred when death was involved, which most of the time, the company had to deal with the police officer. The perspective of some of the respondents is as follows.

"Deterrent regulation is very important. But, the question is how ready our systems are to make the right demands of individuals who become victims of accidents. Our culture tends to use an emotional relationship rather than an objective perspective in the event of an accident."
"(Professor in Occupational Health)

"When the cost of the penalty is high, the contractor will charge the cost to the project. As a result, the project may become more expensive. Safety costs should be included in the Project Bill of Quantity (BQ) "
"(Manager of State-owned Enterprises)

Generally, the penalty cost of infringement is debatable, particularly when considering the scope of a project, contractor's size, the type of owners and personnel involved. Some believed that fifty million rupiahs to one hundred and fifty million rupiahs (US\$ 3,759.4 to US\$ 11,278.2) might be charged to a company in the event of an accident. At the same time, others preferred the amount of penalty that would guarantee the family's life for about twenty years, particularly in the event of a fatal accident.

On the other hand, the penalty cost could be based on a proportion rather than a certain amount per accident. The exact cost (occupational accidents causing injuries and disability) may vary between projects. Consideration should be given to the effect of disability on the individual who is head of the family. The penalty should therefore cover the welfare of employees and the benefits they may receive. When the costs of accidents

involving injury and disability have been incurred, the cost of death should be twice as high.

On the contrary, a high penalty of more than one billion rupiahs (US\$ 75,188) per accident requires more rationality and consensus on the part of relevant stakeholders. In addition, contractors are encouraged to set the cost of safety in the project's Bill of Quantity (BQ) before submitting it to the owner. In addition, insurance policies in the country must also take into account the amount of compensation. This calculation includes the probability factor of each event and the amount of money paid by employees. The sum of the fee may include inflation and other contributing factors. The perspective from one of the respondents is as follows.

“Instead of using exact nominal, a percentage of the project is more reasonable for the cost of the penalty. A complex project may have a higher cost of the penalty” (Professor in Fire Safety)

In addition, the penalty must take into account the level of human welfare expressed as per capita income. The cost of a penalty similar to Malaysia (US\$ 11,506) may be incurred in Indonesia due to a similar construction environment and economic conditions. The Indonesian Government promotes collaboration with the private sector in implementing the OSH program to increase awareness among project respondents. The role of supervision, in which the country has limited experts, is also crucial in ensuring the implementation of the OSH. This research suggests evaluating the current formulation of penalties and focusing on the systematic supervision of the

government. When the penalty mechanism is in effect, the expense of penalty can be used by government institutions to carry out safety education and safety attributes in the procurement process for small-scale contractors or others who need assistance in terms of safety issues. There are some arguments concerning this issue as follows.

"The cost of the penalty should take into account the income per capita of Indonesia" (Chief of the Indonesian OSH Association)

"Focus on the supervision of the government body. When the penalty is applied, the cost of the penalty may be used to carry out safety education and safety attributes in the procurement process "(Manager in Private Contractor)

Penalty Charge

Most of the respondents (53.84%) proposed penalty charges ranged from US\$ 7,519 to US\$ 18,797 for serious injuries, and 46.13% agreed to charge a death-related accident from US\$ 18,797 to US\$ 37,594. The proposed penalty for major injuries is nearly similar to Malaysia as US\$ 11,468. If death occurs in the event of an accident, the charge should be double that of the event of an accident leading to injury.

As the second-highest preference, respondents opted to charge US\$ 18,797 to US\$ 37,594 for accidents causing serious injury and more than US\$ 150,377 for penalties involving the death of personnel. The death penalty is undoubtedly high, showing that the respondent values human beings as an

asset in the industry and should be protected by all means, particularly concerning their lives. As Canada has sentenced a company to a charge up to US\$ 150,000, it can also be applied to the Indonesian construction industry. A detail of the preferences of the respondent is shown in Figure 3.

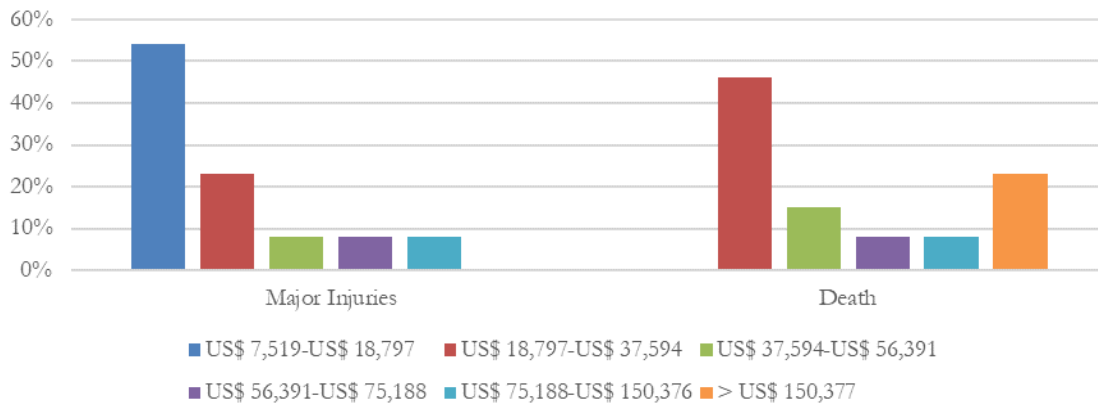


Figure 3. Recommendation of Penalty Charge

Two private contractors and state-owned enterprise respondents proposed a penalty provision based on the complexity of the project. Fairness is considered one of the primary aspects when projects are more massive and complex in terms of scope, budget, and resources. Thus, the penalty can be successfully enforced based on the ranking scheme applied in Australia, taking into account the level of injury and the project's scope.

This study also suggested that the duration of the project should be suspended for activities involving major injuries and deaths of between five to thirty days. Most respondents (70 %) selected between five and ten days as the appropriate time for a major injury. In the meantime, the project needs to be suspended from 10 to 20 days of death. An independent evaluator uses this time window to assess and determine whether a further suspension is

necessary or the company needs to be charged accordingly. A longer duration of the suspension will delay the completion time and reduce the project's cost performance while shortening the duration will reduce the dissuasive effect on the contractor. Expert responses to the time suspension can be seen in Figure 4.

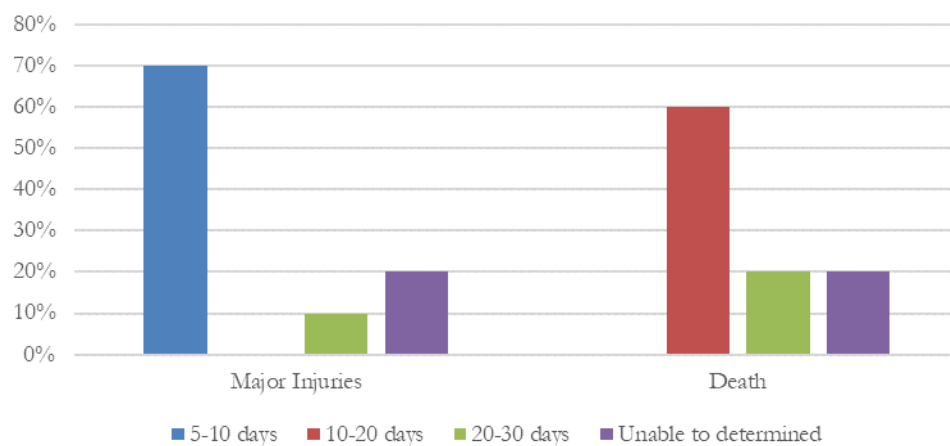


Figure 4. Recommendation of Time Suspension in Indonesian Construction Project

CONCLUSION

This study examined the Indonesian regulations on the prevention of accidents and the safety of construction workers. The current penalty charge based on the Regulation must be renewed to a more reasonable one. However, the problems with the proper penalty scheme are the minimum level of law enforcement, inadequate education and socialisation by the authorities, owners, and building contractors, and the low level of compliance by corporate bodies.

Current Practice on Disincentive Program

Reducing infringements in the construction industry requires some strategies, such as training, regular communication, socialisation, education, repetitive briefing, and continuous supervision. These strategies should be comprehensively formulated by involving contractors and the active participation of stakeholders from government, associations & professionals, owners, and academics. As far as the penalty is concerned, the charge should be fair and consider the losses incurred by the employee, the family, and the company itself. Two alternatives can be used for the penalty cost, such as the percentage of the project or the exact amount per accident. The percentage will be much more straightforward, and the time of the value of the project will be overlooked. The percentage can be divided into categories based on the complexity of the project.

On the other hand, the nominal term may also be used for infringement charges per accident. However, the law or regulation should show that the regulation follows inflation and other contributing factors to determine the future charge. Otherwise, regulation or policy may pose a dispute due to the unclear penalty cost, given the time value of the money.

The research suggests a penalty charge from US\$ 7,519 to US\$ 18,797 for accidents causing major injury and a penalty of US\$ 18,797 to US\$ 37,594 for accidents involving the death of personnel. On the other hand, it is recommended that on-site activities be stopped for five to ten days in the event of major injuries. Ten to twenty days are required to suspend a project when the person has been found dead on site. These findings demonstrate

the benefit of the cost penalty for employees, families, and the community in improving occupational health and safety in the construction sector.

Further studies may include but are not limited to the number of penalties required by the industry, taking into account the scope of the project, the percentage of injuries (near miss, minor injuries, and disability), and a more in-depth analysis of the independent institution as the safety system evaluator.

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