Occupational Accidents and Injuries at An Automotive Industrial Plant

Azila Eliana Azizul El-Jeffry*, Nik Noor Afizah Azlan, Md Noh Ab Majid
Faculty of Business Management
Universiti Teknologi MARA (Terengganu)
*Corresponding e-mail: azilaelianaa@gmail.com

Abstract
This study was directed to examine the occupational accidents and injuries towards the staff at an Automotive Industrial Plant (AIP). The researchers used simple random sampling method in order to select the respondents. Concentrating on the number of populations of 266 local staff, a sum of 157 respondents were taken an interest in this study by reacting to the self-managed surveys. In order to measure the relationships with the occupational accidents and injuries, three independent variables were selected concerning employee's behavior, management commitment and the working environment. Two objectives were achieved and four hypotheses were tested. Based on the results of correlation analysis, there were positive relationships among the identified variables with the occupational accidents and injuries. However, employee’s behavior was the most influenced factor with Beta estimation of 0.373 when contrasted the value for management commitment and working environment by using multiple regression analysis.

Keywords: Occupational accidents and injuries; Employee’s behavior; Management commitment; Working environment; Safety Management

1. INTRODUCTION

Safety Management is an important aspect that every organization needs to emphasize on safety and health towards its employees. Safety management is an approach used by an organization to manage human capital health and safety risk as stated by NIOSH (2013). The main objective of Safety Management is to avoid occurrences of accident that have the tendency to affect the victim (Béland, 2007). Accident cannot be predicted by anyone because the occurrence might be the one that we never thought of. Also, the accident does not recognize any range of age as its victims. Even though there are several actions and precautions being taken, yet the accident still occurs because of the individual itself (Clarke, 2006). Generally, the accident is a definite event that no parties would want. The reason is because, they might cause the victim or related parties to bear several costs of the risks. In any organization, safety precaution is the most important aspect that needs to be taken care of because safety is much related to human. A slight mistake done can cause of high impact towards the victims.

2. LITERATURE REVIEW

2.1 Employees’ Behavior
Employees are the person who serves in an organization and from the service given, paid will get in return (Muhl, 2002). Employees can be the significant person in an organization comes after the employers and customers or clients. It is important to emphasize to the employees because without them, the organization won't be able to achieve their goals because according to Mulhern, (n.d) the employees are the parties that gives an organization a level of
reputations. However, this depends on the behavior of the employees towards the task that they are involved with. According to Makin and Sutherland (1994), internal and external factors of the individual will influence the behavior of a person on how he or she acts the way they are. This idea was supported by Cox and Jones (2006) that employees' behavior and human factors are related.

Neal and Griffin (2006) also stated that the perception of safety climate is positively correlated with safety behavior. “Safer the behavior at work, lesser is the risk of injury” (Khanzode, Maiti and Ray (2012). However; Clarke (2006) does not support the relationship between safety climate and unsafe behavior where it is a significant negative relationship. The researchers agree with Neal and Griffin (2006) where there is a positive relationship between employee safety behaviors and occupational accident and injury. The behavior actually derives from the perception of an individual towards the management. If negative perception was given, therefore it might lead to negative behavior of someone and at the same time might occur accident due to unsafe behavior shown.

On the other hand, Iraj Mohammad Fam, Ali Kianfar and Shahram Mahmoudi (2009) mention about the relationship between job stress and unsafe act. Based on the research done in the evaluation of the relationship between job stress and unsafe act, there is a significant relationship between them, whereas the level of stress increase, the unsafe behavior practices will increase and eventually, this will create an occurrence of accident in the workplace. Iraj et al., (2009) suggested that, implementation of behavior based safety should be enhanced in order to reduce the rate of accident in an organization.

### 2.2 Management Commitment

Management commitment refers to the degree of how much attention does the management gives towards the safety and health of their employees in the organization. Employers are part of management. The higher the person status in an organization, the individual actions will affect the outcome of the organization (Wu, Lin and Shiau, 2010). Wu et al., (2010) also stated that leadership and safety have a relationship where different level of managers have their own roles in implementing safety in the workplace. The majority supported the relationship with their literatures regarding leadership and safety, however they emphasized more on the lower-level managers; supervisors, and very little roles of senior or mid-level managers (O'Dea and Flin, 2003). According to Rundmo and Hale (2003) the manager's attitude is important where it leads to the management commitment towards the priority of safety and awareness of risks. Employers or top management participation gives an impact to the management because each has their roles and safety leadership aspects consist of safety caring, safety coaching and safety controlling (Wu et al., 2010). Rundmo and Hale (2003) mention that the ideal attitude of managers to control hazard occurrence are to detect hazards, find ways to control hazards, identify priority hazards, choose a good solution then implement and monitor as well as learn them. Therefore, safety leadership of employers towards their employees is important because it helps in reducing the rate of accident causation in an organization.

Communication is essential towards the success of safety, especially between managers and workforce (Clarke, 2006). The reason is because communication leads to better understanding towards the work activity. When an understanding is obtained, it will help the employees to work accordingly. In other words, it is known as the communication quality by Hofmann and Morgeson (1999). Parker, Axtell and Turner (2001), Leonard; Graham and Bonacum (2004) also supported the ideas where there are significant relationships between communication qualities and safe working condition. According to Parker et al., (2001) there are types of communication approach that leads to different outcomes. Open communication regarding the general work that enhances the safety and specific safety-focused communication helps to boost up the safe work. Parker et al., (2001) also supported that there is a relationship in safety and communication of management towards the safe working
condition. Those authors also suggested that employers need to find other alternatives in order to enhance safer working condition as well as employees’ working performance.

The management also should emphasize on safety knowledge to the workforces. There are many alternatives that management can take in order to give knowledge to the workforce regarding the related tasks. One of them is a safety training program (Krause and Hidley, 1989). Training should be provided by the operations manager to improve the safety related behavior. In other words, this management commitment such as training providence has a relationship with behavior of employees to act safely during the working hour. When employees are sufficient with training, they are able to perform the task safely and accordingly. Thus, safety knowledge has been perceived differently at the hierarchical level. According to Clarke (2006) different level of employers and employees have different ways of conceptualizing the work safety. The idea was supported by Arbodela, Morrow, Crum and Shelley (2003), where they highlighted the perceptions of top management commitment between truck drivers and managers. Cox and Cheyne (2000) stated that the upper level such as the managers has more positive views than the employees concerning the tasks. The employees should be catering up with appropriate and sufficient knowledge in conducting their scope of works because it somehow can affect the safety behavior of the worker and their reputations.

2.3 The Work Environment
Work environment refers to the surroundings of the job place that the employees are currently dealing with. Working environment plays a very important role because improper working environment can affect the safety of the workers in the area (Geldart, Smith, Shannon and Lothfeld, 2010). This idea was supported by Sawacha, Nacum and Fong (1999), a tidy and well planned working surrounding will give a high safety performance to the employees. There are around 60-80 per cent of accidents involving occupational stress (Clarke, 2006). However, less research has focused on the relationship between workplace stress and safety performance (Clarke and Cooper, 2004). Stress in the workplace can give an impact to the employees conducting the work because this eventually causes them to get caught in an accident. Injuries also can occur due to human-machine interaction as according to the engineering model (Geldart et al., 2010). A proper environment should be given during performing the tasks. This is even stated in the act relating to working environment as subsequently amended last of the Act of 14 December 2012 No 80 by Lover that consist of 8 requirements regarding the working environment. There is a significant positive relationship between work environment and workplace accidents where higher work demands and unclear work procedures associate with the occurrence of accidents (Clarke, 2006).

Ergonomics is known as the interaction of human towards other elements during performing tasks (International Ergonomics Association, 2014). Ergonomics somehow involves in the working environment of employees. According to the International Ergonomics Association (2014) there are 3 elements of ergonomics which are the physical ergonomics, cognitive ergonomics and organizational ergonomics. Ergonomics has the relationship with working environments that have the possibility to cause accidents (Niu, 2010). Ergonomics is a part of risk factors that contribute to occupational safety and health problems. The management need to ensure that the employees ergonomics are good. In other words, working environment have the relationship with management commitment towards having a safe working environment and reduces the occurrence of accidents in an organization as supported by Nunez and Villanueva (2011). Sawacha et al. (1999) suggested that the managers should realize that the safe working condition started from the design stage and not jeopardized by poor site coordinate. Therefore, the work environment really does give an impact towards the occupational accidents and injuries in an organization. If the management plays their role to achieve a comfortable working condition to the employees, it will contribute to less accidents
and injuries, as well as bringing the organization to a higher productivity and achieve their objective respectively.

2.4 Occupational Accidents and Injuries
Occupational accidents and injuries can be defined as the occurrence of the unexpected and unplanned event which includes the act of violence, personal injuries and so on from the work activity. It can also be considered as travel, transport and road traffic accidents that comes from the work activities done in a certain period of time (Laborsta Internet, 1996). Hamalainen, Takala and Saarela (2006), mentioned that occupational injury can be classified into two that are fatal occupational injury and non-fatal occupational injury and it is supported by Khanzode, Maiti and Ray (2012). Eventually, occupational accidents will incur cost either direct, indirect or hidden costs. In demonstrating those, there are models introduced, recognized as the iceberg model (Hamalainen et al., 2005). According to Khanzode et al., (2012) there are many definitions of occupational accidents among countries from simple orientation up to more specific explanation. However, there are very few studies that analyzed the significance of occupational accidents definition from the academic perspectives. In developing countries, the occupational accidents become the most crucial problems nowadays. This is because of the possible threats from the humanitarian, economic, social and the environment consequences (Iraj Mohammad Fam et al., 2010). The occurrence of accident and injuries does not count on what sectors or industries an organization is. It can happen anywhere, anytime either in petrochemical industries, railway firms, automobile manufacturing, nuclear processing plants or some other places (Ghosh, Bhattacherjee and Chau, 2004). Based on the occupational accidents statistics by sectors until June 2014, it shows that the highest accident cases come from the manufacturing sectors around 964 cases, followed by agriculture, forestry, logging and fishing sectors with approximately 224 cases and construction sectors around 85 cases of accidents.

The loss of work time, insufficient health treatment plan, loss of consciousness, limitation of work or motion, or transferring to another job are the results of job related injuries that eventually causes employees to suffer. There are consequences if the occurrence of accident happens. Accident causation has the connection with occupational accident and injuries. Most theories focus on the employees when the occurrence of occupational accidents and injuries occur. There are also theories being developed regarding the accident causation. Those theories consist of Dominos Theory, Multiple Causation Theory, Pure Chance Theory, Biased Liability Theory, Accident Proneness Theory, Energy Transfer Theory and Symptom versus Causes Theory (Jovanovic and Arandelovic, 2004).

2.5 Problem Statement
Nowadays, due to vast of technologies in processing products and services, it requires the human to learn its technologies. The technology might ease the process of delivering the products, but, never realize the impact that it could give to the human whom will handle it. This is especially referred to the manufacturing industry. AIP specifically made its worker deals with machineries and this will require them to learn and aware of the safety precaution and actions needed to be emphasized during the working hour. Based on the statistics from the Department of Occupational Accidents by sector until June 2014, it can be seen that manufacturing sector gives the highest number of cases around 964 cases. The occupational accidents and injuries affected the production of the factory. Even though the cases can be solved, the researchers are curious about the factors that could lead to occurrence of occupational accidents and injuries in an AIP. It started when researcher heard regarding the happening of the accidents in the plant. According to Fogarty and Shar (2009); Wu, Lin and Shiau (2010) and Clarke (2006) accident is caused by the behavior of the employees, the commitment given by the management as well as the working environment of the employees. A negative behavior shown by employees actually drives them to work unsafely and neglected
the safety regulations. Management whom shows lack of commitment to safety actually drives towards lower safety awareness during performing work and causes employees to feel that they are being neglected and not significant to the organization. The environment of the workplace also has its influence towards causation of accidents and injuries in the organization. A workplace that is not comfortable for the employees also will lead to the occurrence of accidents and injuries. The accidents may cause production delay and affect the productivity of the operations. Eventually, this also will impact the organization as well as the victims who suffer from the accidents. Therefore, the researchers want to identify either the employees’ behavior, management commitment and the working environment factors will affect the occupational accidents and injuries at an AIP.

Figure 1: Systematic diagram of Occupational Accidents and Injuries in an Automotive Industrial Plant (AIP).


Figure 1 shows the framework of Occupational Accidents and Injuries at an AIP. Employees behavior refers to the act of a person towards the job that he/she is currently dealing with while management commitment is the role of the higher position in the organization that would commit towards the safety management of the organization. The working environment somehow is the surrounding of the workplace where the employees committing their duties. Here, the researchers support Sekaran and Bougie (2013) where the independent variables influence the dependent variable positively or negatively. There are several other factors that affect the occupational accidents and injuries in an organization such as the safety knowledge, psychological factors, technical factors, procedure factors and some other factors, but yet the researchers only choose those three factors, namely employees’ behavior, management commitment and the working environment due to its suitability towards the organization and this study.

There are two main objectives of this study;
   i. To determine the relationship of employees' behavior, management commitment and the working environment towards the occupational accidents and injuries at an AIP.
   ii. To examine the most influential factor for occupational accidents and injuries at an AIP.

Hypotheses of the study;
   H1: There is a positive relationship between employees' behavior and the occupational accidents and injuries at an AIP.
   H2: There is a relationship between management commitment and the occupational accidents and injuries at an AIP.
   H3: There is a positive relationship between workplace environment and the occupational accidents and injuries at an AIP.
   H4: Employees’ behavior, management commitment and workplace environment can influence the occupational accidents and injuries at an AIP.
3. METHOD AND MATERIAL

A set of questionnaire was developed in order to achieve the research objectives. Operationalizing the concepts resulted in the development of 46 items on a five-point interval scale ranged from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was divided into five sections; profiles of the respondents, employees’ behavior, management commitment, workplace environment and occupational accidents and injuries at an AIP.

3.1 Sampling Technique and Data Collection

The target population was 266 local employees of the selected AIP. However, the researchers decided to take only a sample of 200 local employees. A simple random sampling method was rigorously executed by optimizing the response rate at 78.5% or 157 samples. The questionnaire was personally administered by the researchers.

4. ANALYSIS/RESULTS

4.1 Reliability Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>N of Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees’ Behavior</td>
<td>12</td>
<td>0.878</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.895</td>
</tr>
<tr>
<td>Management Commitment</td>
<td>13</td>
<td>0.962</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.932</td>
</tr>
<tr>
<td>Working Environment</td>
<td>11</td>
<td>0.937</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.922</td>
</tr>
<tr>
<td>Occupational Accidents and Injuries</td>
<td>10</td>
<td>0.868</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.868</td>
</tr>
</tbody>
</table>

Table 1 shows the difference reliability statistic results from pilot test and actual test for the study. There were 35 sets of questionnaires for the pilot test and 157 sets of questionnaires for the actual test that have been analyzed. Employees’ behavior had a very good strength of association with Cronbach’s alpha value of 0.895 for the actual test. However, management commitment had a Cronbach’s alpha value of 0.962 for the pilot test higher than the actual test that represent an excellent strength of associations. In measuring the working environment factor, the Cronbach’s alpha value of the pilot test was 0.937, higher than the actual test value and it also indicates an excellent strength of associations. Occupational accidents and injuries had a very good strength of association with the Cronbach’s alpha value of 0.868. Therefore, the results proved that all items in the questionnaire were reliable for further analysis.

4.2 Correlations

<table>
<thead>
<tr>
<th>Occupational Accidents and Injuries</th>
<th>Pearson Correlation N</th>
<th>Management Commitment</th>
<th>Working Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational Accidents and Injuries</td>
<td>0.512* 157</td>
<td>0.281** 157</td>
<td>0.484* 157</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.01 level (1-tailed)
** Correlation is significant at the 0.01 level (2-tailed)
Table 2 shows the result of Pearson Correlation. The association of employees’ behavior and working environment with occupational accidents and injuries were positively moderate as the r-value were 0.512 and 0.484 respectively. However, the association between management commitment and occupational accidents and injuries were weak as the r-value was 0.281. According to Hair, Babin, Money and Samouel (2003), correlation between 0.4 and 0.6 are said to be moderate while correlation between 0.2 and 0.4 are weak. All relationships were significant (p = 0.000 < 0.05) at 0.01 significant level. Thus hypothesis 1 to 3 were supported.

4.3 Multiple Regressions

Table 3: Summary of Regression Analysis

<table>
<thead>
<tr>
<th>Summary</th>
<th>ANOVA</th>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>R Square</td>
<td>F</td>
<td>Sig.</td>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>0.585</td>
<td>0.342</td>
<td>26.532</td>
<td>0.000</td>
<td></td>
<td></td>
<td>1.645</td>
</tr>
<tr>
<td>Employees’ Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.391</td>
</tr>
<tr>
<td>Management Commitment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.040</td>
</tr>
<tr>
<td>Working Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.277</td>
</tr>
</tbody>
</table>

According to table 3, the adjusted R square is 0.342. It indicates that employees’ behavior, management commitment and working environment explained 34.2% of the variance towards occupational accidents and injuries. The other 65.8% would be explained by unidentified factor(s). The model reached statistically significant with p = 0.000 (F = 26.532, p < 0.05). The results further represented that management commitment as not significant at a p-value of 0.544 (β = -0.049, p > 0.05). Both employees’ behavior (β = 0.373, p < 0.05) and working environment (β = 0.341, p < 0.05) were significant at p-value of 0.00. The result shows that the employees’ behavior was pronounced as having higher beta value. Here, the objective 2 of the study is achieved as the most influential factor towards occupational accidents and injuries is obtained. Hence, hypothesis 4 was supported.

5. DISCUSSION AND CONCLUSION

As the discussion and conclusion, all objectives and hypothesis were achieved and tested. The dependent variables, namely employees’ behavior, management commitment and working environment have significant relationships with occupational accidents and injuries. However the multiple regression analysis results, only 34.2% of the variance were explained by those independent variables and only employees’ behavior and working environment that influenced the occupational accidents and injuries at an AIP. The most influenced factor was employees’ behavior.

Hence, it is recommended for future research to study on other factors that represent another 65.8% of other variance towards occupational accidents and injuries. Besides that, this research can also be expand to other AIPs in Malaysia for the purpose of getting different points of view over this study.
References


Mulhern, F. (2015). The employee of the company: The relative importance of people versus the company brand on the customer experience.


