REVIEW

A NEED FOR NEW ACCIDENT THEORIES IN MALAYSIA?

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ABSTRACT

Workplace accident is a big challenges for a safety professional. Workplace accidents may lead from minor to serious effects to both employees and employers alike. Accident is an unexpected and undesirable event, especially those resulting in damage, harm or unforeseen incidents. This paper also discussed all available accident theories that are commonly used in workplace as fundamental to mitigating accident. Throughout this paper, the author justified that a new or updated accident theory is needed in Malaysia. The author stated that current accident theories are based on different environments and are different in terms physical of the employee who involved in the accident. This author also stated that technology changes is also another factor which can be supporting the new or updated accident theory needed in Malaysia.

Keywords: Accident, Accident Theory, Heinrich Domino Theory,

INTRODUCTION

Accident is a term that is always linked to workplace safety. Accident happens everywhere, any time and to anyone. It has been a big challenge to safety professionals to reduce accident at their workplace. There are 11.3 million serious injuries and 11,000 killed due to accidents in U.S in a typical year[1]. According to the International Labour Organization (ILO) it has been estimated that 2.3 million deaths occur every year due to work-related accidents and diseases[2]. According to ILO, there are 153 workers involved in work-related accidents once every 15 seconds. Workplace accident is also an issue in Malaysia. Based on statistics released by the Malaysian Social Security Organization (SOCSO), the industrial accident (N= 34,974) with fatalities cases (N= 983) had been reported in year 2012[3]. The number of industrial accident cases that been reported to SOCSO have shown a constant reduction where in 2010 (N=35603), 2011 (N=35088) and 2012 (N=34974)[3]. Even though reduction was observed, the number of workplace accident is still alarming.

The Department of Safety and Health Malaysia (DOSH) have published statistics showing the number of workplace accidents that been reported and investigated by DOSH from 2012 to 2014. It showed an increase with total number of accidents in 2012 (N=2768), 2013 (N=2846) and 2014 (N=3125)[4]. This shows that workplace accident is an issue that needs to be looked at. In 2014, the number accidents in Negeri Sembilan recorded a higher number of accidents compared to other states where Perak was the second highest. First of all, the meaning of the accident need to be cleared.

ACCIDENT

An accident is an unexpected and undesirable event, especially accidents that result in damage, harm or an unforeseen incident. An accident is an occurrence in a sequence of events that produces unintended injury, death, or property damage[5]. Hence, an accident is not a result of something but also an event. Beside this, workplace accidents can also result in industrial injuries. Industrial injury is on-the-job mishap more often than not causes serious injuries, that is job-related usually happening on a work site such as a factory floor or a construction site. Beside this, an accident has also been defined as any unforeseen adverse event or having potential to cause harm as per definition of The Royal Society for the Prevention of Accident[6].

The effect of an accident will either be injury or property damages including environment pollution. The injury could be a temporary disability, permanent disability or death. After an accident takes place, the worker should receive prompt first-aid attention and the injury should be treated. The after-effects of the accident, however usually transpire more slowly depending on the work site. Workers who witnessed the scene might be too shaken up to resume their duties. In factory environments, production is usually stopped until the damaged equipment was cleared and replaced with new machinery. Managers can reassign the injured worker, call in a replacement. In Malaysia, the supervisor are usually required to fill out a lengthy accident report and several regulatory forms such as JKKP 6 Malaysia as per Guidelines on Safety and Health (Notification of Accident, Dangerous Occurrence, Occupational Poisoning

and Occupational Disease) Regulations 2004 [NADOPOD] by DOSH.

ACCIDENT THEORY

Accident theories that are widely used to describe accident are based on Heinrich's (1931) domino model, Gibson's (1962) and Haddon's (1968) energy models, using a closed system safety minds, with mechanistic metaphors that describe conditions, barriers and linear causal chains of an accident process[1].The technical faults and human errors are two main focus in the accident theories in the 1960s and 1970s[1,7].

Heinrich Domino Theory

The Heinrich Domino theory was introduced by H.W. Heinrich. Heinrich introduced the theory while working at the Travelers Insurance Company in 1929. Heinrich was a pioneer in the field of accident prevention where he spent nearly 30 years in his work. Since the 1930s, Heinrich's work has influenced many safety practitioners. After studying 75,000 industrial accidents in the 1920's he concluded that 88% of industrial accidents are caused by unsafe acts, 10% caused by unsafe conditions with the remainder 2% being unpredictable[8]. This theory explained an accident as a sequence that was likened to a row of dominoes knocking each other down in a row. The sequences are Injury, caused by an; Accident, due to an; Unsafe act and/or mechanical or physical hazard, due to the; Fault of the Person, caused by their; Ancestry and Social Environment[9].

Bird Domino Theory

Frank Bird Jr. updated and slightly modified Heinrich's Domino Theory to reflect new developments in safety theory and a changing social and political climate. This revised version of Domino Theory emphasizes on management and incident as property loss[10].

By 1976, Frank Bird Jr and Robert G. Loftus (along with input from Heinrich) put forth a new revised version of the Domino Theory in their well-known book "Loss Control Management". By 1994 from Jeffrey W. Vincoli's book (Basic Guide to Accident Investigation and Loss Control), the dominoes have been re-labelled and updated (with a new emphasis on management and incident as property loss) but the basic structure and premises of the theory were still in place[11].

Human Factors Theory

Human Factor Theory is another equally important theory. The theory explains that the main cause of an accident is human error. The factors that lead to human error are overload, inappropriate response, and inappropriate activities. Over load is the inequality between a person's capability and load. A person's personal capability is the factor that is related with someone's natural ability, training, state-of-mind, fatigue, stress and physical condition[12].

Environmental factors, internal factors and situational factor are factors which are responsible for increasing the load that will be carried by a person. Some of the examples that influences the factor of personal load are; Environmental- Noise, distractions, Internal factors- Personal Problems, emotional stress and worry, Situational factors- Level of risk, unclear instruction. Another factor in human error is inappropriate response and incompatibility. These factors are related to the response of a person to a situation that can cause or prevent accident[12]. Example of inappropriate response are; detecting a hazard but not correcting it, removing safeguards, ignoring safety. As mentioned above, another factor which is related to human error is inappropriate activities which will be able to cause an accident. Example of inappropriate activities are; performing task without properly judging the degree of the risk involved of a given task.

Accident / Incident Theory

The Accident /Incident Theory has been adapted from Ferrell's human factors of overload and also Heinrich's domino theory. It states that the causes of accidents/incidents are because of human error and/or system failure. This theory was developed by Dan Petersen and sometimes has been referred to as the Petersen accident/incident theory[12]. Petersen added new elements besides retaining the human factors theory components. The new elements are ergonomic traps, decision to err and systems failures. Human error may directly cause accident or may cause system failure which in turn may cause accident resulting in injury. The factors of Accident /Incident Theory that causes overload are much the same in human factor theory. The factors are Ergonomic Traps - defective workstation, design and incompatible displays or control; Decision to err – Misjudging of the risk, unconscious desire to, logical decision based on the situation; System failure - Due to error in policy, responsibility, authority, accountability, measurement, inspection, correction, investigation, orientation, training, selection, safe operating procedure, standards, hazard recognition, records, medical and others.

Epidemiological Theory

This theory is based on the current trend. The old trend of accident theories is related to accident and its consequences. Industrial hygiene is a matter that has been included in the current trend. Industrial hygiene on a broader

perspective can lead to sickness, disease, impaired health.

Systems Theory

System theory is one variation of the Multiple Causation Theory. The system theory of accident is commonly known as R. J. Firenzie's Theory of Accident Causation. It is made up of three components: person, machine, and environment interaction. This theory explains that the interaction between the components can affect the probability for an accident.

WHY THE NEED FOR A MALAYSIAN BASED THEORY?

The Domino theory of accident has been chosen to explain the necessary of Malaysian based theory. Based on the accident theory, the first element which causes accident will be the social environment where element changes affecting personal behaviour can lead to accident. It has to be noted that the accident theory that has been stated above are mainly based on studies that have been conducted in areas or countries outside of Malaysia. So if a social environment has potential to cause accident, the theory that been studied on the accident that happened out of Malaysia may or may not reflect the Malaysian's social environment? Also, Malaysian or Asian people in general are not equal in terms of size or ergonomic factor compared to people from other continents. Based on the accident /incident theory, ergonomic traps is one of the element that causes accident. This would not be generally accurate for Malaysia due to the studies that created these theories were based on ergonomic factors of locations out of Malaysia.

Goetsch in 1999 stated that physical condition is one of the main elements in the Human theory of accident[12]. The theory is based on the accidents that have occurred out of Malaysia that may not be suitable to the Malaysian context as Malaysians are different in terms of physical and emotional context. Westerners are generally taller and bigger in size compare to Asians who on average are generally thinner and shorter. This supports the fact that Asians including Malaysian are different in term physical conditions. Hence, Malaysian employees will be different in terms of their physique compared a western employee, so the potential for an accident will also differ.

The Theory of Accident Causation states that the interaction between environment and people is a potential factor to cause an accident. However, Heinrich Domino theory was created based on the 75,000 industrial accident which occurred out of Malaysia. Hence the theory may not truly be reflective of the Malaysian condition.

Besides this, majority of the theories reviewed are based on 1980's or 1990's workplace technology. We cannot deny that technology is ever changing year in and year out. This is also definitely applicable to workplace technology. Designing to prevent accidents may be lost or become ineffective when older technologies are replaced with new ones[13]. It also been stated that technologies usually get to market in two to three years and may be obsolete in five years. The dynamic workplace technology maybe creating new hazard which has potential to lead to accident. So with the accident theories that have been developed based on data that occurred a few decades ago and outside of Malaysia may lead to a question whether these accident theories can be applied to prevent accidents in Malaysia.

CONCLUSION

There are many accident theories that have been developed over the years. These theories are developed based on the studies of accidents that occurred outside of Malaysia. We are not against any theory of accident. Instead we would like to stress that accident theories which are based on the accident that occurred out of Malaysia may or may not fully reflect the actual accident causes. This is because not all countries, regions and continents have the same environment, social environment, where even the people also differ in terms of their physical condition. We would like to suggest that a proper study on accident be conducted in Malaysia as Malaysia needs an accident theory which based on the local working environment.

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