

## Risk Management and Employees Accident Minimization at Work Place

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### Abstract

The purpose of this study was to examine the impact of risk management on employees' accident minimization at the work place. Data were collected through the use of self-structured closed questionnaire. The research adopted a descriptive survey design. A total of 100 respondents were selected for the purpose of the study using the stratified sampling method. The Pearson Product Moment Correlation and Regression Analysis were used to test the hypotheses generated for the study at 0.05 alpha levels. Findings revealed that there is a relationship between frequency and each of the identified risk factors accessed. The findings further revealed that risk management has influence on employees' accident minimization at the workplace. It was also found that employees' training reduces employees' accident at the workplace. It is recommended that employer should assume their part to teach employees' about risk management, work related safety and wellbeing techniques at working environment. This will help them in enhancing work environment security and maintain a strategic distance from the expanding numbers in mischance at working environment.

**Keywords:** *Accident minimization, Employees' accident, Severity and frequency, Workplace, Risk management and risk.*

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### **Background to the Study**

The quest for means of livelihood, enhance earning power and survival has led to the involvement of individuals in different types of jobs, activities or work. These jobs or activities are referred to as occupations which is beING carried out in a workplace. Anupama and Protibha, (2011) defined workplace as 'the environment or place in which a worker performs his job. Certain jobs pose a threat to the health of the worker and the community at large, such as driver embarking on long hours driving is at the risk of having low back pains, also an employee working at asbestos factory is at the risk of contracting asbestosis'. 'Health is the greatest asset of any human being and the community in general and it is the foundation on which the entire production of the people rest' (Gray, 1990). As a result of industrial revolution worldwide, of which Nigeria is inclusive, 'man's mode of production has greatly shifted base from the use of physical forces prevalent at the primitive era to the manipulation of machine and gadgets. Regrettably, mechanization of production process has ushered in a multitude of health problems of industrial origin summarily referred to as workplace hazards' (Nwachukwu, 2000).

Occupational Health and Safety Act (2006) defined workplace hazard as 'any condition that result from exposure to a work place hazards such as physical, chemical or biological agent to the extent that the normal physiological mechanism of the body are affected and the health of the worker is impaired. Occupational health should aim at the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations, the protection of workers in their employment from risks resulting from factors that have adverse effect on their health'. 'Some occupational safety and health experts believe about 50 million Nigerians are at risk in the work place.

(Adeolu, 2012). Jacobson (2004) asserted that 'occupational risk assessment is the qualitative or quantitative estimation of the likelihood of adverse health effect that may result from exposure to specific health hazards. The author further stated that occupational risk assessment aims to provide a synthesis of exposure levels and health risks'. National Institute for Occupational Health (2010) also defined occupational risk assessment as 'a careful examination of what could cause harm in the workplace, so that one can decide whether he has taken enough precaution or need to do more to prevent occupational illnesses'. International Labour Organization (ILO) reported that 'workplace hazard and fatalities occur daily in Nigeria'.

Olajeme (2010) further stated that 'scores of others are injured or permanently disabled'. Adedayo (2014) reported that 'recently two uncompleted buildings collapsed in Onitsha within two weeks. The two incidents left about fifteen construction workers dead while many were injured, although after the collapse, Nigerian Society of Engineers vowed to investigate the events to forestall a recurrence, this did not prevent the second tragedy. Similarly, two warehouses, where flammable products were kept in Lagos were razed two weeks ago. It further reported that four employees working in a textile factory in Kano, were killed while trying to remove waste from the factory sewage treatment plant' Adedayo (2014) also reported that 'three people were crushed to death and causing several others injured by a train at Yaba, Lagos. Many more accidents of this nature, with impact on human lives and property, occur every day but only few are reported. The International Labour Organization has expressed concern over the apparent disregard for safety and health standards by Nigerian employers and workers. Adding that most of these accidents are preventable and death avoidable. Therefore, there is need to carryout risk assessment in every workplace so as to reduce or eradicate accidents occurrence'.

Therefore, occupational health risk assessment should be based on removing, and minimizing the causes of accidents and other events in the workplace which may have adverse effects on employees. It should be clear that this cause – and – effect relationship is not always easily identifiable and, as the process and activities in the workplace continue to develop, that the complexity of the problem is a continuing obstacle to good standard of health and safety. Therefore, risk assessment should be carried out within the organization to identify and eliminate all obstacles to the proper functioning of the employees.

### **Statement of the Problem**

In a workplace, continuation of any job depends on employees' physical health and ability to perform. The lay-up of machine and management procedure to minimize risk will determine the number of accident that occurs and severity. A place where accident occurs often will not be good for organization because a lot of laid off employees will affect productivity and cost of replacement of staff. However, frequency and severity accident will affect productivity and profit of the company. Risk management procedure has to be adequate in terms of budget. Are there adequate personnel to manage risk management?

### **Objectives of the Study**

The main objective of this research is to study the impact of risk management on employees accident minimization at the workplace. The specific objectives are to:

1. Identify the key risk factors at the workplace and their relationship with accident minimization at the workplace.
2. Determine the relationship between frequency and risk factors at the workplace.
3. Assess the influence of employees' training on accident minimization at the workplace.

### **Research Questions**

1. What are the key risk factors contributing to employees' accident at the workplace?
2. How can the severity of the allocation of each identified risk factors be accessed?
3. How can employees' training reduce employees' accident at the workplace?

### **Research Hypotheses**

- H<sub>01</sub>:** There is no relationship between frequency and each of the identified risk factors accessed.
- H<sub>02</sub>:** Risk management does not have any influence on employee's accident minimization at the workplace.
- H<sub>03</sub>:** Employees' training does not reduce employees' accident at the workplace.

### **Scope of Study**

The scope of the study covers coca-cola bottling company Kwara state branch, Nigeria.

### **Review of Literature**

Risk is a germane portion of business that cannot be whisked away since firms cannot work without going out on a limb. Risk is regularly connected with uncertainty, as the occasion might possibly happen. Risk suggests presentation to instability or danger; and a choice to do nothing expressly maintains a strategic distance from the open doors that exist and leaving the dangers unmanaged. Hillson (2002) affirmed that “traditionally, risk has been viewed as negative consequences and unfavorable events. The consideration of risk from the negative perspective is restrictive and misleading for two main reasons. First, uncertainty may manifest in either

negative (threat) or positive (opportunity) form, or both; and second, the way a risk is perceived influences the manner in which it is handled". Kelman, (2003) opined that "managing risks from negative perspective may result to complete omission of opportunities (benefits/gains) in the event being considered. Business grows through greater risk taking". Risk is, therefore, "integral to opportunities and threats which may adversely affect an action or expected outcome" (Lowe, 2010). Moreover, getting rid of risk as described by Hillson and Murray-Webster (2011) "undermines the source of value creation; thereby truncates potential opportunities. In essence, to business enterprise risks are 'uncertainty that matter. This sense of uncertainty surrounds everything we do in life, thus everything an individual engages himself is in an uncertain environment. Therefore, there has to be an effective means of managing such situation." Isimoya (2007) sees risk management as "the planning, arranging and controlling of activities and resources in order to minimize the impact of uncertain events. This definition in practice refers to the overall corporate or personal approach to problems posed by risks which they are exposed to so as to reduce the economic effects (fluctuation and reduction in the assets of the firm) whenever the risk materializes". "Risks may be managed using a number of approaches such as avoidance, retention, transfer and capital budgeting (project evaluation). In the risks avoidance approach, the business owners or management may decide to avoid risks by not venturing into activity or developing certain project of known and predictable risks" (Ezike, 2003).

### **Conceptual Literature**

In order to uncover factors linked to workplace accidents, researchers have used accident databases. Some studies have "attempted to relate personal and work characteristics such as age, ethnicity, gender, occupation and work experience to accidents. These factors could indicate a relationship between accidents, and human physical conditions and occupational qualities. They can also help identify the groups of workers who are highly prone to accidents. Furthermore, they allow mitigation strategies to be specifically targeted using workers' characteristics as preliminary factors. These characteristics are believed to be influential in workers' behaviors in workplace, which could be unsafe in certain circumstances". Hinze et al. (2005) found "human errors are mainly responsible for workplace accidents". A number of factors were uncovered by Choudhry and Fang (2008) relating to human error. Work environments play an important role in workplace accidents (Chi et al. 2013). Sherratt et al. (2013) in their research noted that "manufacturing companies are often labeled as unsafe, dangerous or hazardous places to work. The fact that, manufacturing activities are diverse with changing project teams and difficult-to-handle materials and equipment, could lead to human errors that are uncontrollable". Moreover, "the temporary and transitory nature of manufacturing companies are claimed to contribute to accidents.

Hallowell & Gambatese 2009 . While "environmental factors such as climate, temperature, and geographical conditions could be considered as typical characteristics for workplace" (Liao & Perng 2008), "organizational factors may include characteristics referring to manufacturing companies and project-based procurement of works" (Rozenfeld et al. 2010). The size of workplace was analyzed by Lingard and Holmes (2001). "They justified the significance of small businesses as they are the majority in Australia and on average employ less than 20 workers. Being small firms, their characteristics were often associated with poorer management skills and inadequate implementation of safety measures". Organizational and environmental factors were focused on by Ling et al. (2009) who "emphasized factors relating to time, month, location, size of organization, and type of workplace". López et al. (2008) showed that "time of day and day of the week are associated with accident severity". Their

research led to a further study about other factors related to the environment such as “climatic, geographic and behavioral factors and their impact on accident severities” (López et al. 2011).



**Figure 2.1 Researcher's Conceptual Framework**

**Below are the Definitions of terms used by the Researcher**

**Risk Management:** This is 'a potential undesirable and unplanned event or circumstances, anticipated in advance, which could prevent an activity from meeting one or more of its objectives. It is a continuous, forward-looking process that is an important part of business and technical management processes. Risk management should address issues that could endanger achievement of critical objectives. A continuous risk management approach is applied to effectively anticipate and mitigate the risk that has critical impact on the project'.

**Accident**

This is 'when something bad that is not expected or intended happen and often damages something or injures someone. It is also a decrease in value of their sources, or an increase in liabilities. As a technical term 'accident' does not have a clearly defined legal meaning. In insurance terminology, an accident is the event which is not deliberately caused, and which is not inevitable', For example if a driver (who is covered under personal automobile insurance for injury and losses due to negligence) willfully drives the vehicle into a tree, the resulting injury or loss is not insured.

**Workplace**

The workplace is 'the physical location where someone works. Such a place can range from a home-office to a large office building or factory. For industrialized societies, the workplace is one of the most important social spaces other than the home'.

**Accident Minimization**

This is 'when an unfortunate incident that happens unexpectedly, typically resulting in damage or injury is reduced to the smallest possible amount or degree'.

**Risk**

This is 'the possibility of gaining or loosing something of value. Values (such as physical health, emotional well-being or financial wealth) can be gained or lost when taking risk resulting from a given action, foreseen or unforeseen. Risk is also known as an uncertain event or condition that, if occurs has an effect on at least one objective'.

**Frequency**

This is said to be 'the total amount of times that a loss occurs in a particular time frame. That is the number of repetition of loss in a unit of time'.

### **Severity**

This is 'the amount of damage that results from a loss. Severity is used to predict how costly future losses are likely to be'.

### **Theoretical Literature**

**Risk Management Theory:** As described by Wenk (2005) “risk management is the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities”. Effective administration of hazard can bring far reaching benefits to all organizations, whether large or small, public or private sector”. “These benefits include, superior financial performance, better basis for strategy setting, improved service delivery, greater competitive advantage, less time spent firefighting and fewer unwelcome surprises, increased likelihood of change initiative being achieved, closer internal focus on doing the right things properly, more efficient use of resources, reduced waste and fraud, and better value for money, improved innovation and better management of contingent and maintenance activities” (Wenk, 2005). In the account of Dorfman (2007), “ensuring that an organization makes cost effective use of risk management first involves creating an approach built up of well-defined risk management practices and then embedding them. These risk management practices include financial risks management practices, operational risk management practices, governance risk management practices, and strategic risk management practices. Risk spread through companies' economic activities because “risk is the lifeblood of every organization”. Risk has no universal definition; hence, variability of outcomes is a common way of expressing risk although definitions of risk varies; risk has two dimensions or components: uncertainty and consequences”.

In the developed and highly industrialized countries, industrial safety awareness and movement have been in existence right from the days of the industrial revolution. Initially employers were indifferent to the safety of their factories and employees, due mainly to the immunity granted them under the Common Law”, on the part of the employee, the Common Laws according to Hillson, (2002) provided “three ways through which he can impose liability on his employer (due to injury sustained at the work place), these are; on the strength of the employee being able to show that the employer breached his (employer) personal duty not to expose the employee to unreasonable risks. Secondly, under the rule of vicarious liability and lastly, on the proof that his employer has been in breach of statutory duty, e.g. duties imposed by the factory act. Nevertheless, these and other common law doctrines had little effect on safety practices; rather, their relevance was only in the law courts. Essentially, there is a growing manifestation of apathy in the part of employers for the safety of the employees in the work place. In effect there is still a disparity between employers' avowed concern for a safe work place and its realization. Could it be that accidents are natural consequence of industrialization? This is very unfortunate, industrial injuries and deaths need not be accepted or regarded as an incredible price to pay for industrial process”. In an attempt to reduce industrial accidents Lam, (2011) affirmed that “organizations put in place necessary safety practices. Safety practice is concerned with the behavior of employees with regard to the rules, regulations, policies and conducts that shape or govern their actions and inactions or activities in the workplace in order to reduce or even eliminate accidental losses and injuries and maximize the nominated objective of the organization”.

### **Empirical Literature**

White (2005) conducted an investigative study on “the management of property risks in Nigeria using a case study of the insurance sector. Questionnaires were distributed to a sample of 18 insurance companies out of a total of 36. An interview was conducted with the Commissioner of Insurance and the Honorary Secretary to the Institute of Loss Adjusters and Risk Surveyors. Due to the exploratory nature of the study, a qualitative analysis of the available data was adopted. Data from questionnaires and interviews was coded and frequency tables in simple percentages used to analyze responses to each question. A descriptive approach was then adopted in communicating the results. In summary, the study found that although risk management is consciously present in Nigeria insurance business, there still lacks a clear understanding of the discipline in the industry. Where they were available, the involvement of risk surveyors/managers by insurers was found not comprehensive enough. They were not involved in risk control and evaluation even after they had recommended appropriate risk control measures. It was found that although insurers have adequate information for any risk management activity, there lacks an efficient means of storage and retrieval of the same. The study recommended computerization and general improvement of their information systems”. Alex, Matthew and Brian (2014) addressed the issue of safety and health, promising site-based construction hazard identification strategies were identified in a wide body of literature and potentially breakthrough strategies were developed by an expert panel of construction safety professionals in brainstorming sessions. The strategies were then prioritized based on their potential and applicability to construction using the nominal group technique, facilitated by a group-decision support system. Consensus analysis was conducted to verify consistency within the expert panel. A prejob safety-meeting-quality measurement tool to provide active feedback regarding hazard identification capability and communication emerged as being the most relevant strategy. This was followed by a computer-based augmented training environment.

### **Methods and Results**

The descriptive-inferential survey design was used for this research. The study was conducted at coca cola bottling company Kwara state branch in Nigeria. The population of the study comprises of all the employees at different cadre and other key personnel involved in risk management in Coca Cola. The subjects surveyed were unaffected by environmental qualities that may skew results. The stratified sampling method was used so as to reflect the views of staff in different levels, and this was done across all the departments in the organization. A total of 100 respondents were selected for this study from Coca Cola employees. The research instrument used in carrying out this study is questionnaire. The statistical test of Pearson Correlation and Simple Linear Regression Analysis was employed

## Analysis of Data Related to Risk Management and Employees Accident Minimization at the Work Place

### Testing of Hypotheses

#### Hypothesis One

$H_{01}$ : There is no relationship between frequency and each of the identified risk factors accessed. The result of this correlation analysis is presented in Table 1

	Frequency	Ventilation	Toxic	Inadequate Equipment	Unsanitary	Exertions
Frequency	1.00000 <.0001	0.97992 <.0001	0.92587 <.0001	0.99666 <.0001	0.98704 <.0001	0.88397 <.0001
Ventilation	0.97992 <.0001	1.00000	0.92784 <.0001	0.98371 <.0001	0.98994 <.0001	0.91508 <.0001
Toxic	0.92587 <.0001	0.92784 <.0001	1.00000	0.92177 <.0001	0.92320 <.0001	0.86400 <.0001
Inadequate Equipment	0.99666 <.0001	0.98371 <.0001	0.92177 <.0001	1.00000	0.99059 <.0001	0.88954 <.0001
Unsanitary	0.98704 <.0001	0.98994 <.0001	0.92320 <.0001	0.99059 <.0001	1.00000	0.90035 <.0001
Exertions	0.88397 <.0001	0.91508 <.0001	0.86400 <.0001	0.88954 <.0001	0.90035 <.0001	1.00000

### Decision

According to the data presented in Table 1, the correlation between frequency of accident at workplace and ventilation of the workplace is a positive and very strong relationship ( $r = 0.97992$ ), and since the Pearson Correlation value is less than 0.01, it is suffice to conclude that the relationship between frequency of accident at workplace and inappropriate ventilation of workplace is significant. It means the more the inappropriate ventilation of workplace contributes to frequency of accident at workplace, that is the worse the ventilation of workplace, the more accident at the work place. As shown in the output of the Pearson Correlation Coefficients, the relationship between frequency of accident at workplace and toxic exposure is a positive and very strong relationship ( $r = 0.92587$ ), it also reveals that the relationship between frequency of accident at workplace and toxic exposure is significant. It means, when employees' are expose to toxic at workplace, the number of accident at the workplace will increase. The relationship between frequency of accident at workplace and inadequate resources for equipment as presented in Table 1 shows that inadequate resources for equipment and frequency of accident at workplace have a positive and very strong relationship ( $r = 0.99666$ ), with the P-value= $<.0001$ , it means the relationship between frequency of accident at workplace and inadequate resources for equipment is significant. It implies that the more organizations continue to use inadequate resources for equipment, the more the number of accident increases at workplace. The above analysis presented in Table 1 shows that the relationship between frequency of accident at workplace and unsanitary conditions of the workplace is a positive and strong relationship ( $r = 0.98704$ ) and significant, which means that sanitary condition of the workplace have greater influence on the employees' accident minimization at the work place, it could be inferred that the better the sanitary conditions of the workplace, the lesser the number of accident at the workplace. The relationship between frequency of accident at workplace and forceful exertions as presented in Table 1 shows that frequency of accident at workplace and forceful exertions have a positive and very strong relationship ( $r = 0.88397$ ), with the P-value= $<.0001$ , it means the relationship between frequency of accident at workplace and forceful exertions is significant.



### Hypothesis Two

H<sub>02</sub>: Risk management does not have any influence on employees' accident minimization at the workplace.

Table 2: Summary of Regression Analysis of Risk Management on Employees' Accident Minimization <sup>a</sup>						Model Summary <sup>b</sup>	
Variable	Label	Parameter Estimate	Standard Error	t Value	Pr >  t		
Intercept	Intercept	0.63034	0.13507	4.67	<.0001	R-Square	0.7447
	Risk Management	0.72976	0.04662	15.65	<.0001	Adj R-Square	0.7417

a. Predictors: (Constant), Risk Management.

b. Dependent Variable: Employees 'Accident Minimization.

Table 2 reveals to what degree the risk management system of an organization can minimize employees' accident at workplace; risk management reduces employees' accident at workplace by 74.47 percent, and the remaining 25.53 percent is explained by other things that can reduce employees' accident at workplace but not included in this particular model. As depicted in Table 2, the estimates of the model coefficients for  $\beta_0$  (Intercept) is 0.63034, and  $\beta_1$  (Risk Management) is 0.72976. Therefore, the estimated model between Risk Management and Employees' Accident Minimization is presented thus: Employees' Accident Minimization = 0.63034 + 0.72976 Risk Management. This regression equation shows that risk management have a positive relationship with employees' accident minimization. It implies a unit increase in risk management will increase employees' accident minimization, it will reduce employees' accident.

### Decision

Since t-calculated = 15.65 > t-tabulated = 1.9883. We reject the null hypothesis.

In conclusion, the results of the regression confirm with 95% confidence that risk management has influence on employees' accident minimization at the workplace.

### Hypothesis Three

H<sub>03</sub>: Employees' training does not reduce employees' accident at the workplace.

Table 3: Summary of Regression Analysis of Employees' Training on Employees' Accident <sup>a</sup>						Model Summary <sup>b</sup>	
Variable	Label	Parameter Estimate	Standard Error	t Value	Pr >  t		
Intercept	Intercept	0.26644	0.13054	2.04	0.0444	R-Square	0.7832
	Employees' Training	-0.83294	0.04781	-17.42	<.0001	Adj R-Square	0.7806

a. Predictors: (Constant), Employees' Training.

b. Dependent Variable: Employees' Accident.

Table 3 gives the summary of the model and portrays the employees' training on employees' accident; it demonstrates that employees' training reduces employees' accident at work place to the tune of 78.32 percent, while the remaining 21.68 percent is clarified by other exogenous variables that are not included in the model. The adjusted R<sup>2</sup> of 0.7806 which infers the illustrative force of employees' training is impressively high. The statistical relationship between employees' training on employees' accident is presented thus: Employees' Accident =

0.26644 - 0.83294 Employees' Training. This regression equation demonstrates the level of influence of employees' training on reduction of employees' accident. It implies a unit increment in employees' training will reduce the employees' accident at workplace by 0.83294.

### **Decision**

Since  $t\text{-calculated} = 17.42 > t\text{-tabulated} = 1.9883$ . We reject the null hypothesis.

All in all, the results of the regression affirm with 95% certainty that employees' training reduces employees' accident at the workplace.

### **Conclusion**

The purpose of the study focused on the impact of risk management on employees' accident minimization at the work place. Using distinctive statistical testing methods on the hypotheses, it can be inferred that employees' training reduces employees' accident at the workplace. Measures to prevent hazard at working environment does not require very complex resources but require sensitivity, satisfactory knowledge of employees' on danger and how it can be anticipated, as the expression goes and adherence to safe practices. As the maxim goes "An ounce of prevention is worth a pound of cure ". Equipping employees' to use safe work procedures and giving them successful method for correspondence is a good investment. It gives long haul advantages in diminished cost and expanded nature of consideration. Additionally, there is relationship between frequency and each of the identified risk factors accessed.

In spite of the fact that, working environment danger can be seen as a feature of work environment challenges but if the risk factors must be identified and map to frequency of workplace accident in order to promote safety and safe systems of work in an organization. Based on the opinion of the employees' of Coca-Cola Bottling Company Kwara State Branch that took part in this study, risk management has influence on employees' accident minimization at the workplace, reducing the risk and reducing the number of adverse events has numerous benefits; such as, increased employees' sense of security, ailment and damage counteractive action, lessened non-attendance from work because of harm and inadequacy, decreased remuneration payouts, lower cost for recruitment, and motivating forces and so forth.

### **Recommendations**

It is therefore appropriate to highlight some recommendation which, if implemented could play an important role in minimizing employees' accident at work. The following policy considerations are recommended:-The making of sheltered and sound working environment is not the obligation of the employers alone as it were. Employees' also need to take a section with a specific end goal to keep their work environment free from any level of dangers. In this manner, the greater part of the regular accidents at working environment should be prevented with the collaboration from both employers and employees considering it as their obligation to avert mishaps at their workplace.

All staff should be educated on the danger included in a specific zone of the workplace furthermore follow guidelines given for their own security and wellbeing. Employer should assume their part to teach Employees' about danger administration, work related safety and wellbeing techniques at working environment. This will help them in enhancing work environment security and maintain a strategic distance from the expanding numbers in

mischance at working environment. Employers are required to perform hazard evaluation for possible accidents that could happen and adjust important techniques to avoid employees' accident and security methodology honed by them. Employees then should entirely take after the wellbeing and security measures adjusted by their employers and maintain a strategic distance from accidents at workplace to guarantee that they can run the operation adequately and proficiently. Employees should report forthwith to their immediate supervisor any circumstance which they think could introduce a risk and which they cannot amend themselves.

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