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Workplace Accident in Malaysia: Most Common Causes and Solutions

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ABSTRACT

Accidents in the workplace occur for a number of reasons. It may results a minimal or tragic, causing minor injury, damage to equipment or even in some cases, major injury or death. Employees need to stay alert and aware at all times to avoid accidents, while managers need to know the most common causes for workplace accidents and be able to identify the risk factors early to prevent it. A conducive and competitive working environment may help the organization to run their daily operation smoothly, thus achieve their goals successfully. Considering on how much important safety at workplace, the Malaysian government has made efforts on executing safety and health policies through the enforcement of guidelines as well as conducting site safety seminars and certifications. Yet, existing record indicated that the present Occupational Safety and Health (OSH) situation in the workplace is still very much adverse and below expectation. This paper therefore addresses the issue about the most common causes of workplace accidents among workers at workplace. This paper further examined the relationship between individual factors and job factors that contribute to the workplace accidents and suggested solutions on those issues. After assessing through the homogeneity and heterogeneity of the population, the proportionate stratified sampling was performed in ensuring the generalizability of the study. Using 177 samples, correlation investigation was conducted at the survey sites. In ensuring the stability of information generated, cross-sectional data was conducted using self-administered questionnaire. Based on the result, we conclude that elements like stress and fatigue, unsafe act, machinery and tools, design of workplace, training procedures assumed to directly influence the workplace accident.

Keywords: *Workplace accident, stress and fatigue, unsafe act, machinery and tools, design of workplace, training procedures*

INTRODUCTION

The safety in workplace is one of the most essential issues that cannot be taken lightly. Because even it only minor accident, it may cause serious and huge effect to the organization especially within the industry involved machinery handling including of prime movers, trucks, forklifts and cranes that is very much related with the issue of safety and health awareness. In an effort to promote the development of safety and healthy workplace, the issue is important as it is one of the important functions for the organization and workers to conduct their daily operation

and task safely and correctly. Workers that have high level of safety and health awareness are able to conduct their work effectively and efficiently, where it probably might prevent accidents from occurred at the workplace.
The workplace accident occurring during the daily operations results in no win situation. So, when accident occurs, it should always be promptly reported to the office of Safety and Health to ensure that immediate action could be taken by the organization. Further inspection could be conducted to identify the factors causing the accident and the way on how to prevent it from occurring in the future. An employee also urged to report any near miss injuries or accidents either to their supervisors or Safety and Health Office. This paper helps to identify potential hazards or conditions that can be addressed to avoid injuries in the future.

Nowadays, workplace accident became worst and known to be a major concerned to the organization involved. This kind of problem also familiarly faced by the industry's workers that involve in the machinery handling operation like the use of cranes, trucks, prime movers, and forklifts in conducting its operations and deliver its services. Its need to be seriously address and promptly monitored as it may affect the organization in term of high cost to repair the machinery, lead to the company's bad reputation, and also cost for medical treatment for workers that involved in accident. Prior to attempting an identification of the solution for workplace accident, it is important to better understand what the elements are or factors that cause workplace accident first.

This study was conducted at the port of Pangkalan Bekalan Kemaman Sdn Bhd (PBKSB) involving the administration and technical workers. The researcher further examined the relationship among the dependent variable which is workplace accident and the independent variables which found to be two (2) major elements which are the individual factors and nature of job.

The result of the study expected to raise the level of awareness towards safety and health needs at workplace. In addition the employers or supervisors generally can identify what are the common causes that contribute to the accident among their workers and can take the preventative measures in controlling them. In addition the company can continuously review the psychic, sociological and economic cost incurred that may lead to the company's bad reputation or image and can affect the overall company's production and operation. The company can further evaluate the programs that have been performed to clearly discover either it helped the company to prevent further accident at the workplace.

PROBLEM STATEMENT

Workplace accidents not only can be very devastating but also can give major impact to daily production depending on the type of work at stake. For instance, in places where complex machines are handled, it could be very dangerous when accidents occur. In fact, there are so many other ways that can result in various incidents at the workplace. Accidents occur for many reasons. Understanding why an accident happens is the first step in prevention as it solution.

Based on the interview conducted with the Manager of Safety and Health of PBKSB, it was mentioned that the similar problems are getting worst year by year. It has been recorded that there were frequent numbers of accidents occurred each year at the workplace and the trend is increasing from year to year resulted unpredictable cost to the industry. If there are no steps taken for prevention, it can be more serious and badly affected the image of the company.

On the average there were more than 40 accidents recorded for each year beginning 2005 till 2009 despite of efforts done to ensure the safety environment. All accidents have multiple causes. It is therefore important to identify the causes of accident so that it can be prevented in future and to reduce injury, ill health and also cost to the business. By identifying the elements of the accident at the workplace, it is essential to investigate those that occurred and considering the appropriate preventative measures in reducing the risk of them happening again.

OBJECTIVE OF STUDY

The main aim of this study is to identify elements that contribute to the workplace accident among workers at workplace. Further, it will also examine the relationship between:

1) Individual factors as measured by stress and fatigue, unsafe act, with workplace accident among workers.
2)Nature of job as measured by machineries or tools, designs of workplace, and training procedures, with workplace accident among workers.

LITERATURE REVIEW

Workplace Accident

Accident may be defined as unplanned and uncontrolled events in which the action or reaction of an object, substance, person or radiation results in personal injury or the probability thereof (Heinrich *et al*., 1980). As stated by Male (2003), human factors are likely to contribute to this problem on a number of levels including factor relating to individuals (e.g. drivers and pedestrians), the nature of the job (e.g. design of the workplace and vehicle), and the organisational (e.g. training procedures and management systems). A zero accidents goal in the work environment is a Herculean task and almost impossible to accomplish, but an effectual causal analysis paradigm might lead to the implementation of successful intervention strategies that will effectively cut down the high human and social cost associated with occupational accidents (Gyekye, 2010).

Heinrich *et. al.*, (1980), a leading Industrial Safety Engineer, developed the Domino Theory. He believed that all accidents could be modelled with a chain of five factors. They were: Ancestry and social environment; The fault of a person; An unsafe act and / or physical hazard; An accident; and The resulting injury. With moderate and high psychological distress it wills more likely leading to the risk of workplace accident (Hilton and Whiteford, 2010).

As stated by Gyekye (2010), occupational accidents have mostly been attributed to two fundamental causes: internal causal factors (dispositional characteristics of the worker), and external causal factors (characteristics of the work environment). Approximately 1.6 million industrial accidents happen in the United States every year with results ranging from minor to disabling injuries, and sometimes even death. The difference with these types of accidents is that it directly affects a person's job and the employer is responsible for accidents that happen in the workplace (Dacanay, 2011).

Stress and Fatigue

The HSE's (2004) definition of stress is the adverse reaction a person has to excessive pressure or other types of demand placed upon them. These pressures or demands at work include working long hours, workload demands, and supervisory pressures. In another perspective, stress is a form of body reaction towards any problem and pressure resulted to an imbalance between our inner resources and skills on one hand, and pressures we encounter and support received to deal with these (James and Arroba, 1999).

The focus on individual attitudes proposed by Kirkcaldy *et al*., *(*1999) suggests that the general atmosphere or culture for safety in an organisation may have a role to play in mitigating the effects of stress. As revealed by Trimpop *et. al*. (2010), there was a positive relationship between job stress and occupational accident. A link between stress and being involved in a motor vehicle accident was also found by Dobson *et al*., (1999). The authors found that there was an increase in the rates of accidents where participants felt rushed and where they exhibited lower life satisfaction scores. In terms of general driving behaviour, Norris *et al*., (2000) observed that job stress was one of the best predictors of future accident involvement. Kirkcaldy *et al.*, (1999) further reported that, partly the determinants of job-related accidents, found to be, attitudes towards safety serve to moderate the adverse indirect impact of job stress on driving accidents. Safety attitudes in addition to their direct influence on driving accident frequency also had an indirect effect through 'recklessness'. It is attitude towards risk-taking that is 'critical' in triggering on-site accidents.

Sharpe and Wilks (2002) suggest that the cause of fatigue include psychological stresses, such as loss or bereavement; and social stresses, such as problems at work. Earlier investigation on the relationship between fatigue and prolonged driving was discovered by Hakkanen and Summala (2000), found that heavy-vehicle drivers could experience difficulties in staying alert whilst driving, could fall asleep at the wheel, or could experience a near miss situation on the road that contributes to the accident during performing their daily work. Errors are more likely to occur when workers have high levels of fatigue or during times of inflexible or over demanding work schedules (HSE, 1999).

Unsafe act

Human errors that could potentially cause an accident are called unsafe acts may be defined to be a human action that departs from hazard control or job procedures to which the person has been trained or otherwise informed, which causes unnecessary exposure of a person to hazards (Joel, 1997).

In the 1920s, safety pioneer Heinrich studied and classified the records of 75,000 industrial accidents. He concluded that in those days, 88 percent of industrial accidents were caused by unsafe acts, 10 percent of the accidents were caused by unsafe conditions, and another 2 percent of industrial were due to unavoidable (acts of God). Of his 10 Axioms of Industrial Safety, three bear noting here:

- An accident can occur only as a result of an unsafe act by a person and/or a physical or mechanical hazard;
- An unsafe act by a person or an unsafe condition does not always immediately result in an accident;
- The supervisor is the key person in the prevention of industrial accidents.

DuPont (1991) study found unsafe act causing or contributing to nearly all injuries. Similarly earlier finding by Heinrich (1959, cited in Cooper, 1998) suggested that for every 330 unsafe acts, 229 will lead to a serious injury and one in a major incident. Thus, the absence of any injuries for those who consistently engage in unsafe behaviours is reinforcing that behaviour which may eventually result in a serious injury. Heinrich (1980) popularized the view that the vast majority of injuries and illnesses are the result of unsafe act by workers. DuPont (1995) has a training manual that instructs observers that both of the safe and unsafe acts are always done by people, not machines. Thus it is highly essential to concentrate on people and their actions to see whether they are working safely.

Machineries/tools

As stated by Payne (2011), accident claims involving defective or dangerous machinery are all too common in the UK. Recently, the Health and Safety Executive made a point of addressing the need for effective risk assessments in the manufacturing industry. Mechanical handling removes most of the hazards of man-handling but introduces new dangers. Injury to personnel is less frequent but tends to be more severe (Astley and Lawton, 1971). Workplace transport or machinery is the second biggest cause of accidents in the workplace, accounting for about 70 fatalities each year. The majority of these accidents are preventable (HSE, 2005b).

Although forklifts have many benefits (e.g. improving productivity or reducing manual handling) they also result in numerous occupational hazards, especially when frequent interaction with pedestrians occurs (Horberry *et al.*, 2004). Larsson and Rechnitzer (1994) indicate that forklifts have been identified over a number of decades as having a significant impact on serious and fatal injuries. They state that forklifts are inherently high hazard vehicles.

A number of authors (Horberry *et al.*, 2004) have identified characteristics of forklifts which make them dangerous. First, Forklifts have a high mass (a typical counter-balanced forklift has a mass of over 3 tonnes, making the loaded mass nearly 6 tonnes, four times the weight of the average family car). Furthermore it usage is typically involved a large amount of interaction with pedestrian workers. Thus the safety of operation is vital as the loads are often simply placed on the tyres (not secured to the vehicle, therefore relying on gravity for stability). Thus they have problems with stability due to having a narrow track and variable centre of gravity. For some machine the risk

evaluation is misleading due to the compact size of the vehicle. The nature of working with a forklift requires drivers to divide their attention. When carrying a load in reverse the driver has to simultaneously monitor the balance of his load at the back of the truck and watch the direction of travel driving with their left hand on the steering wheel and right hand on the load control and they must monitor his blind spot (Miller, 1988).

Ellis (2003) found that struck by moving vehicle, falling from vehicle, being struck by object falling from vehicle, vehicle overturning were the most common types of accident. Miller (1988) indicates that the literature points to the two major causes of forklift accidents as (1) struck by forklift, and (2) load dropped or shoved onto employee. Other causes highlighted by Miller (1988) include the driver catching a body part between the truck and another object and driving off the loading dock. Astley and Lawton (1971) called for design changes to trucks. This indicated that poor design was causing poor posture, leading to driver fatigue and spinal and abdominal trauma.

Design of work place

As stated by Beasley (2011), older buildings may contain asbestos, which will affect all occupants. Electrical wires or faulty wiring may shock office workers, literally. Williams and Priestley (1980) indicate that because the majority of major injuries occur to non-drivers the poor design and layout of workplaces must be seen as a causal factor. Miller (1988) points out that in other areas where people and vehicles come into contact e.g. parking lots, we carefully segregate them, but in warehouses the same rules often are not applied. One of Miller's recommendations was therefore the use of separate pedestrian routes. Williams and Priestley (1980) further indicated that the bulk of the seriously injured are pedestrians. Therefore, workplace layouts, which increase the interaction between people and vehicles, must be classed as a major causal factor.

Booth (1979) indicates that the prevention of workplace transport accidents by good design of the workplace is not difficult, but once a dangerous layout is created it is much more difficult to correct. It is therefore imperative that more attention is paid to the design stage within the working environment. Miller (1988) also makes specific recommendations for reducing workplace transport accidents: Among them include the lighting levels that are crucial in order for drivers to be able to see properly, and distinguish hazards/pedestrians as quickly as possible, good lighting is essential. This becomes even more important as people age and their eyesight deteriorates. The aspect of noise level should be monitored for promoting conducive workplace. Others include the working space which allows smooth transportation activities which need to be supported with traffic control sign. The use of signs and the use of high visibility lines to indicate edges (e.g. on ramps) is helpful. He draws attention to the use of stop signs, indicating that they can be used when going from areas of different lighting levels, giving the drivers eyes time to adjust. There is a need to be clear markings in any locations where there is an interaction between pedestrians and vehicles. Ideally, mark zones on the floor for stock storage areas, traffic areas, and pedestrian routes.

Training procedures

Upon reviewing the past literature, the need to create workplace safety climate largely demand management support (Coyle *et.al*., 1995; Dedobbeleer and Beland, 1991) particularly in addressing the important of training. As already mentioned, there is evidence to indicate that many workplace transport accidents are associated with poor training. Steemson (2000) cites a number of case studies where adequate training would have prevented the injuries sustained in lift truck incidents. The role of training in overcoming deficiencies in plant layout is also highlighted by Booth (1979) who sees training as vital.

The importance accorded to training and improving competence has led these to be recognised as the main areas for preventing accidents in workplace transport. Accordingly this area has received much attention in the literature. In reviewing the areas of training and competence, related issues of education, skill development and selection of competent operatives have also been considered (Male, 2003). With longer periods of safety training conducted on a regular basis, the consistent result of work safety can be upheld (Shannon *et. al*., 1997).

Horberry *et al.*, (2004) indicate that many of the hazards associated with forklift truck operation are well known. Little has been done to modify the risk environment; instead a culture reliant upon education to prevent the incidence of assumed erroneous behaviour exists. Larsson and Rechnitzer (1994), however, strike a note of caution here, suggesting that the reliance on training and driver skills to overcome deficiencies in vehicle and workplace design is considered by the authors to be a high risk strategy which will only ensure a continuing high level of accident and injury. Thus addressing training issues in minimizing workplace accident is very essential. In fact Collins *et al.*, (1999) observed that a number of drivers themselves were critical of their training provision, noting that it had not prepared them for the conditions busy production areas, the very issue that both Booth (1979) and Williams and Priestley (1980) note as one of the main benefits of adequate driver training.

RESEARCH METHODOLOGY

Theoretical framework

The operationalization of the research construct considers two (2) major elements that contributed to the accident among workers; individual factors (stress and fatigue, and unsafe act) and nature of job (machineries or tools, design of workplace and training procedures) were investigated.

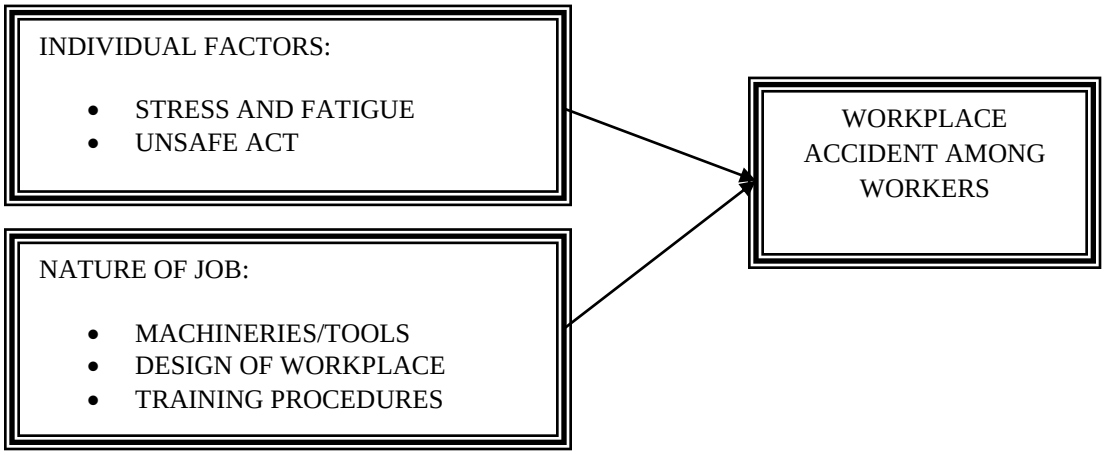

Figure 1: Theoretical framework of the study.

Testable Hypothesis for the study:

Hypothesis 1 There is a significant relationship between individual factors as measured by stress and fatigue and workplace accident among workers.

Hypothesis 2 There is a significant relationship between individual factors as measured by unsafe act and workplace accident among workers.

Hypothesis 3 There is a significant relationship between nature of job as measured by machineries or tools and workplace accident among workers.

Hypothesis 4 There is a significant relationship between nature of job as measured by design of workplace and workplace accident among workers.

Hypothesis 5 There is a significant relationship between nature of job as measured by training procedures and workplace accident among workers.

Sampling procedure

The number of population was drawn from the sampling frame of 322 workers at PBKSB. Of the population size 71 were administration workers and the rest 251 were for the technical workers. In ensuring that a good representativeness of the sample, the study adopted proportionate stratified sampling and further executed through

fish bowl technique. Using the suggestion by Krejcie and Morgan (1970), the sample size of 177 respondents were executed. The representations were further divided into 30 of administration workers and 147 of technical workers.

Data collection method and measurement

The face-to-face interviews was conducted with operations managers, operations executives, foreman and the workers focusing on the same set of questions only in order to obtain the required data related to this study and achieved the objective of the research. A more comprehensive data were further obtained by using personally administered questionnaire used by the earlier researcher. In measuring the response, the researcher used two type of scale for the study. They are Nominal Scale for section A, meanwhile for section B, C, D, E, F and G each had been measured by the Likert Scale with the total of 36 items measuring the variables under investigation.

FINDINGS

Analysis on qualitative investigation

The qualitative data was generated based on the interviews with a few staffs in order to strengthen the primary data analysis procedures. Respondents were asked about the machineries and tools that were listed contributing factors to the workplace accident. It was revealed that the use of old machineries and tools found to be problematic to the workers in handling them. Sometimes they were unable to perform well and caused accident that may harm the workers themselves.

Based on the interview conducted with the assistant manager of Quality Health Safety and Environment (QHSE) it was highlighted that the unsafe act was one of the cause of the accident at the workplace. Some workers did not follow the rules as outlined by the company such as conducting proper inspection before and during performing the tasks. However, there were only several workers that were not aware about wearing the PPE such as gloves and safety glass or goggles.

In another interview, one of them agreed that one of the factors that contributed to the accident at the workplace was caused by stress and fatigue. Workers needed to complete a hard task that might cause fatigue and then lost their concentration in completing their tasks. This problem then drove to the accident among the workers. Therefore, he suggested that the workers involving with overtime to get enough rest to ensure that the tasks could be performed successfully without any harm or injuries.

The forklift operator mentioned that a good and effective training were able to reduce the numbers of accidents. With effective trainings it could motivate and provide proper knowledge to the workers in performing the tasks. Therefore, it directly guided the workers in avoiding and reducing the workplace accidents. In addition, as revealed by the senior foreman with more than 20 years experienced, the inability of the management to provide an effective and efficient design of workplace might cause the operation bottleneck, especially for those handling machineries like crane, prime mover or forklift. He said that this kind of problem could be one of the factors of workplace accidents.

Reliability of measure

Table 1: The Reliability Analysis

VARIABLE	ALPHA	VARIABLE	ALPHA
Workplace Accident	0.740	Machineries/ Tools	0.829
Stress and Fatigue	0.805	Design of Workplace	0.671
Unsafe Act	0.800	Training Procedures	0.865

As indicated in Table 1, the Cronbach's Alpha for all the variables found to be good and reliable, following the rule of thumb as suggested by Hair *et al*., (1976) where the value is more then 0.6.

Analysis of respondents profile

Findings on the profile of the sample is explained in table 2.

Table 2: Frequency Table

ITEMS	FREQ	(%)	ITEMS	FREQ	(%)
Gender			**Position**		
Male	169	95.5	Manager	4	2.3
female	8	4.5	Asst Manager	4	2.3
			Engineer	1	0.6
Department	8	4.5	Accountant	1	0.6
Administration	153	86.4	Executive	7	4.0
Operation	11	6.2	Technician	3	1.7
Finance	4	2.3	Clerk	14	7.9 53.1
Technical	1	0.6	Operator	94	20.3
QHSE			Base Operative	36	7.3
			Foreman	13	
Age					
Between 20-29	60	33.9	**Education Level**		1.1
Between 30-39	57	32.2	PMR	2	86.4
Between 40-49	53	29.9	SPM	153	6.8
50 above	7	4.0	Diploma	12	5.6
			Degree	10	
Work experience					20.9
<2 years			**Income Level**	37	74.0
2 – 5 years	5	2.8	< RM1000	131	2.8
6-10 years	67	37.9	RM1001- RM3000	5	2.3
11-15 years	47	26.6	RM3001- RM5000	4	
>15 years	35	19.8	RM5000 & >		
	23	13.0			

NOTE: The exchange rate for 1 US Dollar = RM3.00

Table 2 displayed the profile of gender which indicated 95.5% were male while other 4.5% were female. Based on the level of working experience, majority of respondents comprised of the workers with 2-5 years working experience that indicates 67 respondents or 37.9%. While, 47 of respondents or 26.6% were having 6-10 years working experience. There were 35 respondents (19.8%) were those with 11-15 years working experience and 23 respondents (13%) were with more than 15 years working experience. The minority of the respondents were consisting of 5 respondents or 2.8% workers with less than 2 years working experience. Referring to education background, 86.4% were having secondary school (SPM) level, 6.8% were with diploma, while 5.6% were having degree or master education.

Based on department, it indicated majority of respondents (153 or 86.4%) were from operation department, 11 or 6.2% respondents were from finance department, followed by 8 or 4.5% respondents from administration, 4 or 2.3% were from technical department and 1 or 0.6% were from QHSE department.

The table show the position of the respondents that majority of them (53.1%) of respondents were operators, 20.3% were base operative, 7.9% of respondents were clerk, 7.3% or respondents were foreman, 4.0% were executive, 2.3% respondents were manager, 2.3% were assistant manager, 1.7% respondents were technician, 0.6% were engineer and 0.6% were accountant. Based on respondents' monthly income, 74% earned RM1000- RM3000, 20.9% earned less than RM1000, 2.8% earned RM3001- RM5000 and the other2.3% earned more than RM5000 per month.

Chi-Square test

By cross-tabulating several set of demographic profiles with the workplace accident, we further test the association of the variables through chi-square. The chi- square distribution provides a means for testing the statistical significance of contingency tables.

Table 3: Chi-Square Test between nominal variable and dependent variable

Nominal Variable		Value	Df	Asymp.Sig(2-sided)
Age		27.648	21	0.150
Gender		9.589	7	0.213
Working Experience		42.289	28	0.041
Education		13.007	21	0.908
Department		27.432	28	0.495
Position		44.645	63	0.961
Income		17.205	21	0.699

Table 3 demonstrated the result of Chi-Square testing between selected profiles as to the workplace accident. The result shows that there was an association between working experience and workplace accident at p-value of 0.041, whereas there were no significant association between age, gender, department, position and income with workplace accident among workers as depicted by the p-value of 0.150, 0.213, 0.908, 0.495, 0.961 and 0.699 respectively. Thus we can conclude that not only independent variables contribute to the workplace accident among workers but working experience also demonstrated an important impact to the workplace accident.

Correlation coefficient

Correlation analysis was used to explain the existence of association and strength of the relationship between the independent variables (stress and fatigue, unsafe act, machineries or tools, design of workplace and training procedures) and dependent variable (workplace accident).

Table 4: Correlation between Independent and Workplace Accident

Variables	Pearson Correlation	Sig. (2 tailed)
Stress & Fatique	.522**	.000
Unsafe Act	.220**	.003
Machineries/ tools	.208**	.005
Design of workplace	.405**	.000
Training procedures	.428**	.000

The table above displayed the correlation between workplace accident among workers and the five independent variables. The first one is the relationship between workplace accident among workers and stress and fatigue. There

was significant relationship between the two at 0.01 levels. The relationship was considered as substantial to very strong as indicated by Pearson Correlation value of 0.522. The second hypothesis examined the relationship between workplace accident among workers and unsafe act. There was a significant relationship between the two variables at 0.01 levels. The Pearson Correlation value of 0.220 explained that there was low to moderate relationship between the two variables.

The third hypothesis examined the correlation between workplace accidents among workers and machineries or tools. There was a significant relationship between these two at 0.01 levels. The Pearson Correlation showed the figure of 0.208 which means that it indicated low to moderate relationship between two variables. While the fourth hypothesis attempted to investigate the correlation between workplace accident among workers and design of workplace. The table shows that there was significant correlation at 0.01 levels. The Pearson Correlation value of 0.405 explained that the association was moderate to substantial.

The last one is the relationship between workplace accidents among workers and training procedures. As depicted in table 4, the result demonstrated that there was a significant relationship between these two variables at 0.01 levels. The Pearson Correlation value of 0.428 indicated that there was a moderate to substantial relationship between the two variables.

Multiple Regression analysis

Table 5: Output of Coefficients

Model		Unstandardized Coeff		Standardized Coeff	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.348	.552		2.441	.016
	Stress & fatigue	.276	.063	.390	4.364	.000
	Unsafe act	.036	.053	.049	.678	.001
	Machineries & tools	.007	.055	.008	.120	.003
	Workplace design	.280	.083	.256	3.373	.001
	Training procedures	.074	.115	.056	.643	.000

Referring to table 5, this attempted to compare the strength of each factor and in explaining their relationship, all of these five independent variables which are stress and fatigue, unsafe act, machinery or tools, design of workplace and training procedures, which were significant with the value of .000; .001; 0,003; 0.001, and 0.000 respectively. Further output through beta value of 0.390 and 0.256 suggested that stress and fatigue and workplace design were the most contributing variables. While others like training procedures, unsafe act, and machineries or tools indicated less serious but still needed to be address.

Table 6: Model Summary

M	R	R Square	Adj. R Square	Std. Error of Estimate	Change Statistics				
					R Square Change	F Change	df 1	df2	Sig. F Change
1	.784(a)	.615	.590	.161	.615	24.471	5	171	.000

As a whole, all the five variables (stress and fatigue, unsafe act, machineries or tools, design of workplace and training procedures) were able to explained 61.5% of the relationship with workplace accident. Even though approximately 38% could not be explained but still the investigation demonstrated all the five factors as a whole were statistically significant at .000.

DISCUSSION AND SOLUTIONS

The purpose of the study focused on the workplace accidents among workers at workplace. Using several testing procedures on the non-directional hypotheses the researcher came out with some conclusions that are acceptable to the logical explanation of the grounded theories. The researcher further concluded that these five elements; stress and fatigue, unsafe act, machinery or tools, design of workplace and also training procedures contribute to workplace accidents among workers. Further, there are numbers of recommended solutions outline by researcher as precautionary action should be taken by the company and workers themselves.

The first hypothesis is about the stress and fatigue. Similarly several earlier studies demonstrated the relationship of workplace stress with workplace accident (Johnston, 1995; Kim, 2008; Hilton and Whiteford, 2010). It means that when workers are stress and fatigue, irregularities of scheduling, and work overloaded will have an effect on their concentration in conducting their works. Therefore, they are exposed to the probability of involving in the accidents. Stress and fatigue in the norm of working life are synonym with workers. As this development could be one of the contributory factors for workplace accident, company should design a proper working schedule for each department that suits with their working style. Workers that usually work at night should have enough rest on the day and fit to continue their job at night. Furthermore, there should be no worker that works too long after their usual schedule of working hour. Another alternative for reducing accident due to stress and fatigue is by motivating them through making them feel comfortable while working. Their complaint should be given attention by the authorities. With these efforts, worker feels appreciated even though they had a rough day of working. Employers also can help to reducing employees' stress levels by organizing the conditions and requirements of the workplace and jobs in such a way as to minimize the sources of stress. Employers may take measures that include ensuring there is a pleasurable working environment, make sure that all staffs has training in time management and delegation so that they can manage their time effectively, having regular open communication so that opportunities to discuss problems and worries are available for them.

The second hypothesis concerned on the relationship between unsafe act and workplace accidents. It means that any other unsafe act by the workers such as failure to obey the rules that had been provided by the company, unethical behavior at workplace or do not wear proper Personal Protective Equipment (PPE) such as safety gloves, safety helmet and safety boots will contribute to the workplace accident among them. Controlling unsafe acts has proven to be difficult. The reason for this is that unsafe acts involve the human factor, that is, they occur as a result of people's attitudes and behaviors. However, unsafe act should be closely monitored. Management should communicate what is important clearly through goal setting, establishing policies and procedures, and even rewarding certain job behaviors (Schneider and Rentsch, 1988; Dedobbeleer and Beland, 1991). The rules and regulations should be seriously obeyed by all workers especially when performing high risk task. Workers should be fully equipped with PPE when performing risky task such as eyewear, safety boots, gloves and others. The most important thing in doing job is workers should do their job seriously and with full concentration. This is important because when workers lack of concentration, they tend to involve in greater risk of having an accident. This will not benefit any parties in the company but only cause loss of working hour. By reducing the occurrence of unsafe acts, it will directly reduce number of accidents and injuries that occur in the workplace.

The third hypothesis proposed the relationship between the machinery and tools with the workplace accident. It means that old machineries and tools, improper or irregular inspections done by the workers, insufficient training among the workers and failure to immediately report any breakdown are among the factors that may contribute to a

workplace accidents. Machineries or tools are very much associated with day-to-day operation. As machinery is also one of the elements that may contribute to the workplace accident among workers, it is important to the company and workers themselves to make proper maintenance inspection before start their work. Make sure all of the tools and equipments are good quality and well maintained. Another solution is by reducing the numbers of old machinery such as forklift, crane and prime mover or by replace them with the new and available for the hard tasks. The company and the supervisors need to be clearly know and understand and also able to give knowledge to the workers on how to handle the machinery and tools correctly to ensure that workers have proper knowledge on machinery and tolls handling.

Design of workplace is one of the crucial parts in avoiding accident in the workplace. Exploring further on the issue, the fourth hypothesis was formulated on the relationship between designs of workplace as part of the elements that are positively contributed to the workplace accidents. This means that irregular workplace layout, the absence of safety features, improper communication among the staffs involved, and inability of the supervisors to provide clear explanation of the layout, may cause problems to the workers in handling their machinery or transport smoothly. As such these considerations assumed to be among the critical elements that contribute to the workplace accidents. Effective design and layout of workplace can eliminate some workplace hazards and help get a job done safely and properly. Poor design and layout can frequently contribute to accidents by hiding hazards that cause injuries. In situation when accident frequency rates are very rare, there is a tendency where workers might be complacent and their awareness of the potential accident are underestimated (Shannon et. Al 1997). The design of it should be proper planned and well balanced between high risk spot and also low risk spot in the workplace. The high risk spot in the workplace should be taken more consideration as it involves time, money and also the safety of workers itself. There should be proper signs in the area such as cross lines and danger zone. There also need to have road signs for heavy vehicles such as truck to park their truck, waiting lines and other. This will help to make job easier as for the company and also for the client. This also can help in avoiding accident happen caused by the design of workplace itself.

While the last hypothesis indicated that there is relationship between training procedures and workplace accidents. Lack of training indicated that workers are unable to perform their work well, limit and improper knowledge on how to handle the machineries or tools correctly, and ineffectively perform their work without the occurrence of accident. Upon analyzing each of the factors separately through correlation and analysis the impact of the whole factors together through multiple regression, the investigation therefore able to conclude that all the six hypotheses that had been formulated earlier; stress and fatigue, unsafe act, machineries or tools, design of workplace, training procedures and work related factors were among the contributory elements to the workplace accident among workers. Addressing the issues on Training Procedures is essential in avoiding accident happen in workplace. Company should provide proper training for all their workers. They should be no exception for workers as for the permanent and also contract workers. This is because all these workers provide their work resources for the company to achieve the same goal. So, there should be no exception in providing training for the workers. The type of training employees should receive will of course depend upon the type of job. However, as a general rule, staff should be trained in working procedure and in the use of equipment. As we know, training will make workers more competent in doing their jobs. Company should not exclude training as it is important to the workers in establishing their working skills and also to provide good work that will produce greater income for the company itself. Furthermore, there should be more safety talk done by the company to give more education for the workers about the importance of safety. The safety talk should be meaningful to all workers to learn and equipped them with safety knowledge. They should emphasize their concern on workers about safety issues so they are not only attending the talk because of the attendance but because of the knowledge gained from the talk. When they truly understand about the importance of safety in the workplace, this will help to reduce accident in the workplace. Among the prominent elements need to be considered include quality movement, awareness creation, technology changes, operation practice changes, productivity improvements, and operation multi-skilling (Brown, 1996).

Besides, as demonstrated in Table 3, there was an association between working experience and workplace accident. It can be concluded that this personal factor, other than independent variables discussed play an important part to workplace accident, where it needs the consideration from all parties involving employers and employees. Employees that lack of work experience or less skilled are able to contribute to workplace accident since they may avoid asking questions in order to avoid looking foolish, unknowledgeable and incompetent against their peers and employer. Therefore, employer should play their role to educate and promote them with Occupational Safety and Health procedures at workplace. This will help them in improving workplace safety and avoid the increasing numbers in accident at workplace.

The creation of safe and sound workplace is not the responsibility of the employer only. Workers also have to take a part in order to keep their workplace free from any degree of risks and hazards. Therefore, most of the common accidents at workplace should be prevent with the cooperation from both employers and employees considering it as their responsibility to prevent accidents at their work place. Employers are required to perform risk assessment for possible accidents that could occur and adapt necessary methods to prevent accidents in the health and safety procedures practiced by them. Employees then must strictly follow the health and safety measures adapted by their employers and help to avoid accidents at workplace to ensure that they can run the operation effectively and efficiently.

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