# Safety Compliance Behaviour in Manufacturing Industry: A Malaysian Perspective

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**Abstract:** This study proposed to discover the important of Compliance with Safety Behaviour (CSB) in the context of Manufacturing Industry in Perak. The outcomes from this study may be helpful for industrial practitioners to understand all the influencing factors to CSB. The present study also aims to investigate if there is any significant relationship between safety attitude, management support, and safety rules and procedures towards compliance safety behaviour in Perak Manufacturing Industry. This safety analysis will provide guidance for management on how to develop specific safety programs. In addition, some of the outcomes stated in the study could be appropriate to other countries which facing similar state of affairs. The CSB, Safety Attitude, Management Support, and Safety Rules and Procedures instrument were used in this study. This study examines the direct relationship between safety attitude, management support and safety rules and procedures on compliance safety behaviour. Quantitative approaches with descriptive analysis method and multi-stage sampling method have been used in this study. Where, cluster method was conducted follows with stratified and simple random sampling method. A total of 770 questionnaires distributed to the manufacturing workers in Perak who had agreed to participate in this study. However, out of it only 480 questionnaires were returned and about 383 questionnaires were used for further analysis. Results showed that safety attitude, management support and safety rules and procedures have positive significant relationship between compliance safety behaviour.

**Keywords:** Safety attitude; Management support; Safety rules and procedures; Compliance safety behaviour (CSB); Job demand; Job control; Job demand-control-support model

## INTRODUCTION

Since the country gained independence, foreign and home countries are paying attention with the manpower, success and achievements in Malaysia [17]. The existence of rich in natural resources in Malaysia contributes to the stability of the economic, social and political. Malaysia recognizes that, the key factors that contribute to productivity are human resources starting the middle of 1980s. Besides that, OSH Act 1994 also have mention that the safety accountability to any person who works in a company; its lies on the main company itself [11]. Hence, it's important to the organization in order to find out the factor contributing to unsafe behaviour at the workplace.

## Problem statement

Almost 2.3 million people died because of death due to work-related disease which happens because of industrial accident [20]. For example, in China there have been predicted that almost 10, 000, 000 occupational injuries to occur every [13]. On the other hand, road traffic fatalities also become among the major cause of work-related death which prominent to substantial cost to the individual and social level in few countries such as U.S., Australia and the United Kingdom [21]. The reputation of the company, profits as well productivity of the organization consider as key factor which related to occupational safety. Besides, many studies have been focused on, to determine the risk scope as well effective scales in order to reduce the rate of death at workplace [11]. The occupational accident phenomena; not only happen in other country but also showed alarming trend in Malaysia. Where, Perak become the leading state which shows higher number of victims in 2013 and 2015 as exhibited in Figure 1.1. Hence through this data, it's important to study CSB in Perak.
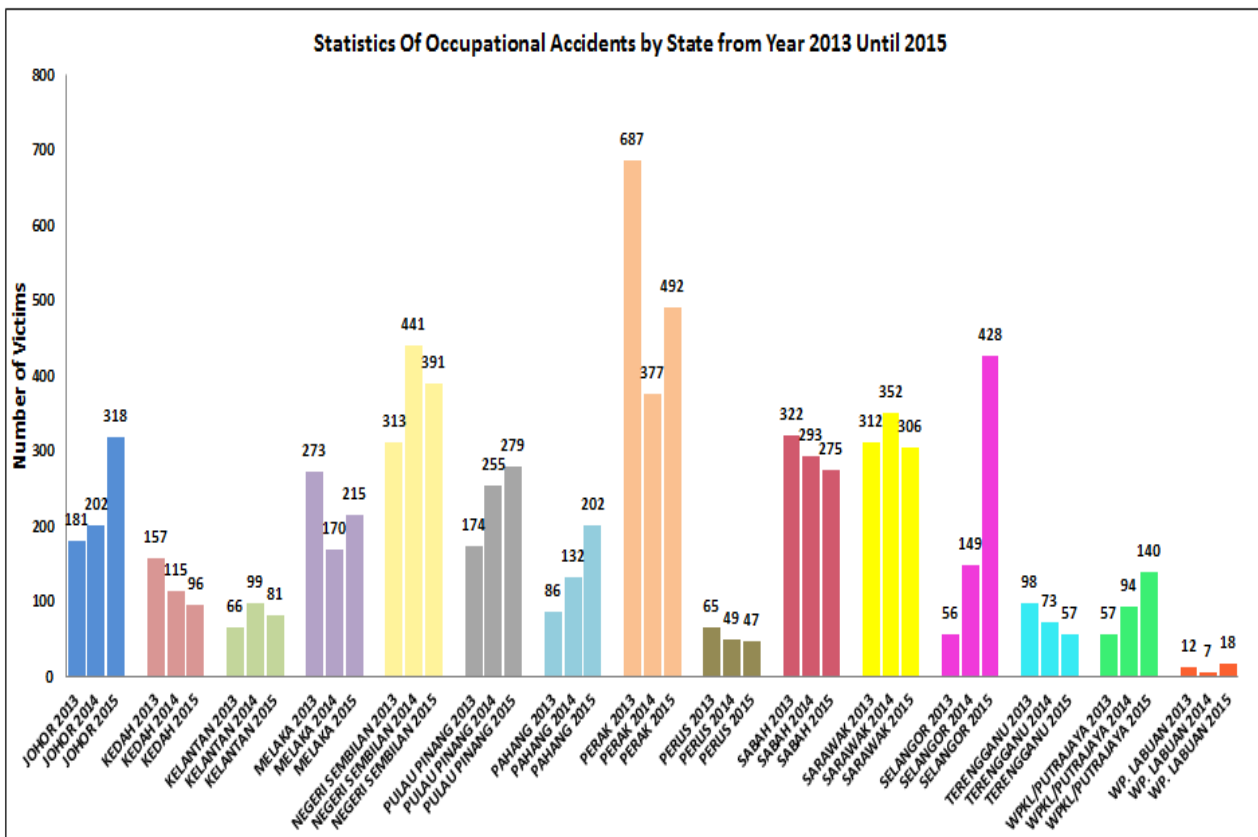
Figure 1.1: Occupational Accidents by State from Year 2013 Until 2015

*Source: Department of Occupational Safety and Health, 2016*

## LITERATURE REVIEW

For each successful achievement in a company considered as full effort through the employees' who delivered their full strength in terms of mentally and physically to achieve their organization's aim and target. No matter the employees' from bottom level or upper level, all of them considered works together in order to achieve the firms goal, its lead to big cooperation among them. In terms to reach top level, all industry work harder because those industry which may not consider as good in production, it may not survival in the market. So, all organization does their best in term to produce good and quality output which may fulfil the end users' needs and wants. Hence, this study will focus on employees' compliance with safety behaviour at their working place since they are playing important role in an organization.

Safety behaviour defined as the behaviour and attitudes of employees' to safety activities [14]. Employees' attitude and their perception distinguish the safety climate concept which can be seen as the current surface features of a safety culture [22]. Based on the study done by [3] attitude towards the behaviour will reflect the degree of positive or negative evaluation of the individual in order to performing the behaviour [2]. Reference [7] found that, there is a clear relationship between an individual's general behaviour rather than specific attitude and his or her intended behaviour. Therefore, it indicates that individual's general attitude is a good predictor to engage in a behaviour that is relevant to the attitude [1].

Management support known as group of people who consists of general managers, division managers, and plant managers who are responsible for tactical planning and controlling in an organization [16]. Management supports were able to affect the safety attitude and safety culture of member in their team, which also help to determine the safety performance of the team [16]. Safety rules and procedures as a factor in their offshore safety studies; showed that it has significant correlation with accident rates [25]. Reference [12] stated that there has a direct positive link between safety rules and attained level of safety.

### Model analysis
### Job Demand-Control-Support Model (JD-C-S)

Job demand-control model is a theory of work design which initially proposed by Karasek in 1979 and later expanded by Karasek and Theorell in 1990 [6]. Job demands refer to the physical, emotional, societal and legislative aspect of the job which required to sustained physical or psychological costs [8]. The presence of job controls would encourage individuals to practice safe

behaviours, which in turn should reduce perceived injury risks [10]. The control and support have a positive impact on reducing strain and enhancing well-being is that they enable the individual to cope more effectively with stressors including work demands, and that these benefits accumulate over time [5]. Past research also shown that, a high level of job control is positively associated with employee health, well-being, job satisfaction and motivation [10]. The example of demands in an organization was consisting of working long hours, and supervisory pressures [15]. A classic role conflict in production settings is that employees' are often expected to achieve unrealistic production targets while also adhering to time consuming safety procedures [19]. Hence, in this study, the JD-C-S model was used to analyse the influence of employees' compliance with safety behaviour in order to reduce the industrial accident rate in Perak.

When there is a low job demand in the organization such as work conflict and work ambiguity; together with low organizational support and low control from the superior; it will create passive situation which lead to low strain. When there is low strain among the employee, there are low chances to happen occupational accident. At the same time, the employees' may feel relaxed if there is high job control, low job demand and low organizational support among the employees' at their workplace. Hence, this environment leads to low strain among the employees'. In meanwhile, if there is high job demand, high organizational support, and high job control; it will leads active job environment where the employees' are work efficiently in their task given. When the employees' are active enough, they would not get tired and this help to avoid the industrial accident from happen. If the job demand is higher than job control; it will leads to job strain. But, if the organizational support higher mean, it may help to reduce the accident rates by avoid the employees' to involve in unsafe acts. Hence, there are high chances to neutral the occupational accident with high level of organizational support in the organization. Figures 1.2 and 1.3 helps to investigate the phenomena of accident in the organization as well help the management to get know on how to reduce the occupational accident in the organization; when there is organizational support, job control and personal resources in the organization.
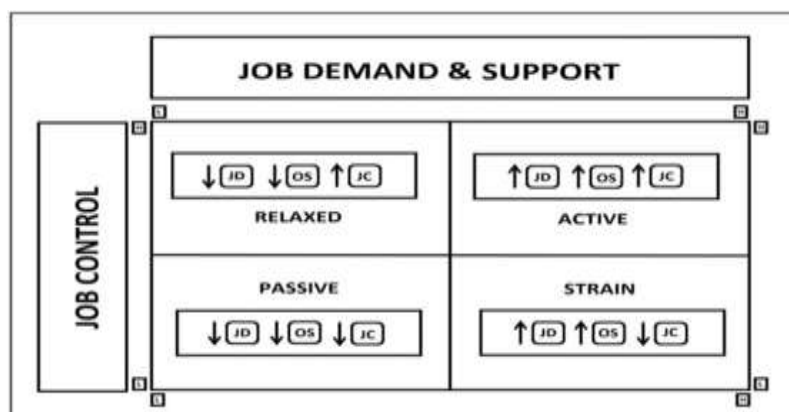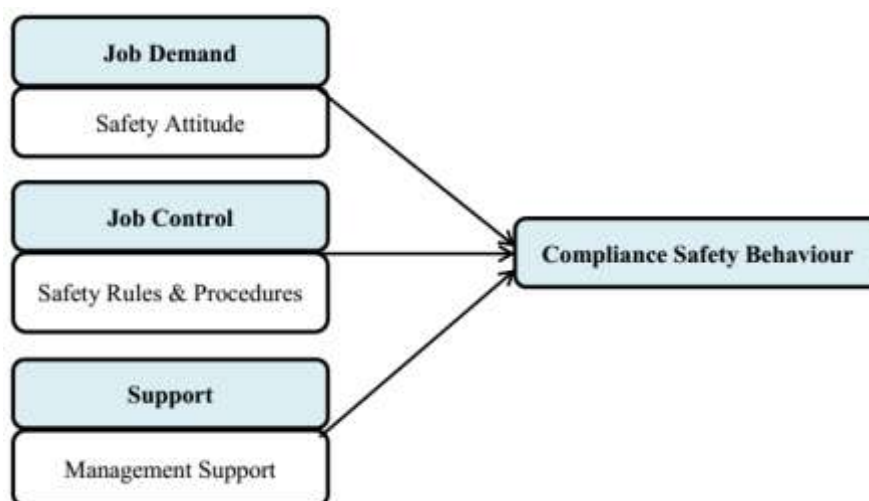


**Fig-1.2: Job Demand-Control-Support Model (JD-C-S)**



**Fig-1.3: Job Demand-Control-Support Framework (JD-C-S)**

**Research Hypothesis**

There are hypotheses statement have been developed. The hypotheses going to be tested based on the research question as follow: Do safety attitude, management support and safety rules and procedures have significant relationship with compliance safety behaviour?

**H1.** There is a significant relationship between safety attitudes and CSB.

**H2.** There is a significant relationship between management support and CSB.

**H3.** There is a significant relationship between safety rules and procedures with CSB.

**3.3 Theoretical Framework**

Based on the objective of this study, a theoretical framework has been developed as indicated in Figure 1.4 below.
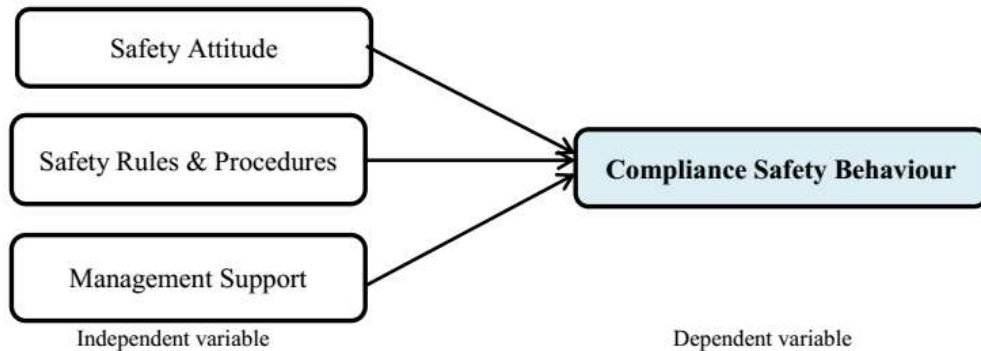


**Fig-1.4: Theoretical Framework**

**RESEARCH METHODOLOGY**
**Sample population and sample size**

In this research study, there were selected of respondents from Perak manufacturing industries. The state of Perak divided into 4 corridor which was northern corridor, southern corridor, central corridor, and north-eastern corridor. These corridors are exhibited in Figures 1.5, 1.6, 1.7 and 1.8.
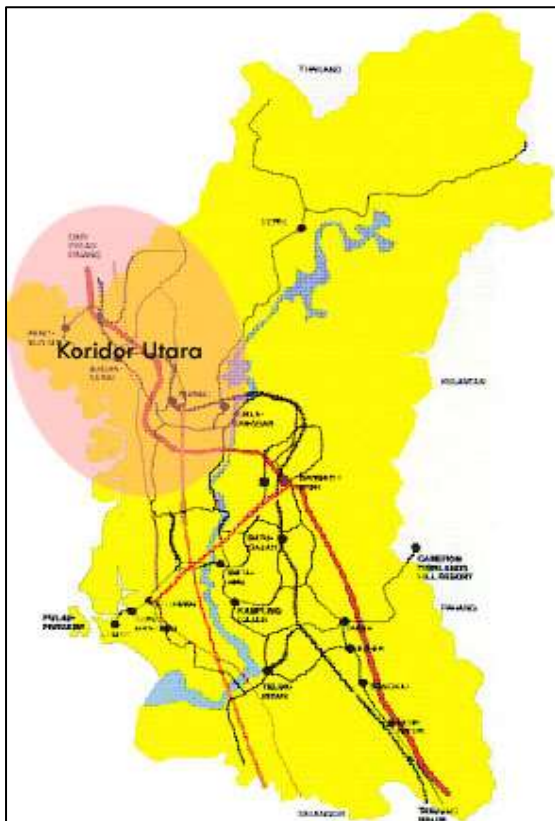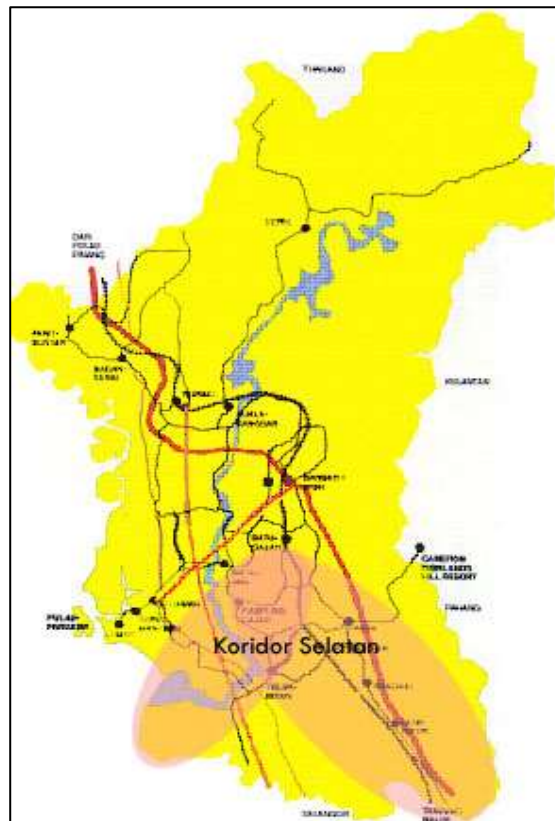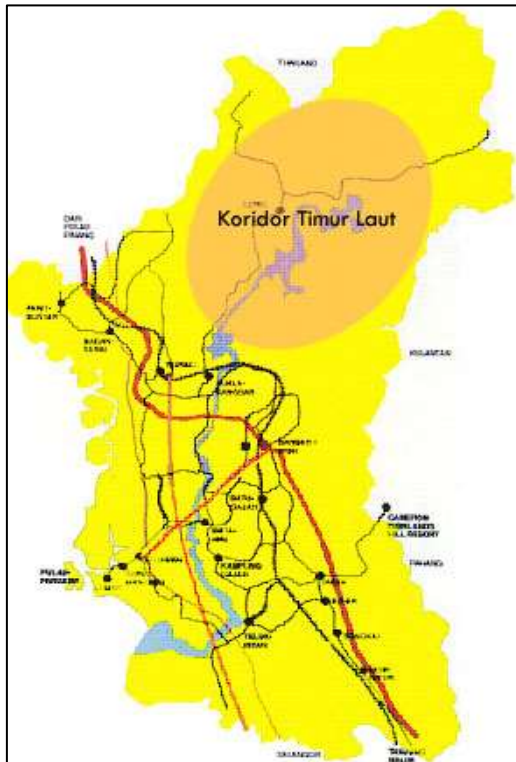


**Fig-1.5: Northern Corridor**



**Fig-1.6: Southern Corridor**

| Fig-1.7: North-Eastern Corridor | Fig-1.8: Central Corridor |

Source:http://www.perak.gov.my/index.php/en/state-gov/about-perak/development-corridor
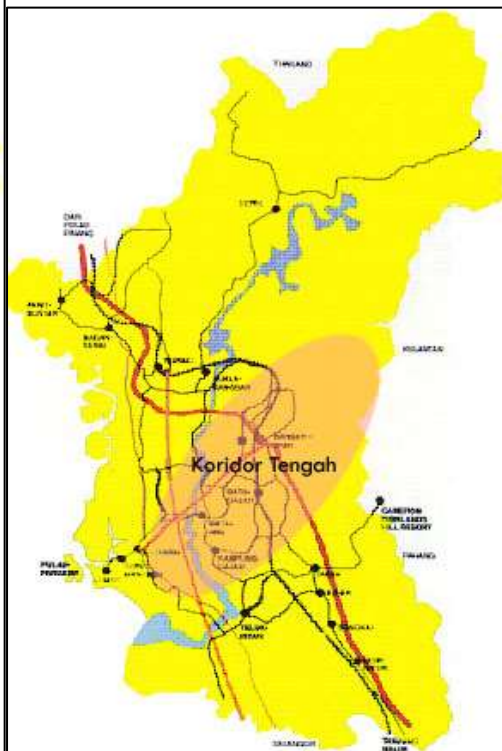
**Sampling Technique**

Firstly, cluster sampling technique used to separate the company and amount of workers in manufacturing industry based on district level at Perak. Then, stratified sampling technique used to categorise the target population into sample population. Finally, systematic sampling method was apply where the respondent based on sample size were randomly picked according to the district level. Table 2 shows the statistics data of manufacturing employees in Perak.

**Table-2: Statistics data of manufacturing employees in Perak**

| No. | Development Corridor in Perak | Number of employees (approximately) | Respondent (sample size) |
|---|---|---|---|
| 1. | Northern Corridor | 23 402 | 51 |
| 2. | Southern Corridor | 19 500 | 43 |
| 3. | North-Eastern Corridor | 3 892 | 8 |
| 4. | Central Corridor | 128 806 | 281 |
| | Total | 175 600 | 383 |

*Sources: Perkeso, Malaysia and JKKPPK, Perak, 2015.*

**Variables Measurements**

Compliance Safety Behaviour (CSB) developed by [9]. Under CSB totally contains of 11 items and about 10 items will be used in this study after edited and rephrased to suit with manufacturing sector. Where, it measured by using five-point Likert scale which were respectively from 1 to 5 (1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree). The reliability for CSB considered as very good because its indicate 0.89 [23]. Safety Attitude was adopted from studies performed by reference [18] and [24]. Under safety attitude totally contains of 13 items. Where, the first 8 items adopt from [18] and extra 2 items adopt from [24]. The reliability for CSB considered as very good because it indicate between 0.783 and 0.84. Several items were not including in this study because it's found to be identical with other items. Safety Attitude instrument were measured by using five-point Likert scale from 1 to 5. Management Support was adopted from studies by [16]. About 8 items will be used in this study after edited and rephrased to suit with manufacturing sector. The reliability for management support considered as good because its indicate 0.795. Where, it were measured by using five-point Likert scale (1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree). Safety Rules and Procedures adopt from [25]. Under safety rules and procedure, totally contains of 5 items and about 4 items will be used in this study after edited and rephrased to suit with manufacturing sector. Where, it

measured by using five-point Likert scale. The reliability for safety rules and procedure consider as very good because its indicate 0.81.

## Findings
### Data Collection
From the total population of 175, 600 manufacturing employees; 383 employees were randomly chosen from Northern Corridor, Southern Corridor, North-Eastern Corridor, and Central Corridor at 95% of confidence level. Hence, 770 questionnaires were distributed among the employees and about 480 data have been collected back. From the collected data,

about 383 questionnaires were used based on the sample size and key into SPSS tool.

### Reliability Analysis
Reliability analysis made in order to identify the Cronbach Alpha whether it is reliable and valid or not with the previous researchers. Table 3 shows the Cronbach Alpha for dependent variables which compliance safety behaviour and followed by the items of each independent variables where safety attitude, management support, and safety rules and procedures. Cronbach alpha coefficient values from 0.776 to 0.881 for the reasons indicated for each item of good inter-item consistency.

**Table-3: Reliability results for pilot study**

| No. | Variables | No. of items | Cronbach alpha | Remarks |
|-----|-----------|--------------|----------------|---------|
| 1. | Compliance with Safety Behaviour | 10 | 0.861 | Excellent |
| 2. | Safety Attitude | 10 | 0.881 | Excellent |
| 3. | Management Support | 8 | 0.845 | Good |
| 4. | Safety Rules and Procedure | 4 | 0.776 | Very good |

## Correlation Analysis
The purpose of conduct this Pearson Correlation Analysis was to identify whether if there were any significant relationship or not, in between dependent and independent variables. By implement this analysis; have been find out that, hypothesis 1 (H1), safety attitude has positive significant relationship with compliance safety behaviour. Where the sig 2-tailed was 0.000 with positive Pearson correlation of 0.799. Thus, *Ha* shows positive significant relationship between safety attitude and compliance safety behaviour because there is no realistic and no substantiated hypothesis *Hn.* This result supported by previous research finding from [4] which reveal that; workers' safety attitude and safety efficacy were significantly related to safety behaviour in US steel industry.

In reference to hypothesis 2 (H2), management support has positive significant relationship with compliance safety behaviour in Perak manufacturing industry. Where the sig 2-tailed was 0.000 with positive Pearson correlation of 0.765. Thus, *Ha* shows positive

significant relationship between management support and compliance safety behaviour because there is no realistic and no substantiated hypothesis *Hn.* At the same time, quite similar findings of Chinese Manufacturing where the management commitment shows positive relationship with safety behaviour [13].

On the other hand, hypothesis 3 (H3), safety rules and procedures has positive significant relationship with compliance safety behaviour in Perak manufacturing industry. Where the sig 2-tailed was 0.000 with positive Pearson correlation of 0.520. Thus, *Ha* shows positive significant relationship between safety rules and procedures with compliance safety behaviour because there were no realistic and no substantiated hypothesis *Hn.* This result reveals that safety rules and procedures have significant correlation with accident rates [25]. This concludes that the Pearson correlation analysis being used in this study where this model also fit in order to find out the relationship in between dependent and independent variables as in Table 4.

**Table-4: Result of Pearson Correlation Analysis**

| | | Compliance Safety Behaviour |
|---|---|---|
| Compliance Safety Behaviour | Pearson Correlation | 1 |
| | Sig. (2-tailed) | |
| | N | 383 |
| Safety Attitude | Pearson Correlation | .799[**] |
| | Sig. (2-tailed) | .000 |
| | N | 383 |
| Management Support | Pearson Correlation | .765[**] |
| | Sig. (2-tailed) | .000 |
| | N | 383 |
| Safety Rules and Procedures | Pearson Correlation | .520[**] |
| | Sig. (2-tailed) | .000 |
| | N | 383 |

**. Correlation is significant at the 0.01 level (2-tailed).

## Regression Analysis

Other than Pearson Correlation Analysis, there is Regression Analysis which helps to identify the overall of discussion of independent variable based on the dependent variables. The regression analysis based on the Table 5, it reflects on the test which used to determine the independent and dependent variable. Regression analysis was to determine the effect of safety attitude, management support, and safety rules and procedures on compliance safety behaviour in Perak manufacturing industry. The safety attitude shows positive significant effect on compliance safety behaviour with positive t-Ratio (10.507) and positive Beta (0.482) at 0.000 Sig-t. Thus, *Ha* shows positive significant influence of safety attitude on compliance safety behaviour; because there is no realistic and no substantiated hypothesis *Hn*. This result supported by previous research findings of [2] where attitude will influence the behaviour by influencing the intention to act in particular way and also is determined by the result of experience.

Besides that, management support also shows positive significant effect on compliance safety behaviour with positive t-Ratio (6.384) and positive Beta (0.296) at 0.000 Sig-t. Thus, Ha shows positive significant impact of management support on compliance safety behaviour; since there is no realistic and no substantiated hypothesis *Hn.* The study done by

reference [13] reveals that management commitment also had a significant effect on three dimensions of safety behaviour which was safety initiatives, personal protective equipment, and safety compliance.

Meanwhile, safety rules and procedures show positive significant effect on compliance safety behaviour with positive t-Ratio (6.560) and positive Beta (0.200) at 0.000 Sig-t. Thus, *Ha* shows positive significant impact of safety rules and procedures on compliance safety behaviour; since there is no realistic and no substantiated hypothesis *Hn*. Besides that, safety rules and procedures and safety promotional policies have significant influence towards the safety compliance.

In this research; the three independent variables in Table 5, explained about 71.3% (Adjusted R Square = 0.713) of the overall of dependent variable which is compliance safety behaviour. Durbin-Watson fell within the accepted range of 1.598; therefore there was no auto correlation problem with the data. The histogram indicates that data used in this study is normally distributed and F-value is found to be significant at 1% significance level (sig. F = .000). This concludes that the regression analysis being used in this study where this model also fit in order to find out the influence of independent variable on the dependent variable.

### Table-5: Result of Regression Analysis

| Variables | Beta | t-Ratio | Sig-t |
|---|---|---|---|
| Safety attitude | (.482) | 10.507 | .000 |
| Management support | (.296) | 6.384 | .000 |
| Safety rules and procedures | (.200) | 6.560 | .000 |
| Adjusted R square = 0.713<br>Durbin-Watson = 1.598<br>F=317.002<br>Significant F= 0.000 | | | |

## Recommendations for Future Research

In future, the researchers should focus on a large area as for future research in order to build a better model should be the occasion to end his interviewees. In fact, the industrial staff can focus to wide range where and may do comparison in between different conceptual study just like compliance safety behaviour in between manufacturing and construction workers and also able to determine their performance level.

## CONCLUSION

It is hoped that this research work and model of the current research, provides additional value to the management in terms to reduce the accident rate among the employees as well find intervention in order to increase the compliance safety behaviour among the workers. For examples, those intervention could be said as provide healthy ergonomic environment to

employees as well employers, and bring them to vacation once in a year.

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