

## Effects of Occupational Hazards on Employees' Productivity

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### ABSTRACT

It is a fact that profit maximization serves as the key/core objective for setting up business organizations (Bamiduro; 2006); however, in achieving this objective, there is the need to consider the welfare and safety of workers in the organization. Considering the welfare and safety of employees in order to boost productivity and profitability, hazard must be minimized or prevented because it serves as a negative catalyst for declined productivity. This paper tends to illuminate the effect of occupational hazards on employees productivity because it negatively affects productivity, which in turn affects organizational profitability. The researchers adopted the combination of secondary and primary sources of data. The secondary data involves the use of journals, periodicals, internet, and related materials while the primary data envelops questionnaires from respondents. Chi-square was used to test the hypothesis while the data collected through questionnaire was analyzed using descriptive (percentages) and inferential statistics (regression analysis and coefficient of multiple determinations ( $R^2$ )). The results of the study indicate that constant exposure of employees to hazardous substances reduces productivity. The results also indicate that training of employees on accident prevention can positively affect productivity. The conclusion is that occupational hazards have negative effect on productivity. The recommendation is that organizations need to provide safe and conducive environment for the performance of the job. There is also the need to provide training and educative programmes in order to prevent or minimize occupational hazards and boost productivity.

**Keyword:** Effect, occupational hazards, employees, productivity, and organizations

### INTRODUCTION

Organizations are set up to achieve specific goals and objectives. Such objectives are achieved by harnessing the resources available including human resources. The human resource is the most critical asset of the organization because other assets are inanimate. There is the need to provide the enabling environment for the performance of the job, including motivation of staff. In recent times, the issue of safety at work and occupational hazards in relation to employees' performance has become a critical one. The importance and criticality of the subject matter has necessitated this paper.

Cases of occupational hazards in Nigeria have been on the increase in recent times and no significant attention seems to be paid to it. With increase in sophistication of machines and equipment coupled with less interest in staff training and quest for higher profits, incidence of accidents at work have blossom.

Occupational health does not only deal with occupational hazards causing accidents and occupational diseases but also includes all kinds of factors at work or related to working conditions that may cause or contribute to diseases or deviation from good health,

The issue of hazards goes beyond the home and industries but also penetrate into every sphere of human life. However, this paper will focus on hazards faced in the work place.

The development of science and technology, as well as the effectiveness of communication technology (CT) has led to the manufacturing and use of sophisticated machinery which have now exposed employees to additional dangerous industrial accidents. Thus, with the improved manufacturing technique, new machinery, new chemical processes, increased exposure to hazards encountered in the work place and available statistics on industrial

accidents, there is an urgent need for occupational health and safety practices, which must take into recognition the assessments and controls of these hazards.

The international labour organization (ILO; 1950), defined hazards as a condition with the potential of causing an accident, leading to injury, damage or even both.

In any event of occupational hazard, there is the possibility of causing an accident which may directly or indirectly lead to declined productivity.

Although there are different types of organizations with different objectives, with different structures and outlook. However, productive oriented organizations are organizations that tend to achieve their stated objectives through the satisfaction of potential customers using the production of goods and services. They can be viewed as converters because they convert raw material into finished products, having adopted effective processing techniques.

Any productive oriented organization must assess the level of the plants and machinery, as well as other equipments and tools used for productive purposes in order to educate employees on how to effectively handle and operate the equipments. It is therefore necessary that carelessness and ignorance of machinery operations may increase the likelihood of hazard which tends to reduce employees productivity. It is therefore necessary for organizations to educate and enlighten their employees in order to reduce the effect of hazards.

### Literature Review

Occupational health can be viewed as the health of workers, encompassing not only health problems related to work and the work environment but also the adjustment of the work place to human abilities. This concept was established in 1950 at the first meeting of the joint International Labour Organization (ILO) and World Health Organization (WHO) expert committee on occupational health. More so, following the deliberations of 11st ILO and W.H.O. joint committee on April 27th -29th, 1992, five elements were expressed as fundamental to good occupational health practices. These include;

- Prevention of occupational hazards, biological, chemical, physical, overload, strain and stress.
- Adaptation of work to the capacities of the workers.
- Diagnosis and treatment of work related diseases and other diseases.
- Health education of workers to inculcate safe and healthy work practices.
- Rehabilitation of the injured worker.

**Noise** at work can be a serious health hazard. According to Ellen(1990), noise not only damages people's ears at work but has a profound effect on people's efficiency at work.

Donnelly (1984) contended that productivity is the measure of how well resources are brought together in organizations and utilized for accomplishing a set of results.

Productivity in its broadest sense refers to the qualitative relationship between what is produced and resource used in producing a given production. Indeed, it is the ratio of input to output. The higher the ratio, the higher the productivity and vice versa. Mayer (1983) viewed productivity as the ratio between the productions of a given commodity measured by volume and one or more of the corresponding input factors by volume.

Productivity is an overall conception which is difficult to express or measure. It is however, possible to consider productivity in terms of various resources use in industries or from the capital invested. Decreased productivity can be as a result of interrupted work process, hazards, lack of motivation, unconducive environment etc.

It is a known fact that national problem can be considered as the sum of individual problems; the best way of improving the national level of productivity would lie in improving the productivity of the individual concerned. Invariably, individual productivity sums up to form the organization productivity. To achieve effective and efficient productivity, all hazards that may negatively affect performance and hinder productivity must be avoided.

Fakokunde (2000), viewed productivity as the relationship between output of goods and services, and the resources input (both human and materials) which are utilized in the production of goods and services. At times, the rate of the

yield of resource input may be physical, tangible, and invisible in quantities. At times, it may be intangible and invisible, and can only be deducted from turn over, profit or even the rate at which objectives are achieved. In this context therefore, productivity is not only a function of the combination of the factor utilized in a given production process, the production mix, it is also that of the quality of each factor input.

The production mix itself determines the level and nature of productivity: high or low, negative or positive.

Organizations should take necessary steps in identifying likely and potential causes of hazards at work(Powler,1995)

### **Occupational Safety and Health**

From occupational safety and health (2012), it is a cross disciplinary area concerned with protecting the safety, health and welfare of people. The goal of all occupational safety and health programs is to foster a safe work environment. As a secondary effect, it may also protect co-workers, family members, employers, customers, suppliers, nearby communities, and other members of the public who are impacted by the work place environment. Since 1950, the International Labour Organization (ILO) and World Health Organization (WHO), have shared a common concept of occupational health. According to the concept adopted by the joint ILO/WHO committee on occupational Health in 1950, occupational health is concerned with 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 arising from factors adverse to health; the placing and maintenance of workers in an occupational environment adapted to his physiological and psychological capabilities and, to summarize, the adaptation of work to man and of each man to his job.

The focus in occupational health is three dimensional;

- A. The maintenance and promotion of workers' health and working capacity.
- B. The improvement of working environment and work to become conducive to safety and health.
- C. Development of work organizations and working culture in a direction which supports health and safety at work, and in doing so, also promotes operation and may enhance productivity of the undertakings.

Emphasis on occupational health and safety has risen for various

reasons which include moral, legal, economic as well as social. Below are details of the reasons.

### **REASONS FOR OCCUPATIONAL HEALTH AND SAFETY**

#### **A MORAL**

- i. Duty of reasonable care
- ii. Unacceptability of putting health and safety of people at risk
- iii. Society's attitude to moral obligations,
- iv. Making the moral case to senior management.

#### **B LEGAL**

- i. The preventive (enforcement),
- ii. Preventive (through criminal sanctions)

#### **C ECONOMICS**

1. Direct and indirect cost associated with incidents and their impact on the organization, to include insured and un-insured costs.

Our attention has been given to occupational health and safety because of the risk it portends. Risk has been defined as the likelihood of harm arising from a hazard, combined with the probable severity of that harm and its extent in terms of the number of people likely to be affected. Sources and potential causes of hazards include fire outbreaks, explosions, slipping floor, poor designs as well as non use of protective clothing

**A Mechanical Hazards**

- i. Impact force
- ii. Collision
- iii. Falls from height
- iv. Struck by objects
- v. Slips and trips
- vi. Entanglement
- vii. Equipment related injury

**B. Chemical Hazards**

Acids

Bases

Lead

Solvents

Petroleum, silica, highly – reactive chemicals etc.

**C. Fire, conflagration and explosion Hazards**

- Explosion, deflagration, detonation, conflagration.

**D Physical hazards**

Noise, vibration, lighting, electricity etc.

**E Biological hazards include**

Bacteria, virus, fungi, mold, blood borne pathogens, tuberculosis.

An occupational hazard is also a working condition that can lead to illness or death. Often, people in jobs which pose a high level of risk are paid more than similar but less risky jobs to compensate for the danger involved. It involves any condition of job that can result in illness, or injury. – Dictionary Encyclopedia (2012).

**EFFECT OF OCCUPATIONAL HAZARDS ON EMPLOYEES PRODUCTIVITY**

Some of the effects of occupational hazards are explained below

1. Whenever there is accident (industrial), there will be slower production, resulting in loss of production.
2. Exposing employees to hazardous substance can lead to injury. The employee with injury may not be able to contribute meaningfully to production effectiveness, thereby leading to financial loss, resulting in less profit, discomfort, pains etc
3. Occupational hazards can also lead to damage materials and machinery, leading to time loss, and loss of production.
4. If occupational hazards are not properly handled, it may lead to loss of trained skilled employees, leading to financial loss.
5. Occupational hazard can also lead to staff turnover, thereby affecting the quality of skilled man power in the organization.
6. If proper and effective control measures are not put in place, occupational hazards can lead to bad publicity for the organization, resulting in denting the image of the organization.

**METHODOLOGY**

This gives a clear and detailed description of the procedures and methods used in carrying out this study.

The methodology includes the use of primary and secondary data. The primary data envelopes questionnaires while the secondary data looks at the use of related materials, journals and the internet. However, the data will be analyzed using descriptive (percentages) and inferential statistics (regression analysis and coefficient of multiple determinations ( $R^2$ )).

## DATA PRESENTATION AND ANALYSIS

Prior to data presentation and analysis, three productive oriented organizations were sampled with 100 questionnaires but 70 respondents returned their questionnaires. The presentation and analysis are show below.

### SECTION A

**Table 1.1:** Distribution of Respondents by Age

Age	MALE	FEMALE	TOTAL	%
18-30years	18	10	28	40
31-40years	13	9	22	31.43
41-50	8	3	11	15.71
Above 50	6	3	9	12.86
<b>TOTAL</b>	<b>45</b>	<b>25</b>	<b>70</b>	<b>100</b>

**Source:** field survey, 2012

From the above table, 40% of the respondents are between the ages of 18-30years, 31.43% are between the ages of 31-40years, 15.41% are between the ages of 41-50years while 12.8% are above the age of 50years. From this table, it shows that the production oriented organizations have younger and capable workforce. The significance of this is that, the organizations have high productivity due to the young and capable work force.

These figures go a long way to show that the organizations have more male workers compared to female workers in the organization.

This may be due to the nature of work in the organizations.

**Table 1.2: Distribution of Respondents by Academic Qualifications**

Academic Qualification	MALE	FEMALE	TOTAL	%
WASSE, SSCE, GCE	6	4	10	14.29
OND, NCE	10	5	15	21.43
HND, B.SC	15	10	25	35.71
MBA, MSC, MA	14	6	20	28.57
<b>TOTAL</b>	<b>45</b>	<b>25</b>	<b>70</b>	<b>100</b>

**Source:** Field survey 2012

This shows that the workforce is becoming more educated. This will give room for the adoption of current technological development in the production processes. More so, it will create a positive relationship between the workforce and the management.

**Table 1.3: Distribution of Respondents by length of Service**

LENGTH OF SERVICE	MALE	FEMALE	TOTAL	%
Less than 12 months	7	3	10	14.29%
1-10years	13	7	20	28.57%
11-20years	14	9	25	35.71
Over 20years	9	6	15	21.43%
<b>TOTAL</b>	<b>45</b>	<b>25</b>	<b>70</b>	<b>100</b>

**SOURCE:** Field survey, 2012

The above table shows that the labour turnover is very low and actually stable; hence, it could be as a result of good motivational factors and conducive environment.

### SECTION B

**Table 1.4: Constant exposure of workers to hazardous substances tends to reduce productivity.**

RESPONSES		%
Strongly Agree	35	50
Agree	25	35.71
Strongly Disagree	0	0
Disagree	10	14.29
<b>TOTAL</b>	<b>70</b>	<b>100</b>

**Source:** Field survey, 2012

This clearly shows that constant exposure of employees to hazardous substances reduces productivity. This can also result in inefficiency, poor performance, high labour turnover etc.

**Table 1.5: The occurrence of occupational Accident affects productivity**

RESPONSES	MALE	FEMALE	TOTAL	%
Strongly Agree	30	15	45	64.29
Agree	15	10	25	35.71
Strongly Disagree	0	0	0	0
Disagree	0	0	0	0
<b>TOTAL</b>	<b>45</b>	<b>25</b>	<b>70</b>	<b>100</b>

**SOURCE:** Field survey 2012

Aside from the fact that occurrence of occupational accident affect productivity, there is also the tendency of also causing financial loss to the organizations.

**Table 1.6: Provision of Adequate safety materials prevents Occupational Hazards.**

RESPONSES	FREQUENCY	%
Strongly Agree	30	42.86
Agree	25	35.71
Strongly Disagree	10	14.29
Disagree	0	7.14
<b>TOTAL</b>	<b>70</b>	<b>100</b>

**Source:** Field survey, 2012

This indicates that adequate provision of safety materials will prevent occupational hazards. It is therefore necessary that management should provide safety materials for the prevention of occupational hazards.

**Table 1.7: Training of employees on accident prevention affects productivity**

RESPONSES	Less than 12month	1-10Yrs	11-20Yrs	Above 20Yrs	TOTAL	%
Strongly Agree	7	13	10	10	40	57.14
Agree	3	3	11	3	20	28.57
Strongly Disagree	0	0	0	0	0	0
Disagree	0	4	4	2	10	14.27
<b>TOTAL</b>	<b>10</b>	<b>20</b>	<b>25</b>	<b>15</b>	<b>70</b>	<b>100</b>

**Source:** Field survey 2012

Employees believe that training on accident prevention can affect productivity. It is therefore necessary for management to provide enabling training opportunities that will aid in increase productivity as well as preventing/reducing occupational hazards.

**Table 1.8: Safety measures put in place by your company help to minimize occupational hazards.**

RESPONSES	Less than 12month	1-10Yrs	11-20Yrs	Above 20Yrs	TOTAL	%
Strongly Agree	8	10	12	8	38	54.29
Agree	0	8	10	4	22	31.43
Strongly Disagree	0	0	3	2	5	7.14
Disagree	2	2	0	1	5	7.14
<b>TOTAL</b>	<b>10</b>	<b>20</b>	<b>25</b>	<b>15</b>	<b>70</b>	<b>100</b>

**Source:** Field survey 2012

Majority of the respondents are of the view that safety measures will minimize occupational hazards. It is therefore paramount for organizations to provide adequate safety measures for employees. This will directly or indirectly increase productivity.

**Test of Hypothesis**

**H<sub>0</sub>:** There is no significant relationship between constant exposure of workers to hazardous substances and reduced productivity.

**H<sub>1</sub>:** There is a significant relationship between constant exposure of workers to hazardous substances and reduced productivity..

**Table 1.9: Extracted from table 1.4**

RESPONSES	MALE	FEMALE
Strongly Agree	25	10
Agree	15	10
Strongly Disagree	0	0
Disagree	5	5
<b>TOTAL</b>	<b>45</b>	<b>25</b>

**Chi-square table**

O	E	O-E	(O-E) <sup>2</sup>	$\frac{(O-E)^2}{E}$
25	8.75	16.25	264.06	30.17
15	8.75	6.25	39.06	4.46
0	8.75	- 8.75	76.56	8.74
5	8.75	- 3.75	14.06	1.60
10	8.75	1.25	1.56	0.17
10	8.75	1.25	1.56	0.17
0	8.75	-8.75	76.56	8.74
5	8.75	-3.75	14.06	1.60
<b>TOTAL</b>				<b>55.58</b>

TC = 55.58

Degree of freedom = (r-1) (e-1)

(4-1) (2-1)

3 x 1 = 3



0.05 (a) df 3 = 7.815

Tt = 7.815

Tc = 55.58 > Tt = 7.815

**Decision:** Since chi-square calculated is greater than chi-square tabulated, we reject  $H_0$  at 0.05 level of significance and accept  $H_1$ . It is therefore concluded that constant exposure of workers to hazardous substances tends to reduce productivity.

**TABLE 1.10**  
**AN EXTRACT FROM REGRESION RESULT**  
**Dependent Variable:** Employee's productivity

Independent Variables	Coefficient	Standard Error	T-statistic	Probability
(Constant)	.749	.773	.968	.034
exposure of workers	-.856	.258	-3.318	.030
occupational Accident	-.871	.251	-3.466	.019
Provision of safety materials	.192	.458	.418	.268
Training of employees	.550	.243	2.263	.042
Safety measures	.073	.200	.365	.717
Occupational Hazards	-.552	.222	-2.486	.032

Source: Author's Computation. See Appendix 1

R – Squared = 0.884

Adjusted R-Squared: = 0.790

S. E. of regression = 0.764

Sum Squared residual = 25.113

F – Stat = 23.875

Prob (F – statistic) = 0.001

**Substituted Coefficient**

EMPRO = 0.749 - 0.856EXPO - 0.871ACC + 0.192PSM + 0.550TOE + 0.073SAM -0.552HAZA

**DISCUSSION OF FINDINGS**

The result in the table above revealed a constant value of 0.749 which indicate employee's productivity if all the explanatory variables in the model are held constant. Also, the result shows that provision of safety materials, training of employees and safety measures have positive impact on employee's productivity in an organization and this implies that 1% increase in them will increase the employee's productivity by 19.2%, 55% and 7.3% respectively. However, the result further revealed that exposure of workers, occupational accident and occupational hazards have a negative impact on employees' productivity and this implies that 1% increase in them will reduce the employee's productivity by 85.6%, 87.1 and 55.2% respectively. Also the test for statistical significance of individual estimated

parameter indicate through the t-test that exposure of workers, occupational accidents and occupational hazards and training of employees passed the test of significance. This implies that they have a significant impact on employee's performance. While, the test further revealed that the provision of safety materials and safety measures do significantly increase employee's productivity in an organization. The coefficient of multiple determinations ( $R^2$ ) of 0.884 implies that about 88.4% of systematic variations in the employee's productivity is being explained by variations in the explanatory variables. This shows that the model is a good fit as only about 11.6% of the variations is unaccounted for by the model. Also the f-test shows that the model is overall significant, considering its probability value of about 0.001 which is less than 0.05 critical value.

## CONCLUSION

The result of the study indicates that exposure of workers to occupational hazards, accidents and violence affects productivity. In order to increase productivity, organizations should constantly give necessary training to their employees in order to reduce to the barest minimum the effect of occupational hazard on employees in the company. The result equally confirms that there is a direct relationship between productivity and health and safety at work.

## RECOMMENDATIONS

Considering the importance of health and safety at work and its concomitant effect on productivity, the following recommendations are made.

1. There should be constant provision of safety measures and materials in places of work especially where chemicals and other dangerous substances are handled.
2. As a precautionary measure, organizations need to arrange and undertake periodic inspections of safety equipment, machinery, and guidelines and compliance to safety rules by employees.
3. Adequate training should be given to workers in order to reduce/or prevent industrial accidents.
4. Workers should take adequate and proper precautions to save themselves against the life threats that are part and parcels of some professions.
5. There is need for both the employees and management to be educated on industrial safety and health at work. Employees should be provided with instructions and manuals on how to do their jobs in safety manner and understand the importance of using protective equipment.
6. There should be effective recording system on health and problems relating to health, safety and other related matters at the work place with a view to minimizing such problems.
7. Organizations should provide protective screen for pc monitors to block radiations from the screen to the eyes.

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## Appendix 1

### Regression

#### Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	Occupational Hazards, Training of employees , Provision of safety materials , exposure of workers , Safety measures , occupational Accident(a)	.	Enter

a All requested variables entered.

b Dependent Variable: Employee's productivity

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.330(a)	.884	.790	.764

a Predictors: (Constant), Occupational Hazards, Training of employees , Provision of safety materials , exposure of workers , Safety measures , occupational Accident

#### ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.067	6	.511	23.875	.001(a)
	Residual	25.113	43	.584		
	Total	28.180	49			

- a Predictors: (Constant), Occupational Hazards, Training of employees , Provision of safety materials , exposure of workers , Safety measures , occupational Accident  
 b Dependent Variable: Employee's productivity

**Coefficients(a)**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.749	.773		.968	.034
	exposure of workers	-.856	.258	-.323	-3.318	.030
	occupational Accident	-.871	.251	-.508	-3.466	.019
	Provision of safety materials	.192	.458	.079	.418	.268
	Training of employees	.550	.243	.224	2.263	.042
	Safety measures	.073	.200	.062	.365	.717
	Occupational Hazards	-.552	.222	-.305	-2.486	.032

- a Dependent Variable: Employee's productivity