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Construction safety and healthy management project one.

INTRODUCTION

Construction is a hazardous profession, and accidents are likely to occur because of the nature of the activities and tasks performed at construction sites. Prevention of construction accidents usually requires predicting future accidents and their nature under given circumstances. Making such predictions must be based on knowledge about past accidents. Clearly, research and prudent safety practices are required to prevent construction accidents. The major causes of accidents are related to the unique nature of the industry, human behavior,
This group project examines the rate of occurrence of accidents and their causes on building sites and the management process in wolaita sodo university .A designed questionnaire administered through accidental sampling technique was used for the study. Descriptive statistics tools such as frequency, percentage and mean were used for the analysis. The study reveals that occurrence of accidents on building sites in the two project sites is low; and different causes of accident identified are falling objects, untidy site, instability of ladder and improper fixing of components, broken ladder, collapse of crane and contact with bared cable.
The study therefore recommends inter alia that practitioners should be cognizant of these causes and guard against them in projects' execution.
Personal protective equipment (PPE) is an important means of preventing work injuries. Ideally, the best approach is to maintain a safe work environment and eliminate any potential hazards. PPE should only be relied upon as a last line of defence in places where it is not practicable to control the hazards at source. The use of PPE generally implies working in a potentially hazardous work environment and its use is a major means of injury prevention. Therefore, it is of prime importance to ensure that the equipment chosen is both reliable and effective, it is being properly used and maintained, and the user has undergone adequate training.

ABSTRACT

This project presents a study that seeks an understanding of the causes of accidents in the construction industry in this two construction companys and focuses on the role of management, human and behavioral and the project's nature in construction accidents. The paper presents an analysis of accidents in sites along with accident causation and injuries based on accident reports extracted from government agencies. The project then discusses the results of a survey with the individuals involved in accidents in construction projects and it analyzes and ranks the causes of accidents in construction projects .The respondents were 154 workers ranging from tradesmen to unskilled labor. A questionnaire used in the survey is divided into three parts, the first part identifies the general characteristics of the person involved in the accident. The second part identifies characteristics of the accident events. The third part identifies the major causes of accidents, in which 30 factors were identified and have been given to the survey respondents to state the level of in¯uence or e□ect of each factor on the accident. The causes were categorized into three groups,

management-related factors,labor and behavioral related factors,
job or project related factors. The factors were measured and ranked under each group by the `Relative Importance Index' technique. The conclusions of this paper suggest that accidents are attributed mainly to management practices rather than human or behavioral issues. Recommendations are included in the paper to suggest a better application of policy and management actions and procedures to improve the safety at construction sites and projects

CHAPTER ONE

construction Safety and healthy management system and types of accident in Breket endashaw construction company plc

Construction is always a risky task because of outdoor operations, work-at heights, complicated on-site plants, and equipment operation coupled with workers' attitudes and behaviors towards safety. Construction is much more unsafe than manufacturing. This is partly due to the more hazardous working methods and machines
employed in construction. These situations at construction sites expose workers to lots of risks. Many safety hazards are specific to the particular job classification, and typically, construction workers underestimate the hazards with their own work.
This affects the motivation for adopting safe work procedures
has been done to identify problems for construction safety all over the time Some research findings from **berket endashaw construction company plc** also apply to sites have
observed, at construction sites, that the problems arise due to

- disorganized labor,
- poor
- accident record-keeping and reporting systems,
- extensive use of subcontractors, a
- the low priority given to safety, the

small size of most construction firms, competitive tendering, and severe weather conditions
during the summer. We observe from the site of construction
companies that the main factors affecting safety performance include top management's poor
safety awareness, lack of training, project managers' poor safety awareness, reluctance to input
resources for safety, and reckless operations. One study also
identified problems that included not valuing the importance of safety measures implemented at
workplaces, not giving sufficient safety education to new workers, and not hiring well-trained
safety and health personnel to implement safety measures. A high standard of safety was found
Through this project we observe that
Some common personal physical hazards in the construction site such as
Struck by falling objects
•Eyes endangered by sharp objects, particles, chemicals
•Skin damaged by sharp objects, chemicals
•Limbs or body crushed by heavy objects
•Struck by moving plant and equipment
•Hearing damaged by excessive noise •Respiration impaired by poor air supply, particles, chemicals

•Physical damage caused by heat, cold, weather

Sources of Accidents and health Problems on Construction Sites

1 FALLING FROM HEIGHT

The main hazards associated with working at height are people and objects falling onto people below. Falls from height have been viewed as the one of the most frequent killers of the workers on construction sites. Statistics indicate that nearly lot of construction workers are killed each year at their work places. Common construction site falls include roof-related falls, crane falls, scaffolding falls, elevator shaft falls, falls resulting from holes in flooring, and falling objects. These may occur as a result of inadequate edge protection, or from objects in storage being poorly secured. Workers at risk of falling from a height include painters, masons, decorators and window cleaners and those who undertake one-off jobs without proper training, planning or equipment

Three ways to PROTECT yourself against falls are:

- Personal fall arrest system
- Guardrails
- Safety Net

These protections must be in place BEFORE you start work!

WHERE FALL PROTECTION IS NEEDED

• Walkways & ramps
• Open sides & edges
• Holes
• Concrete forms & rebar
• Excavations
• Roofs
• Wall openings
• Bricklaying
• Residential Construction

2.Equipment, Machinery, Tools and Transport

Vehicles are necessary for transporting goods and people. However, many people die and are injured due to being struck and crushed by equipment and machinery at construction sites, especially by reversing machinery, site machinery falling in the excavation area, machines overturning due to travelling down a steep slope, and material falling from construction equipment especially haulage trucks, hitting people behind it or nearby. Crush injuries can have a wide range of serious effects, including fractures, internal injuries, head and brain injuries, and back injuries. In some cases, a crush injury may result in amputation and permanent disability of the affected worker.

Meanwhile, many people are injured due to being chopped and cuts by equipment and hand – held working tools such as chisels, screwdrivers, knives, saws, harmers, nails and drilling machines. The greatest hazards posed by hand tools results from misused and improper maintenance

3. Chemicals Substances:

Construction activities involve using chemicals which pose health and safety risks to workers. For example solvents of many different kinds are used in paints, varnishes, pesticides used to treat timber, bonding agents, lacquers and adhesives. At the construction site, workers might be exposed to chemicals by breathing them in, ingestion and absorption through the eyes or skin. Chemicals at work sites can cause headaches, eye

4.Dust:

Dust is a common hazard on roads and building works at many sites. The health risks

associated with a dusty jobs depend on the type of dust (physical, chemical and mineralogical), which will determine its toxicological properties, and hence the resulting health effect; and the exposure, which determines the dose. If dust is released into the atmosphere, there is a good chance that someone will be exposed to it and inhale it. If the dust is harmful, there is a chance that someone will suffer an adverse health effect, which may range from some minor impairment to irreversible disease and even life-threatening conditions . There are higher death rates from respiratory disease and from lung and stomach cancers in dusty trades. At construction sites cement, silica and wood dust and dust from medium-density fibre board poses particular risks.

Table 1. **Types of Incidents and number of cases occurred in the construction site**

Type of Incident	**Number of Cases**
Fatality	**3**
Lost-time injury	**1**
Minor incidents	**5**
Dangerous occurrence	**1**
Near miss	**2**
Falling from height	**5**

But berket endashaw construction company used these accident investigation methods in order to overcome the accident,

- Site visits and personal interviews
- Determining facts
- Chronological event charting
- Barrier analysis
- Event and causal factor analysis

Through this the company is much more fruitful they reduce about seventeen percent of accident occurrence.

General safety rules that we observe on the construction site

General safety rules include clear instructions to personnel in each of the following general areas:

(a) safe operation of plant, machinery and equipment;
(b) maintenance of plant, machinery and equipment;
(c)proper and safe procedures for each production process, in the form of method statements;
(d)rules and instructions on various risk control systems including the permit-to-work system;
(e) provision, use and maintenance of personal protective equipment;
(f)rules for the provision, use and maintenance of safe access and egress and for traffic and plant movement;
(g) fire precautionary measures;
(h) safe handling and movement of materials;
(i) safety procedures for chemical processes and for the handling, transporting and storage of chemicals;
(j) safety procedures for emergency;
(k) duties and procedures for reporting hazards;
(l) duties and procedures for reporting incidents, accidents and ill-health; and
(m) good housekeeping of the workplace.

But the reality is not applied on the construction site but it's just written on the book only.

Management process that we observe on the site,

.The forman and the site engineer gives feedback to worker's before they start the work

.They give explanations about how they execute the work safe
.Give direction how to follow the work steps .

CHAPTER TWO.

construction safety and management practice in etet construction company plc.

The construction safety and management practice in etet construction company some what quite different from that of Breket endasha construction company plc.But the accident types and the frequency of occurrence is the same with that of breket endashaw construction company plc.

They have there own general site safety rules

1. All personnel shall undergo safety induction training.
2. Appropriate Personal Protection Equipment shall be worn at all times.
3. Every accident and near miss event must be reported to the Site Manager immediately.
4. Any person found to be interfering with or misusing fixtures, fittings or equipment provided in the interest of health, safety and welfare shall be excluded from site.
5. Smoking will only be permitted in designated areas.
6. Visitors must report to Security and will be allowed entry at Site Manager's entrance. Whilst on site visitors must wear the appropriate PPE.
7. Vehicle drivers must wear the appropriate PPE (when outside vehicle). Vehicles are not to be reversed at the front of the building unless under the control of an authorized banksman.
8. Vehicle drivers must remain with their vehicle during loading / unloading
9. Safety signs and notices must be followed.
10.The public must be protected from hazards associated with this work 11.alcohol or illegal drugs are to be brought onto the site
12. person who is under the influence of alcohol or drugs is allowed on site 13.Offensive or inappropriate language and provocative gestures are not allowed
14. gambling, threatening or violent behaviour
15. personnel shall indulge in fighting, horseplay or practical jokes within the site or its perimeter.
16.Toilets and washrooms must be kept in a clean and hygienic state after use
17.Refuse must not be allowed to accumulate; work areas are to be kept tidy
18.Combustible materials are to be removed on a regular basis and disposed of in an appropriate manner.
19.Transistor radios or personal audio devices are not to be used.
20.Permission must be obtained from the Site Manager prior to any work on site on site.
21.All site personnel, for their own safety and for the safety of others, are required to fully comply with their employer's statement of safe working method.
22.Site fire and emergency alarms, equipment and instructions are designed to protect life. They must be followed.

We are vey exited through their site rules but the reality is not applied on the site this is some what they different from the neighborhood construction company.

Types of accident that occurred in construction site.

1.Faulty Machines:

Though human errors are the main causes of accidents on sites, many mechanical causes of accidents are due to internal mechanical breakdown involving the steering mechanism, brake system, e.t.c .According to the site engineer, a loader collided with the wall of a building as a result of the machine suddenly became unsteerable. The reason was a broken rear axle bearing of the machine while in operation; which is a mechanical fault. Though the loader was in perfect condition before the time of accident, it developed

mechanical fault that resulted to accident. Conditions of machine such as brakes, steering, oil level, water level and tyre conditions must be checked before operated to prevent any forms of mechanical fault that could develop thereafter.

2.Human Error:

Human error was considered to be an undesirable human decision or action that reduces or has the potential for **reducing** the effectiveness, safety or system performance . They further ascertained that almost all of construction accidents, whether minor or major, resulted from the action of individuals rather than externally imposed factors. This error could be due to failures on the part of construction workers themselves while on site, as a result of unsafe attitude of the workers, error in judgments, lack of concentration at work, lack of awareness on the danger surrounding the activities and safety requirements. Thus, there must be adequate safety training for all construction and building site workers, and personnel on site to raise their awareness level about safety, ensuring safe attitude on site and in return, reducing the potential of occurrence of accident on sites.

3.Environmental Causes: Environmental factors that could generate accidents on sites are:

i. Weather: that during the rainy season, many materials are wasted and manpower is lost on building sites. Thus, because of this environmental condition, it is much easier to carry out construction works on site during the dry season than the wet season. In the event of rain or hamarthan, a worker on scaffold may lose his balancing and step or slid off the plank, hence, resulting to fall. The forman also points out that since construction workers work on an unsheltered environment, adverse weather conditions should be avoided because continuous exposure to adverse weather could lead to general discomfort and illness.

ii. Noise: Continuous exposure to moderately high noise level or relatively high level of impulse noise such as explosives on site, noise produced by heavy equipment, noise from carpentry works, welding works and aluminum works on site are the major causes of occupational deafness . Thus, continual exposure to this high level of noise produced on site could risk a site worker to future or occupational deafness or hearing problem; if effective control such as earplug is not provided and used. Therefore, noise on sites must be maintained at a bearable level or a noise protection provided.

iii. Dust: Dust is a common feature of any building site especially during dry seasons.Exposure of workers to dust on site continuously could lead to eye problem, cough and respiratory disorder and allergies. Construction materials such as sand and cements; works such as demolition of existing structures and wood or carpentry works are the major producers of dust on site. Their inhalation could result in bodily and medical disorder on the workers; therefore, proper protection against dust on site must be provided for all site workers.

FINDINGS AND DISCUSSIONS.

Causes of Accidents on Building Sites.

The different causes of accidents on building sites are shown in Table 2. can be inferred from the Table that four types of accidents and causes exist on building sites in construction site. It also reveals that falling objects (scaffold accidents) is the most common causes of accident on sites, this is followed by unstable ladder (ladder accidents) and improper fixing of components (power tools accidents). It can be observed from Table 2 that the respondents agreed in their opinions that the least cause of accidents on site is collapse of crane (crane accidents). This is probably because most sites in etete construction company plc do not involved the use of crane.

Table 2.Type of Accidents and their identified causes.

U

Type of Accidents	identified Causes
Scaffold Accidents	Fall from height. Collapse of scaffold structure Electrocution Falling objects
Ladder Accidents	Unstable Ladder Uneven Surface Reaching too far to the sides
Electrocution Accidents	Contact with bared wire Contact with energized circuit
Power Tools Accidents	Electrical Shock Faulty Tools Improper fixing of components

Management process that we observe on construction company.

Main safety and health responsibilities of different levels of staff in the organisation

The main safety and health responsibilities of different levels of staff in the relevant industrial undertaking are set out as follows:

(1) Senior management

-To provide a safe and healthy working environment.

- To provide adequate resources (including financial resources), information and training.

-To provide a system of monitoring compliance with the safety policy.

-To ensure that relevant safety and health laws are complied with.

-To maintain contact with in-house safety advisors or safety officers, outside safety consultants, government departments, the Occupational Safety and Health Council and other professional bodies regarding safety and health matters.

-To provide and maintain a system responding to safety initiatives from safety advisors/safety officers/ persons in charge of the safety office, safety supervisors or workers, and to the safety advice from government officers.

("safety supervisor" means a person employed as a safety supervisor in an industrial undertaking under the Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) .

-To provide an effective, efficient and on-going safety and health promotion programme.

-To establish a system to identify, assess and eliminate hazards and control risks at work.

-To ensure that workplace safety rules, procedures and methods are developed, maintained and revised.

(2).Line management (including managers and supervisors)

-To assist the proprietor or contractor in the implementation of the safety policy, measures and procedures.

-To assist the proprietor or contractor in the identification of hazards, and the evaluation and control of risks.

-To supervise workers to ensure safe and correct working procedures.

-To ensure effective consultation on safety and health matters.

- To investigate work accidents and incidents.

- To participate in induction and on-going safety training programmes for workers.

- To respond to safety initiatives of safety advisors/safety officers/ persons in charge of the safety office, safety supervisors or workers and to the safety advice from government officers.

-To communicate effectively the hazards to workers and keep abreast of current safety

and health legislation and information.
- To submit periodically to senior management statistics and reports concerning safety and health performance, unless the task is taken up by the safety office.

(**3) Workers**

- To conduct work activities in compliance with legal requirements.
- To closely follow safe work practices, procedures, instructions and rules and to perform all duties in a manner which ensures the safety and health at work of himself and others in the workplace.
-To provide feedback on the effectiveness of safety measures implemented on the shop floor.
-To contribute ideas on ways to improve safety.
-To report hazards to supervisor and warn colleagues of hazards.
-To report any injury, accident or incident at work to supervisor.
-To participate in toolbox meetings and other safety activities and to attend safety training.

(**4) Safety advisor, safety officer** or person in charge of the safety office

An in-house safety advisor, safety officer or person in charge of the safety office should have the responsibility to assist the top management and senior management in promoting the safety and health of workers in the relevant industrial undertaking. His main duties should include the following:
-To assist in the identification of hazards and evaluation of risks at work.
-To advise senior management or line management as to the measures to be taken to eliminate or control hazards.
-To assist in resolving shop floor safety and health issues.
-To conduct safety and health inspections to check safety performance and recommend corrective action to senior management or line management.
- To investigate occupational accidents and incidents and recommend remedial measures to prevent recurrence.
- To be well informed about workplace safety performance.

Training to equip personnel with knowledge to work safely and without risk to health

Training helps people acquire the skills, knowledge and attitudes to make them competent in the safety and health aspects of their work. It includes formal off-the-job training, instruction to individuals and groups, and on- the-job coaching and counselling. It is helpful to integrate the safety and health requirements of each job into the individual job specification.

The difference between the two construction company is that in berket endashaw construction company plc accidents are happening because of the failure of management system that means accident prevention ways and rules are simply written but it's not really applied and the managiment can take the bigest responsibility about the causes.But in etet construction company some quite different from that of breket endashaw construction company according to they supply PPE but it is not used buy the worker's.

CHAPTER THREE

CONCLUSIONS AND RECOMMENDATIONS

Recommendation

This project was conducted in order to find the main causes of construction accidents in the two construction company as seen by workers involved in accidents. Statistical and factor analyses were employed to understand the characteristics and determine these factors that contribute to construction accidents. In general we recommend that based on the project findings and subsequent discussion, we recommend as follows:

1. Review existing safety regulations;
2. Enforce building and safety regulations;
3. Sensitise the professionals, and sensitise, educate and train the public;
4. Engage competent personnel and ensure close site supervision;
5. Promote professionalism and ensure compliance with the professional code of ethics;
6. Undertake insurance covers and consider health and safety at all stages of project implementation;
7. Maintain and regularly service tools, plant and equipment; and
8. Ensure good site organisation and good housekeeping, and provide sanitation, health and first aid facilities.

Conclusion

Construction accidents cause a large number of deaths,
injuries and economic loss each year. They can be classified into different categories, and the leading
causes are falling hazards, unsafe working conditions,
and scaffolding accidents, etc.
The construction industry is indeed a dangerous and a highly hazardous place of work because of its high incidences of accidents and
fatalities. The project revealed the class of workers that are mainly responsible for building construction accidents, the factors that
causes accidents and the types of accidents that is been encountered in building construction sites. According to our observation , labourers are the main class of workers that are responsible for construction site accidents. They are always in a haste to finish their work and go without considering safety practices
Failure to use personal protective equipment was ranked the highest factor that causes accident in construction site, faulty/defective
equipment and the use of sub-standard construction material were ranked second and third respectively. Other factors are engaging unqualified persons to do construction work, unsafe and incorrect construction methods, ignoring safety procedure, human factors, lack of safety training, poor housekeeping, and absence of caution signs; poor illumination in site and excessive noise were both
ranked the least. The types of accident that is been encountered includes injury from equipment which was ranked first, stepping on sharp object and falls from height were ranked second and third respectively. Other accidents are slip and trip, fall from the same level, electrocution,
collapse of scaffold, struck by objects or moving vehicle and collapse of building or part of it;fire outbreak/explosion was ranked the
least. The consequences of building construction accident are enormous and cannot be easily quantified, though inevitable but could
be controlled to prevent minor or serious consequences on both the workers and the project itself.
In terms of construction accident
prevention, owners, contractors and designers need to collaborate efficiently throughout the lifecycle of a
project and all efforts should be taken to eliminate the possibility of an accident. The concept of constructability should be embedded early in the design
phase to minimize the impacts of accidents.

REFERENCES

GROUP MEMBERS.

NAME. ID

1.Bizuayehu shibiru.....Eng/R/0338/06 **2.***Adisu kuku.....Eng/R/*

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