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Investigation of Commitment Level of Safety Factor in Construction Industry at Kuala Lumpur, Malaysia

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Abstract: The construction industry in Kuala Lumpur, Malaysia has seen a record of rapid growth every year, but the development is slowing down with the number of accidents that occur due to lack of attention to safety aspects at construction sites. Commitment to safety is critical to improving safety performance, but less obvious is the nature of safety commitment at the individual employee level. Therefore, this study focuses on the commitment level of safety factors by the parties involved in the construction industry such as the project manager, safety officer, site supervisor and laborer. The research methodology includes quantitative approach and the data has been collected from questionnaire survey. SPSS version 26 has been used to analyze the Cronbach's Alpha for reliability test, frequency and descriptive analysis and also Likert scaling along with the mean score to present the data resulted. Accordingly, the primary safety factor in construction industry was maintained safe work condition and workers are committed with wearing personal protective equipment (PPE) on construction sites. The result of this research was to benefits parties involved in construction industry by improving the level of safety commitment and raise awareness about safety.

Keywords: Safety, Commitment, Construction industry, Kuala Lumpur

1. Introduction

Construction industry, particularly in Kuala Lumpur, plays an important role in a country with development process, as efficient development contributes to economic growth and creating increased demand for construction activities. It is evident that the construction sector is a very strong and booming industry worldwide advancing as one of the greatest contributing industries towards the country's economic. However, such successes have also contributed considerably towards the safety issues as statistics showed that this industry has earned the reputation of being a highly hazardous industry due to its fatality rates [1].

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Accidents in the construction industry are often associated with negligence in the performance of work, neglect of safety aspects, neglect of awareness and training programs, lack of discipline, lack of communication and other external disturbances that further influence the increasing number of accidents today [2]. Providing a safe working environment is one of the strategies that will assist the country in improving the image of the construction industry. Accidents such as those that frequently occur in the construction sector cost the country millions of ringgits in labor and property losses each year. If this situation is not curbed, of course to some extent it will affect the country's economic development, in addition to the spread of the COVID-19 epidemic that occurs globally.

One of the main factors that can be detected in causing accidents is the workers commitment itself and the environment that is not friendly to safety [3]. Though solid safety performance originates with the organization, it is ultimately sustained by employees' collective commitment to safety [4]. Thus, each employee's personal commitment to safety can have a significant impact on safety outcomes and have consequences not only for themselves, but also for their coworkers [4]. Clearly, commitment to safety is crucial for increasing safety performance, but what is less clear is the nature of individual employee commitment to safety [4]. Therefore, this study is carried out to investigate commitment level of safety factor in construction industry at Kuala Lumpur, Malaysia.

This study aims 1) To identify safety factors in construction industry and 2) To determine commitment level of safety factors in construction industry. These objectives of this study could be achieved, and an accurate instrument designed to measure the Cronbach's Alpha for reliability test, frequency and descriptive analysis and also Likert scaling along with the mean score to present the data resulted. It is by executing further discussion involves parties in construction industry at Kuala Lumpur, methodology, data analysis, findings, discussion, and the conclusion.

2. Research Methodology

2.1 Sample of Study and Data Collection

Generally, this research was conducted in Kuala Lumpur. The target population focused on in this research was main contractor and sub-contractor from different companies located in Kuala Lumpur. Project manager, safety officer, site supervisor and laborer were among the targeted respondent. This is due to the high number of employer and employees involved in construction industry as Kuala Lumpur as target location. It was estimated that around approximately 850,460 people were employed in the construction industry in Kuala Lumpur [5]. Hence, the sample size required for this research was s=384.

The next step was to collect data once the target population and sample size are already identified. First, the survey question was made by using "Google Form". Then, it had been distributed through a social media platform such as "Twitter", "Facebook", "Whatsapp", "Telegram", and "Instagram" since no physical contact which including interviews and the distribution of questionnaires face-to-face were allowed during the pandemic.

2.2 The Instrument (Questionnaires)

Quantitative method was used for this study, thus questionnaire had been developed and distributed to respondents in order to induce sufficient information. A set of structured or specific questions meant to elicit the data necessary for the study. Each of them was divided into three sections; A, B, and C. Section A contained several questions based on the population that will be severalized randomly according to their profile. Section B had a bunch of questions regarding safety factors in the construction industry. Next, questions for section C were about level of commitment to safety factors in the construction industry. Overall, the questions will be 22 in total, which in area A has 4 questions, section B has 10 questions and section C has 8 questions.

First and foremost, section A was a demographic type of data survey that allows gaining background information. The questions had provided context for the collected survey data to describe the respondents and better analyze their data. The respondents' general information divides into 4 parts of variables which are type of contractor status, contractor CIDB registration grade, career position and work experience in construction industry.

Secondly, the questions in section B came out as what the safety factor in construction industry is. The studied safety factors were categorized into 10 types: maintain safe work conditions, establish of safety training, act of safety culture in construction site, effective control by safety officer, maintain a close supervision to the workers, wear personal protection equipment (PPE) in construction site, inspect equipment periodically, maintain clean environment in construction site, weather affect safety factors in construction industry and sufficient knowledge. Lastly, in section C, there are 8 questions under commitment level of safety factors in construction industry were asked in order to determine the commitment of the factor.

Likert scale was utilized in the questionnaire. In this research, the respondents were asked to fill up their general information and respond to each questions in terms of 5 degrees of agreement for section B (1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly agree) and 5 degrees of commitment for section C (1-Strongly uncommitted; 2-Uncommited; 3-Neutral; 4-Committed; 5-Strongly committed).

2.3 Data Analysis

2.3.1 Reliability Test

Based on the main objectives above, the reliability level of the instrument will be represented by Alpha Cronbach. The value of Alpha Cronbach greater than 0.7 suggests that the scales are internally acceptable and that the measurements are good and excellent. In comparison, if the alpha value of the questions is less than 0.7, the instrument is considered questionable, and the questionnaire must be reconstructed to ensure the instrument meets the required degree of reliability. The evaluation of Alpha Cronbach values for the instruments built was therefore used to assess the level of reliability of the devices.

2.3.2 Descriptive Statistic

Descriptive statistics, in other terms, were statistical representations of what was presented or what the data exposed in an understandable manner in a quantitative research study. For example, central tendency metrics included mean, median, and mode and variability sizes appropriate for standard deviation, variance, and minimum and maximum variables. Two of these measures used tables, graphs, or discussion threads to assist individuals in comprehending the significance of the data gathered and processed.

3. Results and Discussion

3.1 Reliability Analysis

3.1.2 Statistical analysis of the reliability of the pilot study

Cronbach's Alpha indicates the reliability level of the instrument. Cronbach's Alpha values greater than 0.7 are considered to have a high degree of reliability and a reasonable index value [6]. By comparison, Cronbach's Alpha was less than 0.6, which was found inadequate. Cronbach's Alpha levels between 0.70 and 0.80 are considered to be acceptable. Cronbach's Alpha, on the other hand, was judged to be very good between 0.9 and 1.0. However, Cronbach's Alpha was deemed to be very

good in the 0.8 to 1.00 ranges. Cronbach's Alpha ratings for the instruments constructed were consequently utilised to determine the devices' level of reliability [7]. The following table summarised the results of the pilot study's reliability test.

Table 1: Reliability statistic of pilot study

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.761	.797	22

Based on Table 1 above, the statistical results of the reliability of the pilot study were analyzed using SPSS software for the questionnaire form where it was distributed to 10 respondents in the circle of the construction industry. It showed the Cronbach's Alpha values for pilot study, 0.76 were relatively acceptable.

3.1.3 Statistical analysis of the reliability of the actual study

After conducting a pilot study, Cronbach's Alpha values were required for the actual research, which involved approximately 384 respondents. As a result, the analysis was conducted in the same manner as the pilot research. The following tables summarized the findings of the reliability analysis for the actual study. Therefore, the analysis process was carried out similarly to the pilot study.

Table 2: Reliability statistic of actual study

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.830	.894	22

According to Table 2 above, the Cronbach Alpha value for actual research was relatively good. Additionally, Cronbach's Alpha for actual research increased, surpassing the previous pilot study. Therefore, both pilot study and actual research were reliable enough to identify all of the safety factors, commitment level and critical of safety factor in construction industry.

3.2 Frequency and descriptive analysis

The data in this study is evaluated using frequency and descriptive analysis using SPSS software creates a more precise score for each item. Additionally, Table 3 analyses the Likert Scale for each item.

Table 3: Degree of agreement according to Likert Scale (Source: Norman, 2010)

Scale	Range of mean score	Degree
1	1.00-1.80	Strongly disagree
2	1.81-2.60	Disagree
3	2.61-3.40	Neutral
4	3.41-4.20	Agree
5	4.21-5.00	Strongly agree

To assess the level of agreeableness, the mean of each score was chosen. A higher value of the mean score implies that the factor is more significant. The surveys distributed had a 5-point scale for response selection (1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly agree) and (1-Strongly uncommitted, 2-Uncommitted, 3-Neutral, 4- Commited, 5-Strongly committed). The mean score assigned to each item is used to quantify the responses. The formula is as follows: take the highest point on the Likert Scale and subtract the lowest point on the Likert Scale, then divide by the number of levels utilised to determine the range of each level based on Norman's study (2016).

Table 4: Respondent's general information

Category	Items	Frequency	Percentage (%)
Contractor status	Main contractor	186	48.4
	Sub- contractor	198	51.6
Contractor CIDB registration grade	G7	75	19.5
	G6	72	18.5
	G5	68	17.7
	G4	54	14.1
	G3	43	11.2
	G2	50	13
	G1	23	6
Career Position	Project manager	51	13.3
	Safety officer	90	23.4
	Site supervisor	132	34.4
	Laborer	97	25.3
	Engineer	3	0.8
	Technical assistant	1	0.3
	Project admin	1	0.3
	Inspector of wok (IOW)	1	0.3
	Assistant engineer	4	1.2
	Internship	1	0.3
	Painter	1	0.3
	Surveyor	1	0.3
	Draftsmen	1	0.3
Work experience in construction industry	5 years and below	110	28.6
	6-10 years	127	33.1
	11-15 years	107	27.9
	16 years and above	40	10.4

The information presented in Table 4 showed that 48.4% (186) of the questionnaires were filled by the respondent, from main contractor company and 51.6% (198) by the respondents from sub-contractor company. These results showed that majority of the respondents are working for sub-contractor company. The information of contractor CIDB registration grade also presented in the table above. There are total of G7 (75, 19.5%), G6 (72, 18.5%), G5 (68, 17.7%), G4 (54, 15.1%), G3 (43, 11.2%), G2 (50, 13%), G1 (23, 6%). It can be concluded that majority of respondents are involved in CIDB registration grade of G7. Besides, this result presented that the highest respondents are site supervisor. Based on the results, many of respondents have 6 to 10 years of work experience which are 127 (33.1%) of respondents and followed by 110 respondents (28.6%) which have 5 years and of working experience in construction industry.

Table 5: Responses on safety factor in construction industry

Items	Likert scale	Frequency	Percentage (%)	Mean score	Degree of agreement
Maintain safe work conditions	Strongly disagree	1	0.3	4.78	Strongly agree
	Disagree	0	0		
	Neutral	6	1.6		
	Agree	67	17.4		
	Strongly agree	310	80.7		
Establish of safety training	Strongly disagree	1	0.3	4.72	Strongly agree
	Disagree	0	0		
	Neutral	9	2.3		
	Agree	85	22.1		
	Strongly agree	289	75.3		
Act of safety culture in construction site	Strongly disagree	1	0.3	4.71	Strongly agree
	Disagree	0	0		
	Neutral	10	2.6		
	Agree	89	23.2		
	Strongly agree	284	74		
Effective control by safety officer	Strongly disagree	1	0.3	4.71	Strongly agree
	Disagree	0	0		
	Neutral	11	2.9		
	Agree	84	21.9		
	Strongly agree	288	75		
Maintain a close supervision to the workers	Strongly disagree	1	0.3	4.69	Strongly agree
	Disagree	0	0		
	Neutral	9	2.3		
	Agree	97	25.3		
	Strongly agree	277	72.1		
Wear personal protection equipment (PPE) in construction site	Strongly disagree	1	0.3	4.67	Strongly agree
	Disagree	2	0.5		
	Neutral	18	4.7		
	Agree	81	21.1		
	Strongly agree	282	73.4		
Inspect equipment periodically	Strongly disagree	0	0	4.71	Strongly agree
	Disagree	1	0.3		
	Neutral	15	3.9		
	Agree	78	20.3		
	Strongly agree	290	75.5		
Maintain clean environment in construction site	Strongly disagree	1	0.3	4.64	Strongly agree
	Disagree	0	0		
	Neutral	15	3.9		
	Agree	105	27.3		
	Strongly agree	263	68.5		
Weather affect safety factors in construction industry	Strongly disagree	2	0.5	4.55	Strongly agree
	Disagree	2	0.5		
	Neutral	27	7		
	Agree	103	26.8		
	Strongly agree	250	65.1		
Sufficient knowledge about safety measures	Strongly disagree	1	0.3	4.66	Strongly agree
	Disagree	1	0.3		
	Neutral	12	3.1		
	Agree	101	26.3		
	Strongly agree	269	70.1		
Total average mean				**4.68**	**Strongly agree**

The result in Table 5 shows that maintain safe work conditions as one of the main safety factors in construction industry. It achieved the highest mean score of 4.78 among other safety factors, ranked that the statement is strongly agree by the respondents. Based on [8] noted that maintaining a healthy and safe work environment can help reduce the risk of accidents.

Table 6: Responses on commitment level of safety factors in construction industry

Items	Likert scale	Frequency	Percentage (%)	Mean score	Degree of agreement
I wear personal protective equipment (PPE) on construction sites	Strongly uncommitted	0	0	4.72	Strongly agree
	Uncommitted	0	0		
	Neutral	14	3.7		
	Committed	80	21.1		
	Strongly committed	285	75.2		
I keep my construction site's environment clean before, during and after construction	Strongly uncommitted	0	0	4.62	Strongly agree
	Uncommitted	2	0.5		
	Neutral	16	4.2		
	Committed	106	27.7		
	Strongly committed	259	67.6		
I keep my work equipment at the construction site in safe condition	Strongly uncommitted	0	0	4.62	Strongly agree
	Uncommitted	0	0		
	Neutral	13	3.4		
	Committed	119	31		
	Strongly committed	252	65.6		
I keep my work equipment functioning efficiently at the construction site	Strongly uncommitted	0	0	4.65	Strongly agree
	Uncommitted	0	0		
	Neutral	12	3.1		
	Committed	109	28.4		
	Strongly committed	263	68.5		
I practice safety working behaviors at construction site	Strongly uncommitted	0	0	4.69	Strongly agree
	Uncommitted	0	0		
	Neutral	10	2.6		
	Committed	97	25.4		
	Strongly committed	275	72		
Site safety inspections are carried out periodically	Strongly uncommitted	0	0	4.62	Strongly agree
	Uncommitted	0	0		
	Neutral	17	4.4		
	Committed	112	29.2		
	Strongly committed	254	66.3		
I participate in safety training program provided	Strongly uncommitted	0	0	4.67	Strongly agree
	Uncommitted	0	0		
	Neutral	16	4.2		
	Committed	94	24.5		
	Strongly committed	274	71.4		
I follow safety rules in construction site	Strongly uncommitted	0	0	4.68	Strongly agree
	Uncommitted	0	0		
	Neutral	10	2.6		
	Committed	103	26.8		
	Strongly committed	271	70.6		
Total average mean				**4.66**	**Strongly agree**

The overall mean score of 4.66 indicates that commitment level of safety factors in construction industry is confirmed given strongly commitment by respondent. It can be seen from Table 6, the highest mean score of 4.72 is wearing personal protective equipment (PPE) on construction sites and for the lowest mean score, it has 3 safety factors that share the same value of 4.62 which is keeping construction site's environment clean before, during and after construction, keeping work equipment at the construction site in safe condition and site safety inspections are carried out periodically. According to [9], accidents on construction sites can be substantially decreased if all workers wear PPE voluntarily.

4. Conclusion

Safety factor is one of the main elements in the construction industry. However, lack of commitment from workers to safety factors influence to the accidents construction industry. Through this research, the safety factors in construction industry were identified. Besides, the commitment level of workers to safety factors in construction industry also had been determined.

In expect, the results of this research can help construction industry to improve safety level of workers to reduce the accidents at construction site for future projects. Moreover, this research hopefully can provide information to future research regarding the commitment to safety factors in construction industry. This research would also assist construction players with effective approaches in order to improve safety level at construction site.

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