

# An Appraisal of Health and Safety of Construction Sites Workforce within Jos, Plateau State

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**Abstract:-** The significance of producing harmless work environment has been recapped in several connected research articles owing to the inherent risk and hazard that lie beneath every work position and their undesirable effect on a firm's general performance. It is against this scenario that this article evaluated the dangers and constraints of health and safety planning on construction sites in Jos. The paper identified some health and safety challenges inherent on such building sites. A total of 100 structured questionnaires were distributed among selected construction sites in Jos, Plateau State. The statistical tools employed for analysis are the percentage method, ranking method and computation of relative index. The results showed that the top three health and safety challenges inherent in construction sites in descending order are pain due to manual labour with relative index of 0.90, followed by stress experienced by site workers with relative index 0.86 and stepping or kicking abandoned objects with relative index 0.83 experienced by site workers. It also showed that the observance of health and safety practices on construction sites in Jos are very poor and hence leads to a very high occurrence of accidents. Similarly, the top three constraints to the adoption of health and safety plan are low level of literacy among the general population with relative index 0.90, lack of training of employee with relative index 0.86 and lack of funds for prompt treatment of sites workers with relative index 0.84. The study concluded that health and safety plan in construction activities should be propagated through sensitization programs at National level and other forums where professional bodies in partnership with government departments can enlighten contractors about the importance of health and safety culture in their work places in a bid to reduce risks and accidents.

**Keywords:** - Accidents, Health, Jos, Plateau State, Safety, Stress.

## I. INTRODUCTION

The significance of creating a hazard free working environment has been echoed in various literature due to the innate threats present in every site assignment and their damaging effects on a company's reputation and performance (Olotuase, 2014). While risk is defined as chance or likelihood that a person could get hurt when unprotected against a hazard, hazard on the other hand means a circumstance or basis (which could be biological, chemical, physical or ergonomic) of probable harm to somebody, plant or equipment. The construction trade is

challenged with numerous health and safety issues resulting from innate hazards in construction tasks. The construction trade has been recognized with the high occurrence rates of mishaps compared to any other industry (Bala, Namala and Adamu, 2012). In the not too distant past, deaths, deformities and other severe occupational threat has progressively been on the upswing by way of operating accidents and building collapse in the course of construction (Dodo, 2014). This ill-fated situation has posed a massive risk to efficiency and the performance of the construction projects in Nigeria (Orji 2014). The high rate of accidents in Nigerian construction trade a has been outlined to the ensuing features: The high percentage of small scale construction firms and independent workers, the diversity and relatively short life of construction sites, high income of workers, the big number of periodic and migratory workforces, several of whom are unaccustomed to construction procedures and contact to harsh weather and many crafts and occupation (International Labour Organization, 1992). Hunter (2011), discourses that, the construction sites are reflected the most hypothetically hazardous and accident-friendly section of any workplace. Extreme contact with these construction site' threats leaves site workers prone to ill-health and possibly death at times. The construction workforce are continuously exposed to adverse technical, economical, material, social, psychological and environmental conditions while on the course of construction site duties (Ezenwa, 2011). The construction industry is a vital pointer and driver of economic undertakings and capital creation and it has a weighty effect on our day to day dealings, extending from the built environment we live and work in, to the roads and bridges we drive on; the services distribution arrangements we use and the spaces and facilities through which we travel and trade. Identifying the position of adequate Health and Safety measures at construction workplaces, the European Union enacted the "control of hazard on temporary and mobile construction sites" order that entails member states to implement national laws to validate a process to ensure that construction site safety is considered put in perspective in both the planning and construction stage (Awodele and Ayoola, 2005). The problem is not that the hazards and risks on construction site are unknown, it is that they are very difficult to control in a constantly changing work environment (According to Dodo, 2014).

In Nigeria, Health and Safety plan appears to be afforded the essential courtesy in order to lessen or prevent hazards and site accidents, thereby presenting severe risks to workers and even bystanders, making the need for a speedy solution for the issue to be addressed (Oresegun, 2009). Oresegun (2009), also discourses that the effort

given to define the effect of Health and Safety on construction sites and its correlation with project performance, labour performance, labour motivation and safety plan is as a result of non-compliance of the Nigerian construction companies with Health, Safety and Environmental (HSE) regulations. Oresegun (2009) additional states that there is no reliable data on accident reports in construction workplaces within the confines of Nigeria because contractors neither report accidents properly nor keep proper records of site accidents. Health and Safety is an unavoidable characteristic of construction owing to its nature of being made up of the accumulations of people from various backgrounds and disciplines with each individual's output determining the level of success to be recorded at each construction step. According to Dodo (2014), construction workers all over the world are triply liable to be killed and doubly as liable to be injured as workers in other industries. In the United States of America (USA), for examples National Safety Council (NSC) established that construction hurts accounted for almost 11 percent of all occupational injuries and more that 30 percent of deaths in 2001 only (Eppenberger and Haupt, 2003). The regularity of building collapse resulting in numerous fatalities is becoming high recently with Nigeria having its own share (Alabi, 2017).

The dearth of well recognized schemes of cutting risks linked to building production in Nigeria has led to needless exposure to occupational threats particularly on high risk trades (Okoye, 2018). However hazards present itself, it constantly comes with damaging effects in the range of severe injuries to death. Therefore, this study sought to appraise the degree of application of Health and Safety Plan in construction workplaces in Jos, Plateau State. The objective includes detecting some health and safety issues characteristic of construction work environment, studying the efficiency of health and safety planning on construction environment and to recognize the factors inducing the non-adoption of health and safety planning in construction work environment.

## II. METHODOLOGY

The major part of data used in the study came from administration of questionnaires to both the administration staff of the contracting companies and the workers. Oral interviews were also used for the collection of data from the workers. The questionnaire contains closed ended questions and structured in nature. The closed ended questions had options for the respondents to choose any that suits his or her feelings. The advantage of this method is that the responses can be scored easily. A total of 100 questionnaires were prepared and administered to construction companies. 50 questionnaires were distributed to management staff of the companies and 50 questionnaires was administered on site, to the gang leaders for distribution to the labourers, iron benders, and other workers. Four construction companies located in Jos metropolis were surveyed. The data collected were analysed using the following formulas

➤ *Percentage Method:*

$$\frac{\text{Actual Number of those that responded}}{\text{Total number of respondent}} \times 100\%$$

➤ *Ranking Method:*

$$\text{Ranking Sum } (S) = \sum nw$$

Where, n = number of respondents  
w = severity chosen

➤ *Relative Index:*

$$R.I. = S / xn$$

Where, S = Rank sum

x = highest severity number

n = number of respondents

The value of the relative index ranges from 0 to 1, where the item with the highest relative index is the first in the rank order. The severities of the items in the questionnaire are represented below:

- Highly Severe (HS) 5 points
- Severe (S) 4 points
- Moderately Severe (MS) 3 points
- Fairly Severe (FS) 2 points
- Not Severe (NS) 1 point

## III. RESULTS AND DISCUSSION

Of the 100 questionnaires distributed, 88 (88%) were retrieved. The survey showed that of the professionals sampled 19 respondents' were engineers, 12, 10 and 9 of the respondents' were Architects, Builders and Quantity surveyors respectively. The gangs responded that the most frequently used safety equipment on the sites in Jos was helmets, gloves and boots. The respondents' respond showed that most of the respondents are averagely provided with welfare facilities such as sanitary facilities, washing facilities, canteen and overtime pay. 27 of the respondents said they were rarely provided with welfare facilities, 15 of the respondents responded that they were frequently provided with welfare facilities while 8 of the respondents showed that they were very rarely provided with welfare facilities. 30% of the respondents responded that the welfare facility mostly provided for them is a Canteen while the least provided welfare facility is washing facilities which accounted for 10% of the total response. First aid box, dressing room and transportation facilities all had 20% response rate. The research output indicated that health and safety training are conducted averagely by the respondents firm the highest with a percentage of 29.54. The research further found that 18.18% of the respondents rarely conduct health and safety training for workers while 15.91% of the total survey showed that the respondents firms frequently conduct health and safety trainings. The findings showed that the major training that is given by the

respondents firm is by educating on hazardous aspects of the work while the least training given by the respondents firm is showing safety movies. Furthermore, 45% of the respondents agreed that their firm use physical training on the use of tools as a nature of training while 15% of the respondents indicated that their firms use safety pamphlets and booklets as a nature of training in their firm. The research showed that safety instructions are averagely and frequently given to workers by their firms which accounts for 30% of the total response in each case however 40% of the respondents agreed that their firm rarely give out safety instruction to workers. The respondents were asked if they

provide insurance to their workers against hazards. 39.77% respondents said they rarely provide insurance to their workers against hazards while 37.50% of the respondents fairly provide insurance to their workers against hazards. This represents 77.27% of the respondents. This shows a very poor insurance practice being carried out in the construction industry. A percentage of 2.27% of the total response from respondents showed that their firm frequently insure their workers against hazards while 11.36% of the respondents indicated that their firm averagely insure their workers against hazards.

DANGERS	SEVERITY					SUM	RELATIVE INDEX	RANK
	1	2	3	4	5			
Scaffolding accidents	-	20	21	35	12	303	0.69	7
Lifting equipment failure	20	20	35	10	3	220	0.50	12
Trench collapses	48	35	5	-	-	133	0.30	19
Stepping or kicking abandoned objects	-	-	20	35	33	365	0.83	3
Crane accidents	35	35	18	-	-	159	0.36	16
Falling from height	16	33	29	10	-	209	0.48	13
Electric shock injury	10	9	31	30	8	281	0.64	10
Accidents due to fire/explosion	10	33	20	20	5	241	0.55	11
Traffic accidents	5	10	35	23	15	297	0.68	8
Compressed gas accidents	40	35	13	-	-	149	0.34	18
Falls from ladders	5	11	22	25	15	318	0.72	6
Unsafe safety harnesses	35	35	18	-	-	159	0.36	16
Accidents from faulty machinery	25	30	25	8	-	192	0.44	15
Hit by falling object	20	32	20	15	-	208	0.47	14
Back pain, muscular pain, due to manual handling	-	-	5	40	43	397	0.90	1
Stress	-	-	10	40	38	380	0.86	2
Health problem caused by dust	-	14	15	29	30	339	0.77	5
Health problem caused by chemicals	-	8	15	35	30	351	0.80	4
Health problem caused noise	10	15	15	32	15	289	0.66	9

Table 1:- Danger Inherent on Work Construction Sites in Jos

The respondents were asked to rank health and safety challenges inherent on construction sites in order of the frequency of their occurrence on a severity scale of very rarely, rarely, averagely, frequently, and very frequently. The results were then analysed which showed that pain due to manual labour ranked first with a relative index of 0.90, followed by stress with a relative index of 0.86 and

stepping or kicking abandoned objects ranked third with a relative index of 0.83. This is to be expected considering the very physical nature of most construction work. Trench collapse ranked number 19<sup>th</sup> with a relative index of 0.30 due mainly to the good soil around the target area which rarely causes trench collapse.

CONSTRAINTS	SEVERITY					SUM	RELATIVE	
	1	2	3	4	5		INDEX	RANK
Competence of site manager	-	8	2	3	25	341	0.78	10
Complexity of design	-	3	2	2	30	347	0.79	9
Employee training	-	-	1	4	38	380	0.86	2
Site layout	8	2	2	2	6	254	0.58	11
Employee attitude to health and safety	-	-	1	4	30	369	0.84	3
Management attitude to health and safety	-	-	1	4	31	367	0.83	5
Lack of funds	-	-	1	4	30	369	0.84	3
Low level literacy	-	-	-	3	55	407	0.93	1
Lack of adequate resources to manage health and safety	-	-	1	4	30	367	0.83	5
Lack of access to health and safety information	-	-	1	3	31	364	0.83	7
Contracts on health and safety not clearly stated	-	5	1	3	29	352	0.80	8

Table 2:- Constraints to the adoption of health and safety planning on construction sites in Jos

Table 2 shows the constraints to the adoption of health and safety planning on construction sites in Jos. The respondents were asked to rank the constraints to the adoption of health and safety planning on construction sites in order of the frequency of their occurrence on a severity scale of not severe, mere severe, almost severe, severe, and very severe. The results were then analysed which showed that low level of literacy among the general population ranked first with a relative index of 0.93, followed by lack of employee training with a relative index of 0.86 and lack of funds ranked third with a relative index of 0.84. Site layout ranked number 11<sup>th</sup> with a relative index of 0.58 followed by the competence of the site manager which has a relative index of 0.78. From the study, majority of building contractors haven't really established any meaningful health and safety planning in their construction sites to help create a health and safety culture for site workers as opined by the respondents.

#### IV. CONCLUSION

This Paper aimed at assessing health and safety of site workers in Jos, Plateau State. The objectives includes identifying some health and safety challenges inherent on building construction sites and investigating the effectiveness of health and safety planning on construction sites in Jos, Plateau State. The study found that health and safety challenges on sites occurred mostly as a result of pain due to manual labour, stress and stepping or kicking abandoned nails fixed on woods or boards by site workers. Similarly, three constraints to the adoption of health and safety plan were identified as low level of literacy among the general population, lack of training of site workers and lack of funds for prompt treatment of sites workers with relative. The study further found that the Health and Safety management system is on the worrying trend since site workers on Nigerian construction sites have limited knowledge about the guiding principles of a Health and Safety management system. Therefore, the need for proper enlightenment site workers about the guiding principles of Health and Safety management system on constructions sites in Jos, Plateau State cannot be overemphasized.

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