

An Assessment of Work- Related Accidents on Construction Sites In Nigeria

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ABSTRACT

Work-related health and safety subjects remain disturbed through defensive workforces and additional people exaggerated via pardon the establishment goods and prepares, contrary to the dangers ascending from their engagement or their associations with the anticipation of ill-health ascending since employed situations. Not any Personal Protective Equipment (PPE), Well-being amenities, drill and protection are obtainable workforces. The Environmental Protection Agency (EPA) which is the individual supervisory frame theaters an irrelevant part once independents flop toward offers a healthy and safe atmosphere aimed at workforces. By means of modest random sampling technique, 70 questionnaires stayed circulated to Project Architects, Quantity Surveyors, Project Engineers, Project Managers, Site Foremen, Artisans and Labourers. 56 questionnaires stayed repossessed in place of Eighty percent reply rate. The statistics stayed examined using descriptive statistics, relative importance index and scale ranking. From the investigate the main source of work-related accidents on construction sites is broken-down tackles. The results also specify that retain the workstation hygienic, establishment of Personal Protection Equipment (PPE) and working out of workers on safety measures remained the actions desirable for talking the work-related accidents subjects challenging workforces on building places, it is suggested that singular thought must stand assumed near the practice of Personal Protective Equipment (PPE) commerce by the source of work-related accidents on building sites. The issue is likewise optional that Managers and independents must deliver appropriate programmers' that remain dependable with National Laws and Regulations to safeguard the health and safety of workforces.

Keywords: *Accidents, Construction, Health and Safety Project and Site*

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I. INTRODUCTION

Building manufacturing theatres, a significant part cutting-edge progression of nations fiscal development. Contempt the charities toward fiscal growing, building manufacturing consumes continuously stood answerable aimed at the elevated tolls of fates and mortalities: this subject partakes located the building manufacturing between the productions through irrational tolls of accidents, enduring besides non-permanent infirmities besides smooth mortalities (Seyyed and Zahra, 2012). Accidents are unexpected measures, which source compensations or wounds inadvertently and suddenly. In the construction segment, accidents are unescapable and has advanced jeopardy associated to other professions (Asanka and Ranasinghe, 2015).

According to Fatih (2015), mentioned that trendy each year, 60,000 incurable accidents happen universal trendy erection subdivision and single operative die for the reason that of a work-related accident in each 10 records, building sector include from head to foot danger unpaid to the situation manufacture procedure then labor-intensive features then the segment stands confronted with financial damage in huge gauge since of occupation accidents. Lucy, Ian and Ian, (1999); Kadiri, Nden, Avre, Oladipo, Edom, Samuel, and Anaso (2014) views accident as unintended and unforeseen incidence which disappointments deliberate arrangement of work subsequent to damage of manufacture, wound to staffs, injury to plant and equipment and finally interjecting production movement. Accidents anticipation has become highly significant characteristic which could be main reason of anxiety in the construction industry, consequently any result to recognize accidents sightsee conceivable conducts of averting and regulatory accidents should be required after, hereafter the

essential for the learning. Occupational accidents in edifice in construction industry have only prejudiced safety and health but also have bad impression on economics of the countries (Ahmad, Iraj, Abass, and Mahdi 2016). This study will evaluate the roots of occupational accidents and aspects connecting to source of occupational accidents on construction sites. With quick economic expansion and mechanization, the construction industry endures to rampant between the most harmful industries in the world (Yahya, Hassan, and Ebrahim 2014). In numerous countries, occupation accidents are a main badly-behaved in community health. This is frequently complicated with condition that cannot be clutch and switch by other workers and employers at the factories (Zakaria, Hussin, and Noordin 2010). Incidence of chance on construction site reasons fatalities to the employer on labour due to recompence compensated by the company. Occupational accidents in Nigeria, usually gotten in nearly every construction site, are instigated by human mistake. The human mistake is measured as an unwanted human choice or deed that decreases the efficiency of security or system presentation (Panassaya, Parichat, Calmin, Pichapa and Thanwadee 2015).

II. Sources of Occupational Accidents

Frequent besides countable basis of coincidences that happens on site, it is a responsibility of the location boss or administrator to recognize these sources and customs of eradicating them. International Labour Organization (I.L.O) (2005), Building site by its countryside is occupied of threats uniform aimed at the actual skilled operative. Accidents motionless happen then undoubtedly endure toward befall due toward together the flora of effort the situation then the diversity of dangers confronted by building labors. The liability of chances deceits by the scheme, situation and the individuals complicated in building actions. Neitzel, Sexies and Ren (2001) demonstrations that incidence of accidents fluctuates since single location to additional. Siriwardena (2006), arguments that an act of Divinity before tragedies by way of connected to building stay proceedings before movements which reasons plain indemnities to building products, developments and shareholders. Numerous items of Divinity that source dead on locations are shower, overflowing, breeze, shaking, victories etc. Adeniye (2001), situations are abundant cooler to transmit obtainable building the lot on location throughout the gasping period than the showery period in occasion of shower workforces on support may misplace his equilibrium then phase or glided of the board hereafter subsequent to tumble. Sotoire (1992) likewise opinions available that subsequently building workforces work on desolate setting contrary climate circumstances must be circumvented because nonstop contact to contrary weather could principal to general distress and infection. Nonstop introduction to abstemiously high sound level or comparatively high level of instinct noise such as explosives on site, noise produced by heavy equipment, welding noise etc. these are main causes of occupational hearing loss Adeniye (2001). Lucy et al. (1999), states that human error is painstaking to be an unwanted human choice or act that decreases or has the abilities for plummeting the efficiency of safety or scheme presentation. This is likewise due to letdowns on the portion of construction workers, errors in decisions, absence of attentiveness at work, lack of consciousness on the risk nearby the doings and care necessities. Therefore, there must be passable safety training for all construction and building site workers and employees on site to increase their responsiveness level about safety. Additionally, diverse types of accidents with variable rates of incidence and mortalities from preceding works are scaffold accidents (O.S.H.A 2005; HSE, 2006; U.S dept. of labour 2005); accidents due to slip, trips and falls Tappin (2004); crane accidents (Neitzel et al. 2001; Skinner 2006). Ladder accidents (O.S.H.A 2005; and electrocution and electrical accidents (Taylor 2002; Crowley and Homce, 2001).

Health and Safety in the Work Place

Work-related health and safety have stayed distinct by the International Labour Organization (ILO), 2001 as: *“The anticipation and maintenance of the uppermost grade of physical, mental and community happiness, the prevention of ill-health between workers produced by their working circumstances, the guard of workers from influences opposing to their health in their service, and the hiring and upholding workers in work-related settings modified to their separate and mental situations.”* Well-being mentions to the defense of forms and notices of individuals from disease ensuing since materials, procedures or scheduled used in the exertion place while care is protection of individuals from bodily damage (Hudghes and Ferrett, 2008). Safety resources a condition in which no threat of a harm causation coincidence occurs. In height level of work-related health and safety donates to the accomplishment of substantial and financial purposes and delivers high excellence and recital in at work life. In abhorrence of this, surroundings at work and in the exertion atmosphere for countless professions and in numerous nations motionless encompass a separate and uniform simple threat to health that lessens the happiness, working volume and level of life extent of working people.

Construction Industry Health and Safety

Building workplaces, the workers are bare to dangers of work-related illnesses, wounds and the opposing belongings of disproportionately extended periods of work. Machines, plants and other classy building

equipment stance risk to the operatives, who cutting-edge utmost suitcases fix not have previous services for functioning such machines or plants. A worker should be allocated responsibilities in relative to his bodily and psychological health and services. Further, employers should have whole switch ended their employees and consequently safeguard devotion to safety performs. The establishment must obey with all supplies of safety and health guidelines that relate to the construction works itself. A number of issues consuming a bad influence on health and safety organization in evolving republics which comprise deprived structure; difficulties of statement outstanding to little knowledge level; unfettered performs on construction sites; devotion to outdated approaches of working; non obtainability of equipment; dangerous climate circumstances; indecorous use of equipment and exploitation. The philosophy of the construction industry in evolving countries also does not encourage health and safety.

Health and Safety Measures in Construction Site Arrangement and Preparation

Gravely deliberate then messy place is the fundamental reason of numerous fortunes. Consequences after cataracts of substantial and crashes among workers and plant or equipment. Interplanetary restrictions, mainly in municipal work sites, are approximately continuously the main warning issue and a design which provides finest for the safety and health of workers may seem to be problematic to reunite with efficiency. Appropriate preparation by management is an indispensable share of groundwork and accounting for the safe and well-organized consecutively of a construction process. There are countless accidents owing to nimble, slipping or falling over materials and equipment which have remained left lying around, and walking on nails which have been left prominent from timber.

Personal Protective Equipment (PPE)

Personal protective equipment (PPE) mentions toward defensive dress, helmets, goggles, or other garment or equipment intended to guard the wearer's frame from wound by dull influences, electrical dangers, heat, chemicals, and contagion, aimed at job-related professional health and safety determinations. OSHA (2007) necessitates the practice of personal protective equipment (PPE) to decrease worker experience to dangers once engineering and managerial panels are not possible or actual in dipping these experiences to satisfactory stages. Doubt PPE is to be second hand, a PPE program must be executed. This package should discourse the dangers contemporary; the assortment, upkeep, and use of PPE; the exercise of staffs; and intensive care of the sequencer to safeguard the situation continuing efficiency.

Health and Safety Cautioning Symbols

Safety Symbols then Indications are single of the foremost resources of interactive health and safety evidence. This comprises the usage of floodlit symbols, indicator besides auditory indications (e.g., excitement panics), verbal message and the pattern of pipe comprising unsafe ingredients. Outdated signposts, such as ban then cautionary symbols, signs for fire departures, fire deed plan signs (fire maneuvers) and fire-fighting equipment are likewise measured toward remain Safety Symbols. It is dangerous that altogether Safety Symbols and Indications can be effortlessly unspoken. Anywhere signposts stand rummage-sale in an office, they should be adequately countless and strong so that they can be effortlessly gotten and unspoken. Billboards similarly essential to be tough, firmly secure and appropriately upheld to guarantee they continue noticeable. Upkeep must be occupied to evade using too numerous signposts in close nearness, signposts are only real if they can be gotten and unspoken. If too numerous symbols are located composed there is a risk of misperception or of significant data existence disregarded (HSE 2009).

Safety Procedure

Site administrators would take a printed safety strategy aimed by their initiative location available on the safety and health values which the situation is their detached to accomplish. The strategy ought designation the older policymaking who remains accountable aimed at sighted that the values are attained, and who has specialist to assign errands to organization and administrators completely heights and to understand they are approved available.

Health and Safety Risk Assessment

Rendering to HSE (2004), managers are obligatory to brand a valuation of the health and safety dangers to which staffs and others are bare on construction sites. The important answers necessity be logged anywhere five of additional individuals are working. Meanwhile handling health and safety is dissimilar from handling any other feature in building there essential to do a danger valuation to discovery available near the dangers, and to set practical events trendy place to switch them, and brand unquestionable they stay skillful.

Legislature and Implementation of Health and Safety Guidelines

Cotton, Sohail and Scott (2005) distinguished that the official and permissible authority agendas scheduled work-related health and safety trendy emerging republics have slight influence. The mainstream of independents are minor and average Initiatives functioning confidential their national bazaars someplace implementation of health and safety values and labour values is actual slack. Implementation of health and safety guidelines leftovers a tricky due to lack of satisfactory capitals obtainable to administration organizations accountable for work-related health and safety administration. Also, there leftovers a serious need for agreement necessities to provision the implementation of labour rules in emerging nations.

III. RESEARCH METHODOLOGY

The mark populace of the research are the building companies that engaged in contracting, consultant, maintenance, services, civil engineering works, renovation, refurbishment and rehabilitation and also includes all construction professionals in the construction industry (Architect, Engineers, and Quantity Surveyors etc.). A simple random sampling remained implemented for the resolve of the research in order to identify heterogeneity in the population and reduce sampling error. Due to the flora of the data to be composed from the population, questionnaires were administered on these sampled respondents to obtain data relevant to the research in the study area (Lagos state, Nigeria). However, this was achieved using a random sampling method.

IV. DATA ANALYSIS AND PRESENTATION OF RESULTS

Presentation of Results

However, the total number of questionnaires retrieved and analyzed were Fifty Sixty (56) which formed 80% of the total quantity of questionnaires managed. Many of the questions were close ended with option given and an open choice question.

Cause of Accidents on Construction Sites

Table 1: Mean and Ranking of the Types of Construction Claims

Types/Causes of Accidents	Mean	Rank
Faulty tools	4.18	1
Operator’s error	3.86	2
Improper fixing of component	3.86	3
Reaching too far to the sides	3.48	4
Broken ladder	3.43	5
Unstable ladder	3.32	6
Uneven surface	3.27	7
Electric shock	3.23	8
Unsecure loads	3.23	9
Collapse of scaffold structure	3.13	10
Falling objects	3.11	11
Fall from height	3.09	12
Contact with electrical wire	2.70	13
Collapse of crane	2.39	14

Table 1 above indicates that the “faulty tools” type/cause of accidents on construction site were ranked first, the next is “operator’s error” while “collapse of crane” type/reasons of accidents on building site were ranked last. The result obtained from the ranking reveals that the common type/cause of accidents on construction site is “damaged tools”.

Table 2: Factor Related to the Causes of Occupational Accident

Rotated Component Matrix

	Component							
	1	2	3	4	5	6	7	8
Memory lapse	.087	-.168	.470	.014	.663	.122	.178	.001
Attention	.400	-.178	-.162	.253	.157	.450	.147	.478
Competence and skills	.022	-.048	-.368	.716	-.101	.110	-.033	.061
Personality	-.256	.426	-.086	-.135	.584	-.055	.447	.022
Attitude	-.086	.149	-.026	-.086	.824	-.210	-.061	.081

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Individual characteristics	.068	.376	-.038	-.279	.280	-.600	.038	.326
Risk perception	.247	.096	-.113	.152	.203	-.073	-.003	.814
Sight and visibility	.081	.128	.025	-.057	.201	-.026	.896	.056
Ambient temperature	.140	.748	.011	-.127	.011	-.084	.132	.130
Sound and air pollution	-.219	.862	-.196	.200	.080	.040	-.059	-.166
Water pollution	-.142	.604	.137	.111	.356	.097	-.267	-.344
Population density in work area	.367	-.353	.146	-.049	.209	.114	.392	-.153
Operator fatigue	.658	-.089	.162	.133	-.211	.119	.114	.273
Power failure	.148	.215	.709	.261	-.195	.055	.132	-.155
Broken or damaged part	-.344	-.064	.790	-.070	.171	.115	.095	.089
Mechanical mismatch	-.195	.358	.120	-.164	-.223	.671	.167	.275
Control system failure	.112	.029	.130	.774	.112	.331	.040	.146
Fuel factor	.006	.080	.383	.782	-.175	-.108	.088	.091
Fair wear and tear	.189	-.353	.727	-.008	.140	-.256	-.050	-.045
Lack of certified skilled labour	.110	-.037	-.069	.186	.017	.795	-.198	-.021
Shortage of safety manuals	.436	.236	-.151	-.154	.292	-.147	.072	-.671
Poor inspection program	.870	-.072	.112	-.116	-.055	-.009	.078	-.065
Lack of innovative technology	.720	.027	-.334	.219	.039	-.065	.070	.085
Lack of training	.189	-.131	.158	.255	-.232	-.125	.690	-.019

Table 3: Relative Importance Index and Ranking of the Level of Prevention of Occupational Accidents on Construction Sites

Level of Prevention of Occupational Accidents on Construction Sites	RII	Rank
Keep the workspace clean	0.93	1
Safety Gear	0.89	2
Provide safety training for all employees	0.88	3
Ensuring safe working environment	0.88	4
Use equipment in the manner prescribed	0.87	5
Mandatory Safety Meetings	0.86	6
Use site signs and symbols as a medium of communication	0.86	7
Maintain the equipment and tools	0.86	8
Reflective Clothing	0.86	9
Follow HSE rules then statement slightly hazardous working conditions	0.85	10
Identify the dangers and make a plan	0.82	11
Regular Break	0.81	12
Be careful with vehicles	0.75	13
Prevent falls	0.75	14
Employ calm and quite individual	0.68	15

Table 3 above indicates that the “Keep the workspace clean” level of prevention of occupational accidents on construction sites were ranked first, the next is “Safety Gear” while “Prevent falls” and “Employ calm and quite individual” level of prevention of occupational accidents on construction sites were ranked last respectively. The

result obtained from the relative importance index and ranking reveals that the most level of prevention of work-related accidents on building locations is “Keep the workspace clean”.

Table 4: Mean and Ranking of the Worker’s Compliance to the Usage of Personal Protective Equipment (PPE) on Building Locations

Personal Protective Equipment (PPE)	Mean	Rank
Boots	4.52	1
Helmet	4.38	2
Gloves	4.02	3
Googles	3.98	4
Overall	3.91	5
Safety net	3.89	6
Safety belt	3.51	7
First aid kits	3.09	8
Pads and Guards	3.04	9
Disposal filtering face	2.61	10
Breathing aids	2.36	11
Air Purifying Respirator	2.30	12
Earplugs	2.04	13
Earmuffs	1.95	14
Kevlar chaps	1.70	15

Table 4 above indicates that the “Boots” worker’s compliance to the usage of personal protective equipment (PPE) on building places were ranked first, the next is “Helmet” while “Kevlar chaps” worker’s compliance to the usage of personal protective equipment (PPE) on building places were ranked last. The result obtained from the ranking reveals that the most common worker’s compliance to the usage of personal protective equipment (PPE) on building places is “Boots”.

V. Discussion of Results

A universal impression of this research project designated that the most communal type/causes of accident on construction site is defective tools existence used by the worker, it is authoritative for contractors to look into the responsibility to avert and defend the workers from work-related accidents on building sites. The study likewise discloses that keeping the workstation spotless at all times avert occupational accidents on construction sites. It further divulges that the worker’ obey most particularly with the use of gumboots between all the Personal Protective Equipment (PPE).

VI. CONCLUSION ANDRECOMMENDATIONS

Conclusion

The research has successfully examined and familiar the assessment of work-related accidents on construction sites in Nigeria. It was unprotected that faulty tools happen to be the key source of fates on construction sites as revealed in table 1, sight and visibility is the influences related to the causes as shown in table 2. To confirm a safe and accident-free building site, anticipation of accident necessity be unspoken then correct practice of Personal Protective Equipment (PPE) must be applied and compulsory toward altogether construction workforces. The effort environs in building goings-on are typically more hazardous, than additional industries outstanding to the practice of weighty equipment, unsafe gears, and hazardous materials, all of which rise the likely for thoughtful accidents besides injuries. Hence, it is obvious that an absorbed devotion here safety is wanted since building by completely stages.

It is predictable that the findings of this research will contribution all construction companies to avert occupational accidents. It will also help their workers to observe with the use of Personal Protective Equipment (PPE) at all periods on construction sites.

VII. Recommendations

The situation recommended that unusual reflection must remain agreed toward the practice of Personal Protective Equipment (PPE) production through the basis of work-related accidents on building locations. The best means to evade occupational accidents on construction sites is to inspire all workers on site to use PPE. There are sure essential means of avoiding occupational accidents; the critical steps contractors can take to avoid occupational accident and pact with the aforesaid recognized origins are: Managers and independents ought to offer appropriate programmed that remain reliable through countrywide Laws and Regulations to

safeguard the health and safety of workforces. This comprises preserving a workroom that has negligible dangers and accidents that can affect in wound or demise. Contractors of the numerous construction firms should be fortified to offer PPE to workers and established active Anthropoid Reserve and Security Sections aimed at the persistence of implementing safety education movements and drill programmes intended for all stages of organization and workers. They would likewise confirm that experienced individual examines the building development location at appropriate recesses near safeguard safety strategies are followed to. Managers essential style a valuation of the health and safety jeopardies toward which staffs and others remain bare scheduled building sites. Independents would kind facility for safety and health when fixing offers. The facility intended for safety and health necessity be finished modest by the purpose to contest by other collectors and to evade a financial harm. Charges for Personal Protective Equipment's procedures must be sightseen and obviously remain slice of tendering and costing for the development application.

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