

Determinants of Occupational Health and Safety Implementation in Road Construction Projects in Kenya: A Case of Construction of Upper Hill – Mbagathi Link Road

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Abstract: This study was purposed to find out the level of administration of Occupational Health and Safety which affects the construction worker in road construction projects. This was achieved by examining the determinants of occupational health and safety implementation in the construction sector of the Kenyan economy. The study will benefit all the stakeholders in the construction industry and make them appreciate more about employee welfare. It is meant to be good material for consumption by anybody else interested in the goings-on in the construction industry in Kenya. The survey was limited to an ongoing road construction project i.e. Construction of Upper Hill – Mbagathi Link Road. A questionnaire was adopted and used to gather data in the research and was delivered to respondents by hand. The respondents were selected by use of random and stratified sampling methods for accountability of the information gathered. The response rate was 83% with 72% of the respondents agreeing that raised levels of awareness of occupational health and safety impact on the implementation of OHS issues in road construction projects. Seventy five percent of the respondents agreed that project financial resources greatly impact the implementation of OHS issues in construction projects. The study recommended the need to increase factoring financial resource allocations for OHS in construction projects to enable road contractors to carry out awareness sensitization workshops, ensure regular supply of PPEs and insurance to construction workers.

Key Words: Construction, Awareness of OHS, Project Financial resources, Implementation of OHS

I. INTRODUCTION

Background of the study

Occupational health can be defined as putting in place measures to ensure a high level of well-being to workers in all types of work and maintaining that status at all times for the sake of their physical, social and mental faculties (Mwombeki 2005). Occupational health and safety matters are important and fundamental in all spheres of production where human capital is a requirement e.g. the manufacturing industry, trade and commerce, information technology, construction industry, hotels, tourism, the education sector, etc. (Hughes & Ferrett 2007)

Occupational health and safety has been alive since the era of industrial revolution that happened in 1760 to 1800s when industries came up and an acceleration in urbanization happened. This brought about an influx in people flocking to the urban centres to work and earn a living (Cameron, 2021). These increasing numbers brought about an increment in child labour and long hours of work. In addition the working conditions were poor with poor pay to the desperate population.

A recognition of the need to put in place measures to protect employees arose due to increased incidents of children getting injured at the workplace arose and got enshrined in law. Among the first laws was the Health and Morals Act of 1802 also known as the factory Act of 1802 in the UK (Cameron, 2021). This law listed a raft of measures to be observed at the workplace to protect workers. These laws have undergone amendments and repeals in trying to better the workplace environment but gaps still do emerge that need continuous improvement.

In their case report, Gyi et al., (1998) posit that for many years the health bit in occupational health and safety has been neglected or ignored deliberately with most employers opting for the more visible and perhaps easily solvable issue of safety. Many employers have given varying grounds for this occurrence. Some have termed health to be a complicated issue that needs measures that take a long period and which do not bring returns that are tangible to their enterprises. Many construction jobs are short-term i.e. temporary jobs that last for the duration of the project hence no serious need of having health personnel within the rank and file. Employees are constantly exposed to varying degrees of health hazards and some do manifest long after the project life. A manager's role in preventing injury in an entity is more visible and pronounced hence given more emphasis than the health element in occupational health and safety.

Mwombeki (2005) asserts that construction workers face dangerous situations that expose them to injuries and diseases emanating from the workplace regularly and with long hours of input. There exist different plant and equipment with

technological growth on construction sites to contend with, these equipment need skills and constant upgrading of these skills to match the changing technology. On most construction sites, these skills are lacking or are not upgraded on time hence exposing the workers to grave dangers. There is a need to have occupational health services that offer inhibitory approaches well spelled out to all stakeholders to attain safety standards and health guarantees when projects come to a closure.

Statement of the problem

The road construction sub-sector of the construction industry is rapidly expanding across the globe and many occupational accidents and health issues continue to occur by the day. The number of people involved in construction projects is very large and needs to be taken care of to safeguard the continuity and availability of this very important resource. According to the ILO 2015 estimates, over 2.3 million workers die at work due to injuries and diseases emanating from their workplaces. Fatal accidents account for more than 350,000 losing their lives while work-related fatal diseases account for over 2 million deaths. Work-related accidents that cause injuries and physical impairment to workers are more than 313 million, serious injuries do occur and thus absence from work. The ILO also estimates that diseases emanating from the work environment but do not cause death are approximately 160 million each year. These estimates indicate that each day about 6,400 people die from occupational diseases and accidents and about 860,000 people are injured while at work. Estimates also show that work-related diseases are the main cause of death at work, which is almost 6 times more workers than occupational accidents.

In Kenya, most of the construction workers are employed by construction contractors and engineering consultants on casual terms and for the duration of a project. This nature of engagement makes road contractors and consultants not to be keen on the issue of employees' welfare in general and occupational health & safety in particular. The availability of a management system on occupational health and safety or lack of it makes the difference in terms of determining the fate of an employee when an accident or a health issue arises. In 2017 data derived from the Directorate of Occupational Safety and Health (Dosh) indicated that 237 accidents occurred in Nairobi over a span of 4 years, with 32 people dying. It also showed that about 100 men from the ages of 21 to 40 were critically injured in that period, some of them sustaining lifetime disabilities. The data also showed in Nairobi, that over 70 percent of the injured or those killed in accidents at construction sites were below the age of 40 years. This number has risen over time. These statistics are a clear pointer to a serious underlying problem affecting a big chunk of a population that is a driver to a crucial sector of the economy.

Objectives of the study

The study addressed the objectives listed below.

- a) To explore how the extent of occupational health and safety awareness by construction workers affects the implementation of occupational health and safety issues.
- b) To establish how financial resources affect the implementation of occupational health and safety issues in road construction projects.

II. LITERATURE REVIEW

Theoretical Literature Review

The theoretical literature review provides the link between existing theories associated to the subject of the study in OHS. The research study dwelled on Heinrich's Domino Theory

Heinrich's Domino Theory

According to Heinrich (1931) accidents occur out of sequential events, like the metaphorical line of falling dominoes. If a domino falls, it triggers the next, on and on and thus removing a key factor like an unsafe action will inhibit the start of a new cycle of accidents. Heinrich portends that 88 percent of accidents occur out of unsafe actions of workers, 2 percent are out of natural occurrence and 10 percent are out of unsafe conditions (Hosseinian & Torghabeh, 2012). This can be attributed to lack of awareness on critical actions in OHS by the workers on construction sites.

He puts forward the accident causes which are five in number and they are well labeled metaphorical dominoes. These five are the social environment and ancestry people belong in, the fault of a person executing a task, acts that are unsafe including conditions of work, accidents happening at workplaces and injuries arising (DMI, 2020)

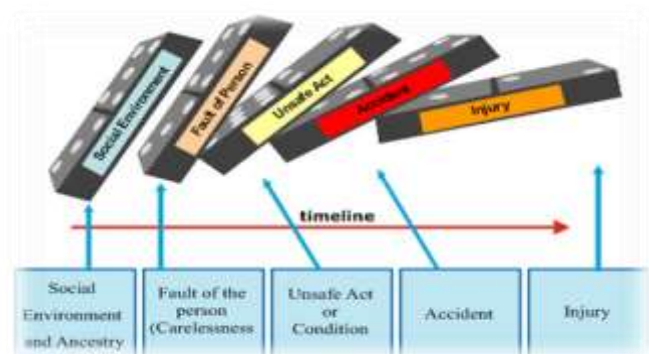


Figure 1 Heinrich's Domino Theory Illustrated (DMI, 2020)

The five factors identified can be explained as (a) Social Environment and Ancestry: characteristics and behavior like greed, bad temper and recklessness originate from social environment or inheritance. This means that three traits come about due to nurture and nature out of a person's fault. (b) The fault of Person: inherent aspects can cause a person to be bad-tempered, ignorant, or reckless. The traits thus appear because of one's previous environments in their upbringing that contribute to unsafe conditions and acts. (c) Unsafe Acts or Unsafe Conditions: Unsafe conditions and Unsafe Acts are

labeled on the third domino at the center of sequences that contribute to an accident. It means they are the most significant factor in causing an accident. Hence in lifting the domino, it will efficiently and easily prevent an accident. This domino represents the importance of awareness of matters of OHS in their implementation on construction sites. (d) Accident: The accidents are the unwanted or undesirable events that occur and cause injury. The event can be a person's fall from a height or the collapse of objects hitting one. This domino can be equated with the preparedness in terms of financial resource allocation to cater for the response mechanism in OHS matters on construction sites. (e) Injury: Injuries refer to the consequences of damage to one's body.

Heinrich's Domino theory of allowing an interruption of the sequence of the accident through acting on underlying causal factors ("pulling out a domino") aids in convincing people to adapt to the corrective actions suggested by the accident investigation (Marsden, 2017). The theory relates well to the variables in the study, the second and third domino imply that having awareness in OHS on construction sites by workers is key and has a great impact in occupational health and safety outcomes in the course of project implementation. Similarly the fourth and fifth dominos bring to forth the need to have response mechanisms to incidents, this warrants proper financial planning by allocating resources to cater for such issues. In conclusion, the theory captures the need to have financial resources allocated to projects to cater for OHS matters and employee awareness measures in OHS implemented with continuous improvement mechanisms put in place in order to minimize accidents and ill health of workers.

Empirical Literature Review

Awareness of occupational health and safety

Safe work standards and practices do endear more people who will then gladly internalize them and put them to practice because of a better understanding and involvement (HSE 2007). The best occupational health and safety strategies need people's involvement at all levels in an organization (Worksafe BC 2008). Commonwealth of Australia (2008) is in agreement that in coming up and managing implementable occupational health and safety policies there is a need to engage all stakeholders in the company. There has to be a legal framework on occupational health and safety that supports the wide engagement of people to address occupational health and safety matters. These engagements involve employers, employees and other stakeholders who have roles, obligations and responsibilities. They have to constantly consult on matters of OHS and agree on where to improve for the betterment of the guiding standards. Depending on the size of the organization, reviews may involve staff and the management or health and safety representatives and OHS committees.

The legal framework in place has to allow every stakeholder to partake in having their voice heard on occupational health

and safety matters of the company in question for a sense of ownership to prevail and enriched standards to be attained. Awareness of OHS in the construction industry is a matter that has also been tackled by Fitzsimon and Fabian (2008) in their exposure draft on Occupational Health and Safety Management explain that for effective training and awareness of matters of OHS the stated issues are a necessity, (a) Identify and evaluate risks of a role then give a clear definition on occupational health and safety abilities. (b) Issue occupational certification to staff after thorough assessment for high-risk jobs to ensure the production of safe products. (c) Come up with and roll out training programs that suit different workplaces to prepare personnel to tackle hazards that may arise. This should happen at different stages of an employee's life in the organization. (d) Implement contractual requirements and orientation sessions so that the contractor's employees working in a site have certification and are well equipped with skills in safety concerning their different trades and are aware of the occupational health and safety expectations relating to them.

The reality of this matter in construction projects the world over presents a different picture altogether. Mwombeki (2005) in a report on OHS challenges in construction sites in Tanzania says that clients, consultants and builders ignore including safety provisions from the start at the project design stage, during tendering and onto the award stage on the grounds of cutting cost. Another study carried out in Tanzania by OSHA (2001) revealed that at least fifty percent of directors knew of PPE in construction while site supervisors, skilled workers, semi-skilled workers and those without a skill barely know PPEs and appreciate the importance of the equipment.

Looking at the Kenyan situation from a different perspective; according to the data from the Directorate of Occupational Safety and Health Services (2019), the number of institutions that have been approved to offer OHS training in the country services stood at fifty-seven with forty-seven in Nairobi, four in Nakuru, three in Mombasa, two in Thika and one in Eldoret (GoK, 2019). There are forty-seven approved first aid training institutions; forty-three are in Nairobi and two are in Nakuru and two in Thika. There are forty-seven approved fire safety training institutions; thirty-eight are in Nairobi, four are in Nakuru, two are in Mombasa & Thika and one is in Eldoret.

Table 1 Approved Training Institutions in Kenya in OHS 2018/2019

County	Approved Occupational Safety and Health Training Institutions	Approved Fire Safety Training Institutions	Approved First Aid Training Institutions
Nairobi	47	38	43
Mombasa	3	2	-
Nakuru	4	4	2
Kiambu	2	2	2
Eldoret	1	1	-
TOTAL	57	47	47

Source: Author (2021)

The distribution of these institutions as shown in Table 2.1 across the country presents a challenge to many people who do not live within Nairobi but have a wish to be knowledgeable in matters of OHS. ILO (2005) says that minimal attempt has been made in getting a deeper understanding of the developing countries' conduct in their labour approaches in the construction industry.

Project financial resources on occupational health and safety

Construction projects are generally capital intensive in nature. In many government institutions and parastatals, they consume a big chunk of the budgetary allocation in every financial year. Infrastructural development has a big impact on the economy of a nation in terms of opening up many sectors of development e.g. creation of easy access to raw materials for value addition by industries through road construction, boosting tourism in having easy access to game parks and game reserves through creation and maintenance of roads, etc.

A construction project budget is an estimate and a tool that aids developers, financiers and other project stakeholders in making decisions that affect the proposed project. It helps in creating a good comprehension of the elements in the project and the available options to optimize costs. A budget helps to have controls on expenditure and the elimination of cost overruns.

Occupational health and safety should be factored in the budgets at the planning stage hence the general agreement that road contractors have to invest in occupational health and safety in their projects. This investment will ensure improved performance on construction sites and data gathered and stored for future use. Construction personnel need to be equipped with good guidance and necessary protection to perform the work under conducive conditions. Expenses used for protective measures by road contractors can be termed as 'safety investments'. In doing the work according to safety procedures, PPEs like highly visible clothing, hard hats, safety boots, safety glasses, and sunscreen should be provided to the workers. Likewise, the working environment itself also ought to be planned and developed safely. For this, safety barriers and other safety signage should be provided to caution construction workers of the hazards and the course of action to take to stay safe. For the health and safety of the community living near the construction site, the arrangement of warning boards, sufficient fencing, and sign systems is a requirement. Thus, the public can be kept out of the areas that are active with construction work because they may not have prior information on the safety hazards to be encountered. Additional measures to be taken for the project neighbors to ensure their safety may be the provision of alternate walkways, control measures to noise and dust pollution and disposal of hazardous materials as per the laws. Much as these measures seem to be performed during the construction phase, they should be factored in the project during the design stage.

The classification of safety funding can have several branches i.e. safety committee, safety staffing, safety equipment and facilities, safety training, new technologies, safety promotion, incentive and methods or tools designed for safety. However, many construction companies are reluctant to instigate necessary safety and occupational health measures as they consider them an extra cost. The lack of safety culture has caused many construction companies to backtrack in taking the required measures and they thus contend with superficial and simplistic safety requirements that prevent hazards in their on-site applications (Yilmaz, Yildiz, & Zorlu, 2020). Also, most of the contract documents do not accurately state the provisions of safety and health costs; this causes contractors to overlook the financial allocation aspect of health and safety matters. There is therefore, a need to calculate and make a budget for hazard prevention costs before a construction project commences to better understand safety costs during the implementation stage of the project (Yilmaz, Yildiz, & Zorlu, 2020).

Summary and Research Gaps

The national policy on occupational safety and health services came into force in 2012 but its implementation has been slow due to a myriad of challenges including; little government support in its implementation, the existence of many government entities purporting to engage in handling OHS matters on construction sites but in reality creating duplicity and overlap in roles without tangible outcomes. These are issues that need to be researched on to identify ways and means of optimizing resources for OHS handling on construction sites. The lack of adequate personnel to carry out effective monitoring and evaluation in the construction industry and the lack of structures to integrate occupational health services into all levels of the healthcare system. Lastly, an inadequate system for occupational injury data management is a major gap.

Conceptual Framework

This is an analytical tool used to explain the relevant variables in the study and how they relate to the study. In this study, there were two types of variables i.e. dependent variable and independent variable which are well captured in the framework in Figure 2

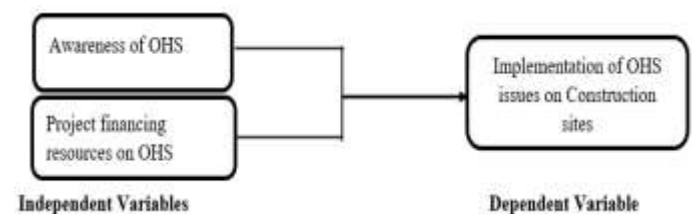


Figure 2 Conceptual Framework

Operationalization of Variables

Table 2 Operationalization of Variables

Variable	Indicator	Measure	Scale	Instrument
Awareness of occupational health and safety	<ul style="list-style-type: none"> - Number of training conducted - Number of incidents recorded - Number of near misses recorded - No of employees attending the training - Behavioral change 	Likert/ Ordinal	<ul style="list-style-type: none"> - 5 Point Likert Scale - Interval 	<ul style="list-style-type: none"> - Questionnaire - Interview Guide
Occupational health and safety financing in construction projects	<ul style="list-style-type: none"> - Availability of funds to respond to OHS issues - Total compliance to OHS specifications and requirements in projects - Provision of PPEs to employees - Frequency of replacing worn-out PPEs 	Likert/ Ordinal	5 Point Likert Scale	<ul style="list-style-type: none"> - Questionnaire - Interview Guide
Implementation of OHS issues	<ul style="list-style-type: none"> - Number of incidents recorded - Project cost management on OHS issues - Employee satisfaction 	Likert/ Ordinal	<ul style="list-style-type: none"> - 5 Point Likert Scale - Interval/Ratio 	<ul style="list-style-type: none"> - Questionnaire - Interview Guide

Source: Author (2021)

III. RESEARCH DESIGN AND METHODOLOGY

An exploratory descriptive design was utilized in the study. The research objectives of the study were attained through an empirical study and utilizing the survey method. A survey is a method that is widely used in gathering data from the field; it can be used to acquire data from a phenomenon in its natural being in the environment. A survey can adequately gather people’s opinions, people’s behavior and characteristics. The data gathered in a survey has qualities that best capture and describe the characteristics of the target population.

Stratified and simple random sampling was used. There were several groups involved which formed different strata. The first group was personnel from the Resident Engineer doing supervision work of the construction project. The second group was personnel from the Road Contractor implementing the construction work. These two teams formed two strata. From the target population determined, the sample size was computed based on Yamane (1967) sample size formula,

$$n = N / (1 + N(e)^2) \tag{i}$$

Where: n is the sample size, N is the population size & e is the error of sampling (0.05)

Table 3 Sample Size Distribution

Category	Target population	Sample size
Contractor’s Section	154	111
Resident Engineer’s Section	34	31
Total	188	142

Source Author (2021)

The projected sample size was 142.

A questionnaire was used for data collection. The questionnaire was designed to accommodate closed questions to agree or disagree and open questions to give room for more explanation and reason that gave a better insight and understanding of the situation at hand. The questionnaire was the instrument of choice because it is easy to design and can be easily distributed and responded to hence obtaining data from a large sample of people without the physical presence

of the researcher. The absence of the researcher eased pressure from the respondents while filling in the requested information.

The questionnaire was tested for validity and reliability by the researcher on another road construction project within Nairobi County currently going on before being subjected to the target population. The questionnaire was tested on ten percent of the sample size to find out its ability to measure the needful and being able to yield scores whose differences reflected the true differences of the variable that was being measured. The ten percent was per Mugenda and Mugenda (2012) argument on the sufficient number of participants for a pilot test. Validity included testing for various aspects and the researcher completed the questionnaire together with five other workers in the road construction sector. This act helped to improve various aspects of the tool for data collection.

The questionnaire was manually distributed to the randomly selected prospective respondents at both the Contractor’s section and the Resident Engineer’s section. The researcher applied the ‘drop and pick later’ technique since the respondents were busy and thus the researcher gave them twenty-four hours to fill in the questionnaire before collection for analysis.

The analysis was largely based on descriptive statistics utilizing the Likert scale to measure positive and negative responses. The respondents gave a quantitative value to show the degree of agreement or the degree of disagreement as pertains to specific statements on the questionnaire. Qualitative data was analyzed by way of content analysis to determine the positive answers provided or where more detail will be required.

The subjects were properly made aware of the research process for their understanding and the importance of their input before they made up their minds on the decision to participate. They had an opportunity to read and understand the information provided and ask questions to their satisfaction. Prospective participants in the study were briefed well before the commencement of the research data gathering phase on the procedure to be used and the potential risks that

could be encountered in the process. They had to give their consent to participate in the research process without coercion.

In a 2002 study, Baez emphasized confidentiality as a fundamental requirement to build trust and maintain the privacy of persons partaking in a research study. It helps build relations and uphold integrity as a way of enhancing ethical standards in research. The identity of the subjects was not divulged as per the design of the data collection tool.

IV. RESEARCH FINDINGS AND DISCUSSION

If the extent of occupational health and safety awareness by construction workers affects the implementation of occupational health and safety issues

The study did seek to know how aware the road construction workers were of occupational health and safety issues in their work surroundings. The awareness of construction workers in OHS was an independent variable that affected the enactment of occupational health and safety matters on the road construction project.

Table 4 Awareness of OHS

Category	Frequency	Percentage
Yes	85	72
No	30	25
Not answered	3	3
Total	118	100

Source: Author (2021)

A majority of the road construction workers i.e. 72% believe that awareness of occupational health and safety affects its implementation in road construction projects. 25% were in disagreement by saying no and 3% left the section blank without a ‘YES’ or ‘NO’ response. The majority further explained that knowledge of OHS helps them handle their duties and responsibilities better hence avoid site incidents. This finding indicates that if employees are made aware of OHS requirements and needs then implementation would be smooth with minimal incidents in road construction projects.

Occupational health and safety awareness by construction workers and the effects in the implementation of occupational health and safety issues

The study sought to establish the perception of employees undertaking the construction of Upper Hill – Mbagathi link road on the impact of raising awareness as a factor in occupational health and safety implementation in road construction projects in Kenya. The response options were on a scale that ranged from 1 to 5 Where 1=strongly disagree, 2= disagree, 3= neutral, 4= agree, 5= strongly agree. Computation was done in percentages to help evaluate their perception. The response is shown in table 5.

Table 5 Breakdown on Awareness of OHS

Study question	S. Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	S. Agree (%)
Safety workshops and toolbox meetings are important in road construction projects	2.0	0.0	15.0	31.0	52.0
Safety awareness training helps to reduce site incidents	0.0	1.0	7.0	29.0	64.0
As a road construction worker, you are well acquainted with the safety requirements on the construction site	24.0	53.0	9.0	7.0	7.0
Your knowledge in matters of Occupational Health and Safety has contributed towards an improved working environment	7.0	24.0	56.0	5.0	8.0
PPEs should not be mandatory on construction sites	10.0	41.0	15.0	32.0	0.0

Source: Author (2021)

Findings in Table 5, show that 52% of the respondents strongly agreed that safety workshops and toolbox meetings are important in road construction projects. 31% were also in agreement with the study question. 15% were neutral to the study question and 2% strongly disagreed. The researcher opined that 83% of the respondents were in agreement that safety workshops and toolbox meetings are important in road construction projects.

On whether safety awareness training helps to reduce site incidents, 29% of the respondents agreed while 64% strongly agreed with the study question. From this finding, a total of 93% were in agreement that safety awareness training helps reduce incidents on road construction sites.

The researcher then set out to if the respondents were well acquainted with the safety requirements on the construction site. 53% disagreed of the respondents disagreed and 24% strongly disagreed with the study question. In total 77% of the respondents were not well acquainted with the safety requirements on the construction site. This finding was key to the researcher in exploring how the extent of occupational health and safety awareness by construction workers affects the implementation of occupational health and safety issues.

56% of the respondents were neutral on whether their knowledge in matters of Occupational Health and Safety has contributed towards an improved working environment in construction projects, a total of 31% disagreed with the study question while a paltry 13% in total agreed that their knowledge had made a difference in the working environment. These findings were an indicator of the need to create awareness of OHS issues on construction sites.

On whether PPEs should not be mandatory on construction sites, 41% of the respondents disagreed and 10% strongly disagreed with the study question. 15% were neutral and 32% agreed with the study question. The researcher opines that these findings show awareness by respondents of what is required of them on the construction site in terms of PPEs, however, a relatively large percentage i.e. a total of 47% of the respondents are unaware of the great significance of

having PPEs on site as part of awareness education to help implement OHS issues on road construction sites.

Establishment of how financial resources affect the implementation of occupational health and safety issues in road construction projects

Establishment of how financial resources affect the implementation of occupational health and safety issues in road construction projects

Project Finance Allocation was an independent variable that influenced the implementation of occupational health and safety issues in the road construction project. This is as per the findings elucidated in Table 6 below.

Table 6 Project Finance Allocation

Category	Frequency	Percentage
Yes	88	75
No	30	25
Total	118	100

Source: Author (2021)

Table 6 indicates that 75% of the respondents are in agreement that project financial resource allocation by road construction companies to projects affects the implementation of OHS issues in road construction projects. However, the majority of respondents further explained that they feel funds to cater for OHS matters are utilized on implementing other road construction activities besides OHS. The minority i.e. 25% of the respondents were in disagreement with an explanation that employees need to be given the allowance to cater for their safety on the construction site.

Effects of project financial resources by road construction companies in the implementation of occupational health and safety issues in road construction projects

The study sought to establish the perception of employees undertaking the construction of Upper Hill – Mbagathi link road on the effects of project financial resources as a factor in occupational health and safety implementation in road construction projects in Kenya. The response options were on a scale that ranged from 1 to 5 Where 1= strongly disagree, 2 = disagree, 3= neutral, 4= agree, 5= strongly agree. The study computed percentages to help evaluate their perception. The response is shown in table 7 below.

Table 7 Breakdown on Project Financial Resources

Study question	S. Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	S. Agree (%)
You are provided with PPEs during project implementation at your employer's cost	30.0	35.0	14.0	14.0	7.0
You get medical attention when the need arises i.e. if an incident occurs while in line of duty on the construction site	46.0	28.0	10.0	14.0	2.0

Safety training and awareness workshops are conducted regularly with experts visiting the construction site	82.0	18.0	0.0	0.0	0.0
Including financial allocations on matters of occupational health and safety in construction contracts as obligations to construction companies greatly enhance the implementation of occupational health and safety on construction sites.	10.0	15.0	0.0	36.0	39.0
Financial allocations on occupational health and safety greatly reduce the margins of construction companies.	35.0	27.0	0.0	22.0	16.0

Source: Author (2021)

In table 7, 35% of the respondents disagreed and 30% strongly disagreed about road contractors supplying them with PPEs. 14% were neutral, 14% agreed and 7% strongly agreed with the study question. These findings show that there is little financial input on the part of road construction employers in providing their employees with personal protective equipment i.e. only of 21% of the respondents agreed to have received PPEs while 65% disagreed. There was partial financial expenditure on OHS equipment.

On whether employees get medical attention catered for by the road contractor when the need arises i.e. if an incident occurs while in line of duty on the construction site 28% of the respondents disagreed and 46% total disagreed with the study question. This formed the majority with a total of 74% being in disagreement. 10% of the respondents were neutral, 14% agreed while 2% strongly agreed. These findings show that road construction employers do not factor financial expenditure in catering for injuries and incidents on construction sites. A majority of construction operatives are left to their means in case of an incident i.e. 74%.

There was a strong disagreement on Safety training and awareness workshops being conducted regularly with experts visiting the construction site. 82% of the respondents strongly disagreed and 18% disagreed with the study question. All the respondents disagreed with the study question, an indicator of lack of financial input by road contractors hence exposing their employees to danger.

On whether financial resources on matters of occupational health and safety in construction contracts greatly enhance the implementation of occupational health and safety on construction sites, 36% of the respondents agreed while 39% strongly agreed to the study question. 15% of the respondents disagreed and 10% strongly disagreed, this formed a total of 25% who disagreed with the study question. To the researcher, these findings indicated that financial resources are important to the implementation of OHS issues on construction sites.

Finally, 27% of the respondents disagreed and 35% strongly disagreed that financial allocations on occupational health and safety greatly reduce the margins of construction companies. This formed a total of 62%; this finding is an indicator that

road contractors need to factor financial allocations on OHS in their road construction budgets without worries about their profit margins. 22% of the respondents agreed and 16% strongly agreed with the research question

V. RECOMMENDATIONS AND CONCLUSION

Recommendations

Awareness of OHS

The study recommends that Road Contractors immediately come up with programs to conduct regular occupational health and safety awareness and training workshops and implement them to acquaint the construction workers with proper occupational health and safety skills during project implementation. This should be monitored and documented by the project supervisors during the life of the project.

Project financing resources on OHS

The study recommends that during the project planning stage by prospective clients, financiers, consultants and the government; there should be financial allocation on occupational health and safety response factored in the project cost before procuring the implementing entity i.e. the road contractor. This should be on a project-by-project basis and will be well captured by amending the building construction policy by the government. This recommendation if implemented will enable road contractors, acquire PPEs adequately for construction workers, and respond to site incidents by treating the affected construction workers and plan for awareness workshops and skills improvement training for the construction workers.

Conclusion

The study had a general objective of looking into the determinants of implementation of occupational health and safety issues in road construction projects. There were two specific objectives in the study that defined the variables i.e. Awareness of occupational health & safety and Project financing resources on occupational health & safety. The study concluded that there is very little input by road contractors in raising awareness in their employees on matters of occupational health and safety on construction sites. There is a need for contractors to have schedules for holding occupational health and safety awareness workshops and training sessions during the project implementation period. Sufficient allocation of finances to projects on matters of occupational and safety seldom happens during the project planning stage and many contractors do not factor PPEs, employee insurance, employee awareness workshops and training in their budgets during the implementation stage in road projects.

Suggestions for further studies

Having conducted the study on one road construction project; other studies can be conducted on other active building construction sites for comparative analysis. It will be

important to conduct further studies to get and maintain a real-time database on occupational health and safety incidents across Kenya. This will help understand the gravity of occupational health and safety incidents on construction sites and help amend policies to measure up to the changing technologies in the construction industry. Proper statistics need to be conducted to ascertain the number of qualified occupational health and safety personnel in the country and their distribution to ascertain the ratio of OHS personnel to construction workers.

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