

A STUDY ON ASSESSING CONSTRUCTION SITE SAFETY PRACTICES AMONG CLASS OF CONTRACTORS

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ABSTRACT

In recent years, this construction area has been considered as one of the most dangerous industries in which workers are more exposed to the risk of accidents. The Department of Occupational Safety and Health (DOSH) statistics prove that the construction industry has the highest rate of fatal accidents compared to other industries in the country. Therefore, this study mainly focused on the implementation of safety practices in construction industry focusing on among class of contractor A, B, C and D. Regarding to this fact, the main goal of this study is focus on the evaluation of the implementation of safety practices among each class of contractors. This study was started by reviewing literature reviews from journals, thesis, articles, books and web pages. Questionnaire surveys were formed and designed focusing on safety practices in the construction industry. A survey in questionnaire form was carried out to obtain data from the contractor's class A to D. Subsequently, the data from the questionnaire were analyzed by using the SPSS software. In conclusion, this study also could show the difference of level of safety practices which is applied by every class of contractor in their workplace area that class of contractor C and following by class of contractor D, are contractors which is noted the lowest level in practicing safety work culture in construction. The study also proposes some suggestions and recommendations to improve the safety practices and to minimize the accidents at construction industry.

Keywords: *safety practices, construction site, implementation, class of contractors*

INTRODUCTION

Malaysia, pursuing the goals of Vision 2020 and Shared Prosperity Vision 2030, has experienced rapid growth in various economic sectors, notably in construction (Malaysia, 2019) (Khan et al., 2014). This industry, encompassing projects ranging from buildings and dams to roads and bridges, has significantly boosted the nation's economic progress. However, its rapid development has also surfaced challenges, particularly concerning worker safety.

The Social Security Organization (SOCSO) reported that the transportation and storage industry accounted for 6.3% of all workplace-related accidents in 2010 (Rahmatika, Dien Noviany; Afiah, 2014). Moreover, the Department of Occupational Safety and Health (DOSH) Malaysia highlighted that the construction industry had the highest fatality rate in the country between 2009 and 2018 (Azmi et al., 2020), (Amirah et al, 2013).

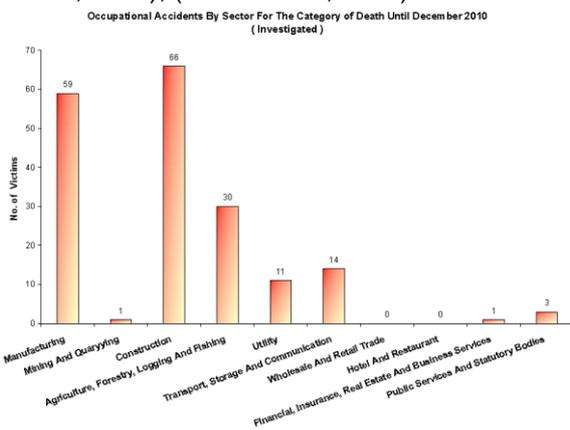


Figure 1. Occupational accidents by sector for the category of death

to **Table 11.** A notable thesis chosen for detailed analysis was "Construction Safety Practices in Batam, Indonesia" by Inda Eka Pemana. This selection was due to its exemplary safety practices demonstrated in the study (Permana, 2016).

In 1994, Malaysia introduced the "Occupational Safety and Health Act 1994 (Act 514)", aimed at:

1. Ensuring workplace safety and health.
2. Protecting individuals in the workplace environment.
3. Promoting an environment adapted to physiological needs.
4. Facilitating the transition to improved safety standards through regulations and industry codes.

Enforced by the Department of Occupational Safety and Health (DOSH), this Act mandates companies to promote and adhere to safety regulations. DOSH, overseen by the

While a safe and healthy workplace minimizes operational costs and project delays, many companies prioritize profit over safety. Consequently, comprehensive accident prevention policies remain sparse, and the real cost of accidents is often underestimated (Hamid et al., 2019), (Oxford University, 2019). Despite its economic contributions, the construction industry's image is marred by high accident and fatality rates. Although safety regulations are in place, awareness and practical implementation have been subpar in recent years (Azmi et al., 2020), (Hamid et al., 2019), (Oxford University, 2019).

This research aims to:

- 1) Evaluate safety practices among construction contractors from classes A to D.
- 2) Identify and promote best safety practices in the construction industry through literature reviews, questionnaires, and site visits.
- 3) Offer recommendations to enhance safety management and emphasize the enforcement of safety rules by authorities.

Safety is defined by the English Oxford Dictionary as a state of being free from danger, risk, or injury (Brockman, 2014; Oxford University Press, 2019). While the "Safety First" slogan is prominently displayed at construction sites, its actual prioritization is questionable. This study emphasizes the importance of sincere safety practice implementation to ensure its more than just a slogan (Furness & Muckett, 2007; Li et al., 2020).

Our research delves into evaluating the best current safety practices in the construction industry. We examined seven pieces of literature, including journals, theses, and articles, summarized in

Minister of Human Resources Malaysia, also serves as the secretariat to the National Council for Occupational Safety and Health (Ministry of Human Resources Malaysia, 2011). A list of notable regulations under this Act includes:

- 1) Occupational Safety and Health (Employer's Safety and Health General Policy Statement)(Exception) Regulation 1995.
- 2) Occupational Safety and Health (Control of Industry Major Accident Hazards) Regulation 1996
- 3) Occupational Safety and Health (Safety and Health Committee) Regulations 1996
- 4) Occupational Safety and Health (Classification, Packaging and Labeling of Hazardous Chemicals) Regulation 1997
- 5) Occupational Safety and Health (Safety and Health Officer) Regulations 1997
- 6) Occupational Safety and Health (Prohibition of Use of Substance) Order 1999

- 7) Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulation 2000
- 8) Occupational Safety and Health (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease) Regulation 2004

In developing countries, adherence to safety regulations is crucial. The success of these safety practices hinges on the behavior of construction workers and their supervisors. Despite universal safety regulations, variations in worker behavior can influence the actual safety outcomes on site.

From the literature, several key factors pivotal to effective safety practice implementation were identified:

1. Safety resource provision.
2. Equipment maintenance.
3. Comprehensive training programs for workers.
4. Enhanced workplace security measures.
5. Clear planning and work instructions.
6. Regular safety inspections.
7. Adherence to top-tier safety standards.
8. Risk prevention measures.
9. Maintaining discipline and fostering a positive worker attitude.
10. Emergency preparedness and safety equipment availability.
11. Rigorous safety management and enforcement.
12. Engaging experienced contractors and subcontractors.
13. Provision of essential safety facilities.

These insights offer a roadmap for elevating safety standards in the Malaysian construction sector.

METHOD

This study employed two primary methods to achieve its objectives:

1. **Literature Review:** A comprehensive review of existing literature was conducted to collate information about current safety practices in the construction industry. Through this review, we synthesized essential safety practices and subsequently identified a standout thesis by Inda Eka Permana, titled 'Construction Safety Practices in Batam, Indonesia'.
2. **Questionnaire Survey:** Structured questionnaires were distributed to contractors of classes A through D. This survey aimed to gather insights about the implementation of safety practices at their respective workplaces. Feedback was then compiled and analyzed to identify prevalent safety practices, as highlighted by the literature.

The survey inquired about specific safety practices, segmented into 13 key categories:

1. Safety resource provision.
2. Equipment maintenance.
3. Worker training programs.
4. Workplace security measures.
5. Work instruction and planning.
6. Safety inspections.
7. High-standard safety program implementation.
8. Risk prevention strategies.
9. Discipline and worker attitude.
10. Emergency response and safety tools.
11. Rigorous safety management and enforcement.
12. Engagement with professional contractors and subcontractors.
13. Safety facility provisions.

Responses were captured based on a binary checklist, with "1" indicating "Yes" and "2" indicating "No". All collected data were processed using the SPSS Software.

The entire methodology, from literature review to data analysis, is illustrated in **Error! Reference source not found..**

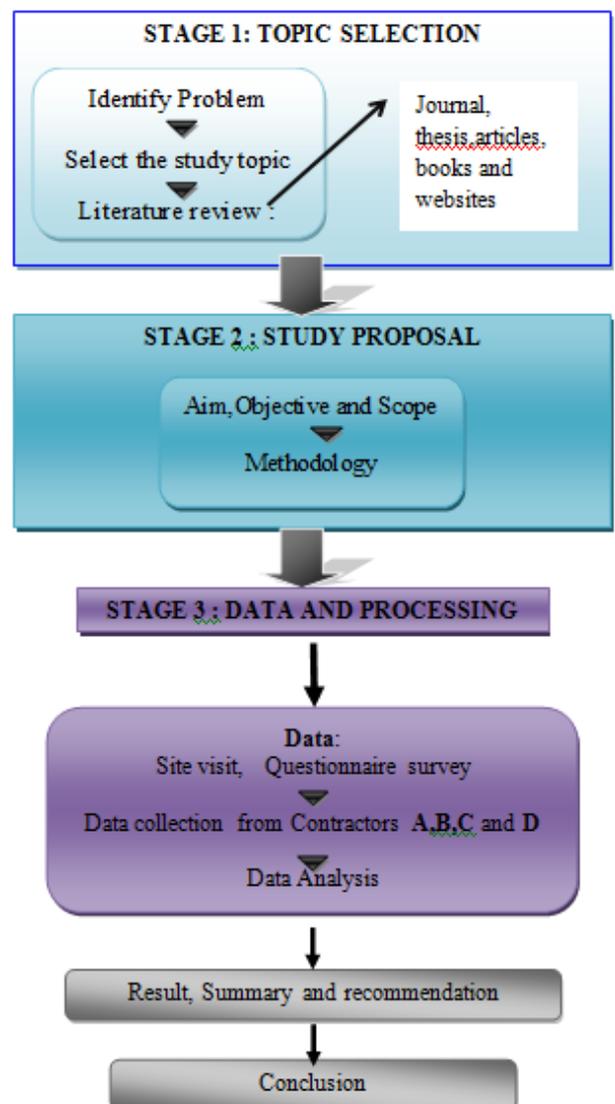


Figure 2. Flowchart of Study Methodology

RESULT AND DISCUSSION

Utilizing literature reviews and surveys directed at contractors of classes A to D in Kuala Terengganu, this chapter delves into the data analysis to fulfill the study's objectives.

Respondent's Background: The survey, processed using SPSS, revealed that the construction industry is predominantly male, with 68.3% of male respondents. A majority (56.1%) were aged between 20-29 years, with 97.7% having an undergraduate education. Of these, 56.1% held professional positions, and nearly half (48.8%) had between six to ten years of experience (**Table 14**).

Reliability Testing: A reliability test verified the questionnaire's consistency. With an overall Cronbach's Alpha of 0.968 (greater than the 0.7 threshold), the questions were deemed reliable. Further reliability statistics for each group of questions are detailed in **Error! Reference source not found.** and **Error! Reference source not found.**

Table 1. Reliability statistics for all question

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.968	.965	65

Table 2. Reliability statistics for each group question

Group of Question	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
Group 1	.245	.247	5
Group 2	.849	.849	4
Group 3	.929	.932	6
Group 4	-.004	-.262	5
Group 5	.726	.721	4
Group 6	.930	.931	7
Group 7	.605	.570	3
Group 8	.627	.542	5
Group 9	.734	.697	5
Group 10	.834	.836	7
Group 11	.868	.873	9
Group 12	.721	.874	4
Group 13	.721	.874	4

Safety Practice Analysis: The survey addressed 13 key areas of safety practices, from safety support provision to facility availability. Contractors from classes A to D were assessed on these practices, with mean scores indicating the level of implementation. Higher mean scores

suggested lesser importance attributed to the respective safety practice.

Table 3. Comparison means between different respondents

Group	Class Of Contractors			
	Class A	Class B	Class C	Class D
Group 1	1.16	1.23	1.46	1.42
Group 2	1.33	1.45	1.615	1.69
Group 3	1.28	1.94	2	1.9
Group 4	1.134	1.34	1.44	1.378
Group 5	1	1.61	1.83	1.585
Group 6	1.15	1.82	1.79	1.89
Group 7	1.5	1.82	2	1.945
Group 8	1.12	1.10	1.312	1.422
Group 9	1	1.54	1.576	1.556
Group 10	1.04	1.57	1.68	1.62
Group 11	1.44	1.83	2	1.93
Group 12	1.62	1.91	2	2
Group 13	1	1.22	1.28	1.44
Average Total	1.21	1.56	1.69	1.68

Analysis of Safety Practices by Contractor Class:

- **Group 1 (Safety Support):** Class C contractors scored the highest mean (1.46), indicating a weakness in prioritizing safety. In contrast, Class A contractors, with the lowest mean score, prioritized safety support for workers.
- **Group 2 (Equipment Maintenance):** Class D contractors scored the highest mean (1.69), whereas Class A showed the strongest commitment with a score of 1.33. Class B and C contractors scored 1.45 and 1.65, respectively.
- **Group 3 (Workers Education & Training):** Class C contractors scored the highest with a mean of 2, while Class A placed the highest emphasis on worker education, scoring 1.28. Class B and D were closely matched with scores of 1.94 and 1.9, respectively.
- **Group 4 (Workplace Security System):** Class C led with a mean of 1.44, followed by Class D at 1.378. Class A exhibited the most robust security systems with a score of 1.134.
- **Group 5 (Work Instructions & Planning):** Class C had the least emphasis on this aspect with a score of 1.83, while Class A showed strong alignment with a score of 1.
- **Group 6 (Inspection):** Class D, with the highest mean of 1.89, seemed to underplay the importance of inspections. In contrast, Class A, scoring 1.15, emphasized regular site inspections.
- **Group 7 (High Standard Safety Program):** While Class C contractors showed the least interest with a score of 2, Class A contractors were

keen on maintaining high safety standards, scoring 1.5.

- **Group 8 (Risk Prevention):** Class D led with a score of 1.422, with Class A and C scoring 1.10 and 1.312, respectively. Class B contractors showed strong commitment to risk prevention.
- **Group 9 (Discipline & Worker Attitude):** Class C scored the highest with 1.576, while Class A contractors emphasized discipline, scoring the lowest.
- **Group 10 (Emergency Support & Safety Devices):** Class C led with a score of 1.68, whereas Class A, with a score of 1.04, emphasized the importance of emergency preparedness.
- **Group 11 (Safety Management & Enforcement):** Class C scored the highest with 2,

while Class A demonstrated strict safety management, scoring 1.44.

- **Group 12 (Professional Contractor Engagement):** Both Class C and D scored the highest with 2, indicating lesser emphasis, while Class A highlighted the importance of hiring professionals, scoring 1.62.
- **Group 13 (Facilities):** Class D led with a score of 1.44, while Class A contractors, scoring the lowest, showcased the importance of providing essential facilities.

In summary, Class A contractors consistently prioritized safety practices, with an overall mean score of 1.21, showcasing their dedication to safety. Conversely, Class C contractors, with an overall mean score of 1.69, demonstrated less emphasis on safety practices.

Table 4. The List of The Literature Review

NO	TITLE	AUTHOR
1.	'Best Practices in Safety Management For Conventional Civil Construction Industry in Malaysia'	Research by Rosli B. Ahmad
2.	'Safety Management Practices in the Bhutanese Construction Industry'	Journal by Kin Dorji and Bonaventura H.W. Hadikusumo
3.	'Meeting the Challenges in Industrial Safety Management in Construction Works'	Journal by Dr. S.K Jain
4.	'Safety Programs In Large – Size Construction Firms Operating in Egypt'	Journal by Amr A.G Hassanein and Raaga S.Hanna
5.	'An Analysis of Construction Safety Best Practices From a Cognitive System Engineering Perspective'	Article by Tarcisio Abrey Saurin, Carlos Torres Formoso and Fabricio Borges Cambraia
6.	'An Evaluation of Health and Safety Management in Small Construction Enterprises in the United Kingdom'	Research by John H. Reynolds, Apollo Tutesigensi and David J. Linsell
7.	'Construction Safety Practices in Batam, Indonesia'	Research by Inda Eka Permana

Table 5. Summary of Research Worked Finding on Safety Practices in Construction Industry

No	Author / Publisher	Title	Findings
1	Rosli B. Ahmad (Thesis-Degree of Master of Science in construction Management, UTM, May 2008)	Best Practises in Safety Management For Conventional Civil Construction Industry in Malaysia [12]	Examined safety management practices in the oil and gas construction industry, particularly at Sime Darby Engineering Sdn Bhd (SdESB). Investigated safety management in the conventional civil construction industry in Malaysia. Recommended best practices for safety management in civil construction include: Establishing a robust safety management system with emphasis on safety. Allocating a dedicated budget for safety. Hiring safety officers and establishing safety departments. Crafting an overarching safety plan and forming a safety committee. Conducting safety walkabouts, audits, training, and awareness campaigns. Creating emergency response teams, designated safety zones, and emphasizing personal protection equipment. Focusing on safety permits, medical treatments, equipment inspections, hazard identification, and emergency drills. Prioritizing communication of safety information and ensuring compliance.

Table 6. Summary of research worked finding on safety practises in construction industry

No	Author / Publisher	Title	Findings
2	Kin Dorji Bonaventura H. W. Hadikusumo (Journal of Construction in Developing Countries, Vol.11, No.2, 2006)	Safety Management Practises in the Bhutanese Construction Industry[13]	<p>Research was conducted with 40 construction contractors and 14 government officials in Bhutan to understand safety management practices.</p> <p>Key Challenges:</p> <ul style="list-style-type: none"> • Lack of safety standards and regulations. • Limited prioritization of safety. • Insufficient safety data and skilled manpower. • Absence of safety training and structured systems. <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Increase awareness of safety legislations. 2. Offer insurance schemes for workers. 3. Introduce safety performance metrics. 4. Provide safety incentives. 5. Supply essential Personal Protective Equipment (PPE) like ear plugs, safety boots, and helmets. 6. Implement standardized accident reporting and investigation procedures. 7. Maintain systematic accident records. 8. Conduct safety orientations for new workers. 9. Regularly organize safety and health training. 10. Ensure every project has a safety plan. <p>Conclusion:</p> <p>To bolster safety in Bhutan's construction sector, a holistic approach focusing on both preventive and post-accident measures is essential.</p>

Table 7. Summary of research worked finding on safety practices in construction industry

	Author / Publisher	Title	Findings
3	Dr. S. K Jain (Journal by Nuclear Power Corporation of India Limited Anushaktinagar, Mumbai 400 094 Dec 2007)	Meeting the challenges in Industrial Safety Management in Construction Works[14]	<p>In India the construction industry is the second largest employer net to agriculture whereas it is next to the road accidents in our country. Therefore we need to focus on the following aspects:</p> <p>Innovation in the training methodologies to achieve higher effectiveness of training among the contractors employees</p> <p>Developing and Implementing Behavior Based Safety Program to improve orientation of work force towards safety in work</p> <p>Implementation of innovative engineering measures to strengthen the safety requirements at design stages to achieve safe working environment during construction.</p> <p>Training and certification, in Industrial Safety requirement, of line managers and others responsible for construction activity essentially to enhance their perception and appreciation for industrial safety</p> <p>Key drivers for effective Industrial Safety Management; Safety organization; Job hazard analysis & work procedures; Safety training; Safety related deficiency management; Use of near misses & experience feed – backs; Safety provisions and personal protective equipments (PPE) Ex safety helmet, safety belt, safety shoes, hand gloves, goggles, fall arrester; Safety meeting; and Safety enforcement by line managers</p>

Table 8. Summary of research worked finding on safety practices in construction industry

No	Author / Publisher	Title	Discussions
4	Amr A. G. Hassanein Ragaa S. Hanna (Journal of SH&E Research Vol. 4, Num. 1 Spring 2007)	Safety Programs in Large – Size Operating in Egypt[15]	<p>This research is mainly targeted at investigating the safety programs applied by large – size contractors operating in Egypt as a means of revising them. A questionnaire survey was conducted among a selected sample of the addressed category utilizing a significant number of questions focusing on each company’s safety policies and practices.</p> <p>The results revealed that the safety programs applied by large – size contractors operating in Egypt are less formal than those applied by their American counterparts. Only a few companies out of the surveyed sample had accident records broken down by projects; provided workers with formal safety orientation, and trained safety personnel in first – aid.</p> <p>Research findings revealed that reforms in the way of the employers contribution to the social insurance were necessary; thereby, linking accident insurance costs to the contractors safety performance. This is meant to serve as a strong incentive for safety management.</p> <p>Hinze & Gambatese (2003) – improve safety performance include: Minimizing worker turnover; Implementing employee drug testing; Training workers; Analysis – safety practises such as: Physical examination of workers as a prerequisite to employment; Personal protective equipment; Safety orientation; Field safety meeting (toolbox meeting); Company organization with regard to safety; First aid personal; Jobsite safety inspections; Discussing safety during site visits; Safety awards; Safety budgets; Allocation of safety expenses; Safety performances measures; Safety inclusion in progress meetings; and Accident reports[16]</p>

Table 9. Summary of research worked finding on safety practices in construction industry.

No	Author / Publisher	Title	Discussions
5	Tarcisio Abrey Saurin Carlos Torres Formoso Fabricio Borges Cambaraia (Article in press T. A. Saurin et al. / Safety Science (2007)	An analysis of Construction Safety Best Practises From a Cognitive Systems Engineering Perspective[17]	<p>Discuss how five safety management practises – process transparency, safety planning, proactives performance measurements, accident investigations & identification & monitoring of pressures & performances migrations – which can be improved and re-interpeted based on the three CSE principles (flexibility, learning and awareness)</p> <p>Best practises categories:</p> <ul style="list-style-type: none"> Safety planning Accident causal analysis Proactive performance measurement Monitoring pressures and migrations Process transparency Autonomation

Table 10. Summary of research worked finding on safety practices in construction industry

No	Author / Publisher	Title	Discussions
6	John H. Reynolds Apollo Tutesigensi	An evaluation of Health and Safety	In 2007, a survey of small construction enterprises in Southern England was carried out

<p>David J. Lindsell (Thesis – Management in Small Department of Civil Construction Engineering, University of Portsmouth, Portland Building, Portland Street, Portsmouth, PO13 AH, United Kingdom (2007)</p>	<p>to identify factors which contribute to this relatively poor record. The survey was based on prior research which had identified three interrelated factors that influence health and safety (H&S) management the individuals competence and attitude; the job tasks and environment; and the organizational culture and leadership. It was found that project managers on small construction sites had limited knowledge of H&S requirements which often resulted in a poor or potentially dangerous work environment and a poor safety attitude within the workforce Researcher assessment of site safety; Maintaining safe; Suitable access & egress; Providing sufficient working space; Ablution facilities; Safety signs; Protection / separation for the general public</p>
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Table 11. Summary of research worked finding on safety practices in construction industry.

No	Author / Publisher	Title	Discussions
7	Inda Eka Permana (Thesis –Degree of Master of Science in construction, UTM, January 2007)	Construction Safety Practises in Batam, Indonesia[10]	<p>This study focused on the safety practises in Indonesian construction industry and improvement programs which can be potentially implemented in Indonesia. The case study involved three construction companies in Batam, Indonesia in order to determine the safety practises and the management system adopted by each company. In conclusion, the study also identified various critical elements in safety practises such as providing safety support, work construction and planning, emergency support safety measuring devices that can be adopted to improves the current safety performances in indonesia, specifically in Batam</p> <p>Safety practises can be done such as: Providing safety supports; Maintenance of project equipments; Worker education & training program; Workplace security system; Work instruction & planning; Inspection; implementation of high standard safety program; Protection by preventing the cause of risk; Disciplinary & workers attitude; Emergency support & safety measuring devices; Strict management & safety enforcement; Offering job to professional contractor & sub contractor</p>

Table 12. The frequency of safety practices in construction industry

No.	SAFETY PRACTICE	AUTHOR							Freq.
		1	2	3	4	5	6	7	
1.	Providing safety support (Personal protection equipment such as safety helmets, safety harness, safety shoes. Gloves & googles	*	*	*	*			*	5
2.	Maintenance of project equipments				*		*	*	2
3.	Workers education & training program	*	*	*				*	4
4.	Work instruction & planning	*	*			*		*	4
5.	Workplace security system						*	*	2
6.	Inspection	*			*			*	3

7.	Strict management & safety enforcement	*		*		*	3
8.	Protection by preventing the cause of risk	*				*	2
9.	Implementation of High Standard Safety Program	*				*	2
10.	Emergency support & safety measuring devices			*	*	*	3
11.	Disciplinary & attitude workers	*	*	*		*	4
12.	Offering job to a professional contractor & sub contractor	*				*	2
13.	Ablution facilities					*	1
14.	New worker orientation		*		*	*	3
15.	Safety organization	*		*	*		3
16.	First aid personal	*		*		*	3
17.	Safety signs	*				*	3
18.	Allocate financial budget & safety award	*		*			2
19.	Establish safety officer / department	*					1
20.	Suitable access & egress	*				*	2
21.	Workers insurance schemes		*				1
22.	Conduct safety walkabout	*					1
23.	Form emergency response team	*					1
24.	Emphasis on safety work permit	*			*		2
25.	Emphasis on 'toolbox' meeting	*		*	*		3
26.	Conduct drug & alcohol test	*					1
27.	Emphasis on putting fire extinguishers	*					1
28.	Accident record keeping		*		*	*	3
29.	Annual internal & external safety audit	*					1

Table 13. The rank of frequency of safety practices in construction industry

NO.	PRACTISES	RANK
1	Providing safety support (Personal protection equipment such as safety helmets, safety harness, safety shoes. Gloves & googles	1
2	Workers education & training program	2
3	Work instruction & planning	2
4	Disciplinary & attitude workers	2
5	Accident record keeping	2
6	Inspection	3
7	Strict management & safety enforcement	3
8	Emergency support & safety measuring devices	3
9	New worker orientation	3
10	Safety organization	3
11	First aid personal	3
12	Safety signs	3
13	Emphasis on 'toolbox' meeting	3
14	Maintenance of project equipments	4
15	Workplace security system	4
16	Protection by preventing the cause of risk	4
17	Implementation of High Standard Safety Program	4
18	Offering job to a professional contractor & sub contractor	4
19	Allocate financial budget & safety award	4
20	Emphasis on safety work permit	4
21	Suitable access & egress	4
22	Ablution facilities	5
23	Establish safety officer / department	5
24	Annual internal & external safety audit	5
25	Workers insurance schemes	5
26	Conduct safety walkabout	5
27	Form emergency response team	5
28	Conduct drug & alcohol test	5

NO.	PRACTISES	RANK
29	Emphasis on putting fire extinguishers	5

Table 14. Analysis demography of respondents

NO.	QUESTION	MAJORITY/NOTABLE DATA
1	Gender	Male: 28 Female: 13
2	Age	20-29 years: 23
3	Highest Education	Undergraduate: 40
4	Occupation Level	Professionals (e.g., Engineer, QS): 23
5	Working Experience (Years)	1-5 years: 20
6	Contractors Class in PKK	Even distribution among A, B, C, D
7	Contractor Class in CIDB	Majority in G4 to G7
8	Company Type	Bumiputera/Local Contractor: 41
9	Project Value (RM)	Even distribution over RM 500,001

Table 15. Supplying safety support (group 1)

Safety Group	Class A	Class B	Class C	Class D
1. Safety Support	High use of safety equipment	Moderate use	Hand gloves prioritized; low use of goggles	Moderate use
2. Equipment Maintenance	Regular maintenance	Moderate maintenance	Lag in incidental maintenance	Lag in equipment priority
3. Training Program	Comprehensive training	Limited training	Minimal training	Minimal training
4. Security System	Secure project boundaries	Secure boundaries; less secure areas	Less secure areas	Less security training
5. Work Instruction	Comprehensive instructions	Limited instructions	Minimal instructions	Minimal instructions
6. Inspection	Regular inspections	Varied results	Minimal safety walkabouts	Moderate inspections
7. Safety Program	Comprehensive programs	Limited programs	Minimal programs	Minimal programs
8. Preventing Risk	Avoids risky conditions	Avoids some risks	Moderate risk avoidance	Moderate risk avoidance
9. Worker's Discipline	Strict discipline	Varied discipline	Lacking in safety discipline	Moderate discipline
10. Emergency Support	Comprehensive support	Moderate support	Minimal support	Moderate support
11. Safety Enforcement	Strict enforcement	Limited enforcement	Minimal enforcement	Moderate enforcement
12. Professional Contractors	Full control over partners	Limited control	Lacks reliable partner selection	Lacks reliable partner selection
13. Facilities	Provides essential facilities	Limited facilities	Limited facilities	Moderate facilities

CONCLUSION

From the study that has been done, it can be conclude that the study has achieve its objectives. Some conclusions for this research were drowned and recommendations to improve the safety practices at construction project will be highlighted.

Disparity among Contractor Classes: A notable disparity in the adoption and execution of safety practices was observed among the different classes of contractors. Class C contractors exhibited the most vulnerability due to various factors, including financial constraints, the nature

of their projects, and lack of consistent monitoring from safety departments. **Identification of Essential Safety Practices:** Through a combination of literature reviews, questionnaires, and site visits, thirteen pivotal safety management practices were identified. These practices are instrumental in enhancing safety standards across all scales of construction projects.

While the construction industry has made strides in emphasizing safety, there's a clear need for more consistent measures, especially among specific contractor classes. The recommendations provided, in line with the study's objectives, can pave the way for a safer and more compliant construction environment. Some of the recommendations given include: **Establishment of a Dedicated Safety Agency:** To enforce and monitor safety standards in construction, a specialized agency should be established. This agency should have the authority to enact safety policies, conduct evaluations, and penalize non-compliant contractors. **Creation of a Workers Oversight Section:** A dedicated section within the Ministry of Manpower should be established to bridge the oversight gap in the construction sector. **Enhanced Safety Protocols:** Management's proactive involvement in overseeing workers and ensuring adherence to safety protocols is paramount. Active government participation is crucial to ensure standardization and elevation of safety measures. **Chain of Control System:** A collaborative approach, involving all stakeholders, can ensure uniform safety standards across all construction phases. This section should enforce safety regulations and formulate safety-centric policies. **Budget Allocation for Safety:** Financial allocations for safety measures should be incorporated during the project planning phase, ensuring that safety is never compromised due to budgetary constraints.

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