ERGONOMIC PRACTICES AND WORKER EFFECTIVENESS IN CHINA ROAD AND BRIDGE CORPORATION KENYA LIMITED, NAIROBI CITY COUNTY

ENOCK ABUGA ONG'UTI
D53/CYT/PT/30882/2015

A RESEARCH PROJECT SUBMITTED TO THE TO SCHOOL OF BUSINESS, ECONOMICS AND TOURISM IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION OF KENYATTA UNIVERSITY

MAY 2023

DECLARATION

This document represents my unique engagement and never has it been submitted for a grading or a degree in any other University. Without the author's and/or Kenyatta University's explicit written permission, no part of this work is to be duplicated.

Enock Abuga Ong'uti

Signature: …… Date:……...

D53/CYT/PT/30882/2015

This project has been submitted for grading with my consent as Supervisor in Kenyatta University.

Dr. Jedidah Muli

Signature: …… Date……...

Supervisor

School of business

Business Administration Department

Kenyatta University

DEDICATION

This study project is devoted to my father Abel, mother Caren, and whole family for their essential counsel and spiritual support.

ACKNOWLEDGEMENT

Predominantly, I greatly appreciate the Everlasting God for providing me with the grace and power to create this project. Secondly, I am acknowledging my entire family for their continuing support. I would also thank my supervisor, Dr. Jedidah Muli, for her time and expertise in guiding me through this work. Finally, I thank Kenyatta University for its academic infrastructure and conducive environment that has enabled me to reach this realization.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

OPERATIONAL DEFINITION OF TERMS

Worker effectiveness: refers to the degree to which employees are able to perform their job tasks efficiently and with high quality while maintaining their health and well-being. It encompasses various factors, including productivity, performance, job satisfaction, and overall work outcomes.

Environmental hazard: refers to any condition, substance, or event in the environment that has the potential to cause harm to living organisms, including humans. Environmental hazards can be natural, such as earthquakes or floods, or they can be human-made, such as pollution or chemical spills. These hazards pose risks to the health, safety, and well-being of individuals and ecosystems.

Ergonomic practices: the application of ergonomic principles in the design and organization of work environments, tasks, and equipment. They focus on creating workspaces that optimize human performance, safety, and well-being. Ergonomic practices aim to reduce the physical and cognitive strain on workers, minimize the risk of injuries, and enhance productivity and comfort in carrying out job responsibilities.

Safety Resources: refer to the tools, materials, information, and support systems available to promote and maintain a safe working environment. In the context of ergonomic practices and worker effectiveness, safety resources are resources specifically aimed at addressing ergonomic hazards and ensuring the well-being and safety of workers.

Safety communication: refers to the exchange of information and messages related to safety practices, procedures, and hazards in the workplace. It involves effectively conveying safety-related information to workers, promoting awareness, understanding, and adherence to safety protocols, and facilitating a culture of safety within the organization.

Safety tutorials: refer to instructional materials or sessions that provide guidance and training on safety practices and protocols in the workplace. In the context of ergonomic practices and worker effectiveness, safety tutorials specifically focus on educating employees about ergonomic principles, proper body mechanics, and techniques to minimize the risk of injuries related to ergonomic stressors.

Safety Precaution: are measures or actions taken to prevent or minimize the risk of accidents, injuries, or hazards in the workplace. In the context of ergonomic practices and worker effectiveness, safety precautions specifically refer to steps or practices implemented to mitigate ergonomic hazards and ensure the safety and well-being of workers.

Safety precaution measures: refer to specific actions, procedures, or strategies implemented to minimize or mitigate risks, hazards, and potential injuries in the workplace. In the context of ergonomic practices and worker effectiveness, safety precaution measures specifically pertain to steps taken to address ergonomic hazards and ensure the safety, health, and well-being of workers.

Safety policies: are formal guidelines and principles established by an organization to promote a safe and healthy work environment. In the context of ergonomic practices and worker effectiveness, safety policies specifically pertain to policies that address ergonomic hazards, promote proper work practices, and prioritize the well-being and safety of workers.

ABBREVIATIONS AND ACRONYMS

BEM: Behavior Engineering Model

CBC: China Bridges Corporation

CIT: Construction Induction Tutorials

CWD: Compensating Wage Differentials

GDP: Gross Domestic Product

HBM: Health Belief Model

HPT: Human Performance Technology

HSE: Health and Safety Executive

ILO: International Labor Organization

KNBS: Kenya National Bureau of Statistics

NACOSTI: National Commission of Science and Technology and Innovation

OSHA: Occupational Safety and Health Administration

SPSS: Statistical Packages for Social Sciences

US: United States

ABSTRACT

The construction sector is a commercially key sector in every nation. However, construction employees are exposed to several risks. Weak safety and health precautions have a significant detrimental impact on workforce productivity on construction sites. The study aimed at probing the effect of ergonomic practices on worker effectiveness in the construction section in Kenya's economy. The research specifically determined the effect of safety communication, safety tutorials, safety measure and safety resources on worker effectiveness. The study was anchored on behaviour engineering model, compensating wage differentials and health belief model theories. The study adopted descriptive research approach and the population targeted was 400 employees of China Road and Bridge Corporation Kenya Limited which included top management, middle level manager and casual labourer's respondents that were selected proportionately from various cadres. Stratified proportionate random sampling techniques was applied to highlight the respondents. The study sampled a total of200 respondents where Top management (20), Middle management (40), and Casual laborers (140) were sampled. Questionnaires were used as a data collecting tools which constituted open-ended and closed-ended questions were used to identify research questions. Both qualitative and quantitative data was collected which was subjected to thorough pilot test to do away with errors. Content validity was used to check the internal consistency of research instruments. While Cronbach's alpha coefficient of 0.7 was used to test the accuracy of research tools. Descriptive was used to measure of central tendency while inferential statistics used multiple regression to determine link between the dependent and the independent variables. Date was presented in the form of means, percentages, frequencies and standard deviations where tables and charts were utelized. The coefficient of determination indicated that safety tutorials and safety precaution had a positive effect on the level of worker effectiveness while safety communication and safety resources had a negative effect. Nonetheless, the four variables have a combined positive effect on the level of worker effectiveness at the at the China Road and Bridge Corporation Kenya Limited. The study recommends that effective safety communication system should be implemented to help reduce accidents and injuries in the workplace. Also, the study highly recommends the use of tutorials to improve worker effectiveness. Further, the study recommends implementing safety precautions in the workplace as they have been proven to increase worker effectiveness. Finally, the study recommends that CRBC should re-evaluate its investment in safety resources to ensure that they are being translated into safe and effective employee environment to prevent waste of resources.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The modern history of ergonomics can be traced back to the world war from 1939 to 1945. From the 1960s to the 1990s, there were many changes made to ergonomics. Some of these were cognitive ergonomics, organizational ergonomics, positive ergonomics, and spiritual ergonomics. Ergonomics is becoming more of an issue in organizations in both developed and developing countries since the rise of occupational safety and health. Today, every company in the world puts more thought into making their workplaces safe.

Ergonomics comes from the Greek words ergo, which means work, and nomos, which means health. It is the study of how people work and how to design the workplace so that people can easily adapt to it and be more productive (Mokdad & Abdel-Moniem, 2017). Ergonomics is the study of how a worker interacts with his or her working environment. This includes the physical space in which a person works, as well as the tools and materials, work practices, and work structure, whether the person works alone or as part of a team. Modern ergonomics can be traced back to the world war from 1939 to 1945.

In the United Kingdom, experts from different fields were interested in how well people did their jobs and how important theory and method were. This was the start of the field of ergonomics (Wilson, 2000). From the 1960s to the 1990s, there were many changes made to ergonomics. Some of these were cognitive ergonomics, organizational ergonomics, positive ergonomics, and spiritual ergonomics (Mokdad & Abdel-Moniem, 2017). Ergonomics has become a bigger issue for the

organization since the rise of safety and health at work. Every company in the world has put more thought into making their workplaces safer (Pun, 2011).

Ergonomics in the workplace adds value to the business and makes employees more interested in their jobs. Organizations think that a healthy workplace can help foster a culture of innovation and creativity (Sabir et al., 2019). The government has passed a law to make sure that people have safe and healthy jobs. The goal of ergonomic standards is to make people feel safe and secure (Akinbola & Popoola, 2019). Ergonomics should be used to improve quality, productivity, and safety by making products, tasks, and environments fit people instead of the other way around. Ergonomists look at the worker, the workplace, and the design of the job to figure out how well a person fits their job (Jaffar *et al.*, 2011).

Ergonomics is based on the idea that the demands of a job shouldn't go beyond what a worker can do and what their limits are. This is to prevent stress at work, which can be dangerous to their safety, health, and productivity. The goal of an ergonomics program is to make the workplace safe and productive so that the organization can reach its goals (Neumann & Dul, 2005). Industrial design has replaced traditional product design in China. "People-oriented" and "ergonomic design" are terms that are being used by more and more companies to describe their products. One of the ergonomics trends in the business world is the idea of "green design" (Cheng, 2011).

Businesses and corporations have been trying to figure out how to reorganize their workplaces in new ways for decades (Adhikari et al., 2021). Also, the trend toward more interesting and flexible office architecture, as well as the need to meet the different and growing needs and expectations of different employees, has led to a

lot more talk about how and where good work is done (Harris, 2016). Innovative workplaces cut down on health problems and make workers more productive. Flexible working hours, an inspiring interior, chances to learn and explore, new ways to relax, and a sense of ownership could be great ways to make the workplace more innovative and lead to the ergonomics design (Nielsen *et al.,* 2017). Due to how poorly designed workplaces are in India, the number of people getting sick from their jobs is rising at an alarming rate (Chowdhury & Chakraborty, 2017).

The performance of employees has a bigger effect on the performance/goal of the organization (Sabir *et al.,* 2019). In the past, financial motivation was the most effective way to improve job performance (Adhikari *et al*., 2021). But in the present, ergonomics has become a factor that affects how motivated employees are and how well they do their jobs. In a developing country like Nepal, ergonomics is the latest business practice, but it is still a new idea, and most businesses don't know how to design their workplaces with ergonomics in mind. Even the people in charge of an organization can't make ergonomics a part of the culture and system. In fact, the practice hasn't been looked into much because people don't know much about ergonomics. Nepal's government has started to pay attention by enforcing a few laws and rules, but it's still early and we need more evidence to know what's really going on in terms of health and safety at work.

Worker effectiveness at work is defined as the superior execution of assigned responsibilities by staff (Fomenky, 2015). It relates to the effectiveness, quality, and efficiency of output. Their operational proficiency also determines the value of a labourer to an organization. Since each individual represents a substantial

investment in an endeavour, the profit or reimbursement should be substantial (Yap & Lee, 2020).

Worker effectiveness is quantified in diverse ways regarding the responsibility and sector, but it can widely be quantified by a worker's pace and effectiveness, the quality and depth of their work, and their trustworthiness and reliability, (Won et al., 2021). Worker effectiveness therefore, can be measured as the work done in certain period, how good is an employee compared to others and whether he or she has unique qualities and whether employees can make good decisions thus growing of an organization.

The construction sector, according to Ayangade, (2009), is a commercially key sector in every nation. The construction sector's participation variation is from enhancement the commodity procurement to the putting up of buildings an infrastructure, leading to job prospects for its human capital while also directly supporting the Gross Domestic Product (GDP). As per Pheng and Hou (2019) the sector provides a nation’s infrastructure and physical structures to accommodate other businesses, hence producing jobs, adding to GDP, and supporting fundamental requirements such as housing.

The construction industry's building section primarily focused on the assemblage of building parts and equipment provided by the manufacturing section and brought to the job site by the transportation sector. It is impossible to overstate the significance of the sector to national-global markets. According to Michael, (2011), this sector accounted for 13.2% of global GDP by 2025, demonstrating a positive trajectory. This is shown in the supply of fundamental equipment to other segments of the economy, such as transport systems, corporate and domestic buildings, and

amenities. Construction also contributes a significant proportion of commercial development by reverse and forward connections, as it uses goods and services from other sectors.

Notwithstanding the benefits that the construction business has given, there are also disadvantages to working in the field. Construction operations are catastrophic; at least 60,000 catastrophic incidents occur on construction projects worldwide annually, following the International Labor Organization (ILO) report, responsible for 1 out of 6 deadly occupational incidents (Negash, 2022). The total is substantially higher, at 108,000, according to the International Trade Union Confederation, with construction accounting for 30% of all occupational accidents. The construction operations account for 27% of deadly workplace accidents and 9% of recorded catastrophic accidents per the Health and Safety Executive (HSE) in the United Kingdom in 2015/16.

Health and safety considerations in construction mission execution are also not prioritized in most third world nations, and implementing safety precautions all through during the process is seen as a strain, (Mbuya & Lema, 2004). Employers often presume that operationalizing and reinforcement of health and safety needs in the construction sector translated to more costs and reduced profits.

The construction sector contributed considerably to the economy in South Africa Cumberlege, 2008) since it was able to contribute R59,422m to the GDP in the year 2012 and an amount of R112,631m in 2015This amount is equivalent to 3.5 percent of South Africa's GDP, (Stats, 2013). Furthermore, the sector hired an approximated 433,000 people in September 2012, accounting for around 5.1 percent of the South African total, (Stats, 2012). As a result, the South African

government designated the construction sector as a key strategic resource, believing that it could be exploited to boost socioeconomic development people's quality of life (Didiza, 2008). As a result, it was critical that the sector expand and captivate more players.

Owing to its increasing character, the Nigerian construction sector, as per Ayangade (2009), was yet to come close to that of the industrialized nations, like Australia. Furthermore, according to Ayangade (2009), while the construction sector in other industrialized economies account for about 22% of their corresponding GDPs, the Nigerian case is unique in that it benefits mildly less than 16% to its economy, resulting in elevated recruitment (20%) for its massive 140 million citizens especially in comparison with the 12% in advanced nations.

Most of Kenya's construction projects rely largely on physical labor for their completion. According to Mbiti (2013), the construction sector incorporates approximately 800,000 individuals that are responsible for delivering built structures to customers on schedule, on budget, and to the stipulated quality standards. It would be preferable if involved parties were aware of the set levels of staff efficiency beforehand, such that efficient preparation and sequencing could be accomplished.

Furthermore, Kenya has a plentiful stock of semi-skilled and unskilled workers that must be employed, (Mbiti, 2013). The construction sector has been facing demand to adopt excellent procedures as a strategy of increasing job chances for operators in the job market in order to bring social and economic benefit to the community. Because the construction activity is such an essential part of the economy's labor market, all steps should be taken to enhance workforce efficiency. An increase in

workforce efficiency will increase project performance and make it more appealing to shareholders.

Weak safety and health precautions have a significant detrimental impact on workforce productivity on construction sites. Masu (2010) believes that Kenya, as a third world state, is not immune to the patterns in other nations that are at an intersection with construction companies owing to the latter's failure to complete tasks in a timely manner.

Postponements on construction projects have cost the contractors' money, raised the costs to the consumers, and damaged the collaborative environment amongst the project's participants. The shortage of proper documentation on work performance in Kenya's construction sector has caused this, (Wachira, 2009). Interruptions in accomplishment of the project in the construction sector are symptoms of an issue with efficacy, and therefore a major concern for the sector. Enhancing staff efficiency is an essential element of construction service because it is among the primary predictors of project success.

A further essential part of economic growth is the formation of jobs through construction activity. According to latest estimates from the Kenya National Bureau of Statistics for the first quarter of 2018, the constructing societies contributes for 5% of the country's GDP and hires about a million individuals, with an approximate yearly salary budget of K.sh. 3.2 billion (KNBS).

As per Mohammed (2014), the construction business is also considered to be one of the most hazardous. Accidents not only cause serious suffering and pain, but they also lag efficiency, productivity, quality, and timeliness, as well promoting

detrimental effects on the ecosystem, raising building costs. Construction health and safety control is of significant interest to all shareholders in the construction sector, given the negative consequences of fatalities.

1.1.1 Worker Effectiveness

Employees are one of the most important tools of any organization in general (Gabčanová, 2011:2) and project organizations in particular as the quality of output of the organization depends largely the caliber of the people working therein (Golden, 2011; Heskett, 2006; International Labour Organization, 2011). With positive and creative contributions from employees, the quality of the output of an organization can give an immense competitive advantage over their competitors. To achieve this in the present-day competitive environment, management will need to take some strategic decisions to improve the performance of its human assets (Gabčanová, 2011). One of these decisions is to develop a work system that will fit job to an employee, rather than the employee to the job (Computer/Electronic Accommodations Program, 2012). This innovative management strategic decision is known as ergonomics (human factors). It involves the scientific use of human data to design a workstation, work center, or working environment to create a job friendly environment for individual employee. This is to improve the wellbeing, safety and efficiency of workers by fitting the environment to them and not the other way around (Ergo Squad, 2012). This may have adverse effects on some of the employees who sometimes have to adjust their sitting position to reduce stress.

The effectiveness of employees can be improved if the workplace is designed with ergonomics in mind. Better education is needed in the business world so that people can understand how improving the work environment can help increase

productivity. When a company gives its employees a better place to work, their health improves. This makes them more productive and reduces the company's healthcare costs (Al-Omari & Okasheh, 2017).

Raja, Nawaz, & Javed, (2019) study showed that employees think that a well-designed workspace will help them be more productive. Ergonomic furniture is made to fit the physical needs and abilities of the people who use it. Ravindran (2020) showed how room temperature, furniture, and repeating tasks are some of the most important ergonomics factors that affect how well people do their jobs. To improve how well employees do their jobs, low-cost ergonomics solutions must be put in place. (Sarder & Mandahawi, 2006) found that employees are more productive and safer at work when their working conditions, habits, and equipment are designed to fit their needs. A study by Lan *et al.* (2010) showed that high or low air temperatures made office workers less productive. In the past few decades, the main things that determined how motivated and productive an employee was were training and development, employee engagement, company culture, and recognition. But as the organization has changed, a new factor has been added: ergonomics. This is also a key part of meeting the performance level set by the organization.

According to Mathis & Jackson (2018) worker effectiveness plays a significant role on an organization success. It is described as the workers' ability to accomplish given duties in a timely and effective manner as specified by the employer. To increase worker's effectiveness, employers major in establishing a suitable working environment that directly impact employees' motivation, work satisfaction, and sense of belonging positively. Friendly work policies and

compensation plan are examples of tools that are popularly leveraged by employers to implement a worker effectiveness culture.

Employers leverage many-accurate methods of measuring worker effectiveness. Quantity, quality & timeliness of output, availability or participation on the workplace, and accuracy and efficiency of task accomplished are example of methods used to measure worker effectiveness in the workplace (Mathis & Jackson, 2018). Additionally, according to Gilbert (2007), worker effectives can be measured by studying the consequence of encouragement and competence. To accurately measure worker effectiveness, employers should, with detail, evaluate internal and external environment surrounding workers.

Scalable, quantity is the best method of measuring worker effectiveness. Empirically, if there exist a suitable environment, an organization's output will increase and vice versa (Stroh, 2001). Affirmatively, high employees and overall production output implies workers are well compensated, managed using friendly policies, and trained. To increase the quantity produced, employers should focus on the environment and ensure that the obstacles to efficiency are eliminated. And most important, employers should give the essential assistance to employees; the biggest obstacle to excellence, or worth, accomplishment is the scarcity of performance assistance, not an individual's insufficient knowledge or competence (Stroh, 2001). To increase the efficiency of using quantity method of measuring worker effectiveness, employers should ensure that tasks are effectively accomplished by paying employees highly and engaging them in formulation of workplace policies.

1.1.2 Ergonomic Strategies

Organizations are leveraging ergonomic strategies to create a conducive working environment. Ergonomic strategies are creative workplace designs created to help workers become compatible with underlying tasks. For example, encouragement of fit employees is an example of ergonomic strategies since they help prevent occupational injuries and illness. Notably, advance technology has greatly impacted positively the creation of ergonomic strategies since technology has aided in execution of workplace researches.

As the global environment becomes more dynamic, organizations and businesses are forced to keep looking for the best ways to plan and manage innovation through new methods and paradigms that efficiently serve both new and existing markets with new and/or changed products and services (Liem & Brangier, 2012). Organizations' operations create a link between macro-level and micro-level data, where different communities and stakeholders are involved, and between ergonomic thinking and radical innovation, creating value, and their processes. Ergonomics' uses have changed over time as ergonomics research and knowledge has grown and as new human concerns have come up around the world (Wilder & Sigurdsson, 2015).

Human health and safety are the main goals of ergonomics research and advice. This includes preventing musculoskeletal diseases and other health and safety goals in the workplace. Also, workplace health and safety laws in many countries have a strong connection to ergonomics (Baril *et al*., 2003). In these situations, companies may not see ergonomics as an important part of their strategy, corporate goals, planning, and control cycles, but rather as an outside factor. In terms of

health and safety, the current trend in western government policies, which is to reduce command-control legislation while increasing support for voluntary initiatives, is a threat to ergonomics because organizations won't start ergonomic initiatives on their own (Dul *et al*., 2012).

In the workplace, the idea of an occupational or workplace injury has been around for decades. Occupational safety practices are used in organizations in developed countries, but most organizations in developing countries haven't done anything yet with occupational safety, cognitive ergonomics, or organizational ergonomics (Hofmann et al., 2017). Most of the health care fields in the United Kingdom are using ergonomics interventions to create training programs for robotic surgeons. Because of ergonomics training, more than 81% of surgeons change how they do their jobs (Koshy et al., 2020). In the United Kingdom, ergonomics are used in the health care sector. For example, the chair height can be changed to fix knee flexion, the armrest can be moved so that the forearms are parallel to the floor, and the head position can be changed. In the past few years, there has been more research into how to make workplaces more ergonomic so that workers are less likely to get musculoskeletal diseases. Even so, the use of ergonomic interventions in the workplace is still in its early stages.

Ergonomics means taking steps to make manual handling tasks, activities, objects, and tools, as well as the design of the work environment, better fit the needs of the worker. It has been used a lot in Italy's business sector (Capodaglio, 2022). Interventions include making changes to the equipment that is already there, changing the way work is done, buying new tools or other devices to help with the work, and making other changes that are common in the industry. Industries are

putting more effort into giving workers who are exposed to dangerous conditions training that helps them learn more about working methods and techniques, as well as how to move, stand, and carry loads.

In Argentina, improving the quality of life at work has been put off because of problems like industrial reconversion, privatization, and controlling inflation. Not paying attention to these places has made them more likely to be a health risk. Different workplace safety measures are put in place to reduce the health risks. More attention is being paid to how well a job fits the employee these days. Workplaces are made based on the skills or personalities of the employees to help them do their jobs best (Soares, 2006)

In South America, the study found that repetitive movements were the most common exposures for both men and women in terms of physical, chemical, biological, and ergonomic working conditions. For women, this ranged from 50.8% in Argentina to 84.4% in Colombia, and for men, it was from 58.6% in Uruguay to 77.3 % in Central America (Merino-Salazar et al., 2017)

In their study, Mokdad *et al.* (2019) found that few ergonomic studies have been done in Africa, even though there have been calls for them to be used in developing countries. Basically, working with date palms in the agriculture industry is dangerous and has a lot of bad connotations because it causes more musculoskeletal diseases. The trend is that most workers are stuck in old ways of climbing, like free climbing and climbing with a belt.

Ergonomic strategies have many components. Health safety, workplace arrangement, wellness, and workers' involvement are all example of ergonomic

strategies. The goal of these ergonomic strategies is to mainly enhance workplace conditions and the environment. Health Safety is a major ergonomic strategy. According to health and safety guidelines, employers should protect employees against risks threatening their health and safety. For this reason, to evaluate project performance, health and safety have been highlighted as metrics that should be employed alongside the conventional characteristics of cost, quality, and time. As a result, the motives for addressing safety and health can be divided into three categories: human factors, legislation, and financial concerns, (Adan, 2014). Reality has it that investing in construction health and safety improves profits by enhancing output, improving staff morale, and lowering attrition rates, (Mohammed, 2013).

Workplace arrangement is similarly a major ergonomic strategy. A better workplace arrangement create a conducive working environment since issue such as work congestion, taste duplication, etc.; it is tough for a person to be effective when they are physically uncomfortable (Corp, 2014). Any workplace arrangement that renders workers uneasy for a short or long amount of time might have a negative impact on production. Workers are more motivated and operate better when their workplace is designed ergonomically. Worker feedback is often encouraged when workplace equipment or the physical setting needs to be changed.

Wellness programs have become a growing concern for businesses. The positive relationship between wellness program and production justify why wellness programs have been of concern to business. Stress reduction, weight loss, smoking cessation, and health screenings are examples of common wellness programs. As a

result of wellness programs, high workers' productivity, high workers' sense of belonging, and high motivation among employees, companies are compelled to intervene to support and promote their workers' health and well-being as a result of this relationship, (Mattke, et al, 2013).

Besides health safety, workplace arrangement, and wellness, worker's involvement is also a key ergonomic strategy. Affirmatively, the benefits of participating may be higher than the expenses of not participating. Health and performance forums are example of worker's involvement initiatives. Thus, by involving workers, employers overcome sudden strike of contingents' events such as accidents and infections since workers alert them in advance, thus reducing costs involved in addressing the underlying hazards. For example, interventions to enhance health improvement in the worksite can lower the healthcare costs for workers, in turn increasing production. Interventions like this can also be used as a portion of an approach to react to responsibilities and legislation relating to ethical employment, (Mhurchu, Aston & Jebb, 2010).

1.1.3 The China Road and Bridge Corporation Construction Change

According to the Kenya directory of construction companies, there are over two fifty main construction companies in Kenya engaging in construction of roads, bridges, buildings and general works. Out of these, approximately 99 % are privately owned. Construction employees are exposed to several risks, per the Ministry of Labor's OSHA office, including falls from rooftops, unprotected machines, getting hit by construction machinery, electrocutions, silica dust, and asbestos.

Because the construction sector has a higher frequency of attrition and many major workplace accidents. According to the Ministry, both management and employees must cooperate to improving the safety of their workplace environment in order to avoid occupational injuries and other health concerns among workers. The employer is responsible for the entire workplace atmosphere, but workers also have a role to play, such as following employer instructions and wearing the personal protective equipment given by the company, (OSHA policy 2016).

China Road and Bridge Corporation Kenya Limited is a construction company widely in operational in Africa including Kenya. The company was established in Kenya in mid 90s (Servant, 2005). Since then, its operations have witnessed many safety issues despite the fact that the government and relevant authority insisting about safety in working environment; the subject is still an issue in construction industries and specifically China Road and Bridge Corporation Kenya Limited and pollution and environmental degradation to the communities and ecosystem have also worsened.

On September 22nd, 2017, a panel of environmental and human rights inspectors of the Global Community, together with the Occupational Safety and Health Association, underlined the importance of protecting workers and the neighborhood from a variety of environmental circumstances. Regrettably, the approach has not been emphasized at China Road and Bridge Corporation Kenya Limited, resulting in worker illiteracy and an upsurge in occupational accidents. Particularly, the company's ergonomic strategies are very ineffective that Occupational Safety and Health Association's guidelines.

China Road and Bridge Corporation Kenya's ergonomic strategies unveil Kenya construction industry's poor measures for creating a conducive working environment. Specifically, the companies have poor safety provisions- one of the employed ergonomic strategy. Recently, its workers complained about the company's use of open Lorries to transport them to construction sites (GCR, 2022). While complaining bitterly, one of the worker confessed risks exposed to them as they are transported using open lorries; to reduce risks such as accident and health complication, the worker chose the use of buses transportation. Additionally, the company's fails to enforcement wearing of protective equipment, thus lowering the effectiveness of personal protective equipment ergonomic strategy. Consecutively, some of its employees on 18 December last year died following the collapsing of culvert lines as they had not worn protective gear namely helmets.

There exists an inverse relationship between improper ergonomic strategies and worker effectiveness. Supportively, the worker effectiveness at China Road and Bridge Corporation Kenya is low since ergonomic strategies are poor. For example, The Company lacks proper safety provisions and fails to enforce personal protective equipment ergonomic strategy, thus greatly lowering the employees' productivity. Low employees' productivity is witnessed by workers regularly holding industrial strikes to explicitly fight against future relatable accidents that are caused by the employer's negligence (GCR, 2022). Pay discrimination is another factor lowing China Bridge Corporation Kenya's worker effectiveness as employees likewise strike so as to demand higher wages; particularly, its employees claim that there exists a pay difference its local subsidiaries. For example, its workers in Nairobi are paid wages above 5$, while workers in Narok are paid lowly for instance 2.5$.

1.2 Statement of the Problem

Despite construction sector being an important part of any country's economic advancement, it encounters incidents of employees' effectiveness problems. As a result, it continues to remain among the most dangerous and disaster-prone workplaces, together with one of the risky industries in terms of its operations. Because personnel are subjected to severe circumstances and handle risky machines, the construction sector is linked with high-risk situations, labor-intensive employment, heavy workloads, and substandard health and safety (James, Rust & Kingma, 2012).

Along with the premise that the authorities and appropriate authorities stress on workplace safety (Nyakego, 2014), the matter remains a concern in the case of China Road and Bridge Corporation Kenya Limited. As seen, the companies continue to report workplace injuries since its safety provision is poor; employees are transported to construction site using open Lorries and workers attend their jobs without wearing protective gears. Additionally, the company's safety awareness procedures haven't enhanced safety levels as staffs are neither kept aware on occupational health and safety policies nor on safety tutorials. As a result, workers have become more ignorant, resulting in an upsurge in accidents. Employees effectiveness problems remains a threat in construction sector since sufficient resources have not been reserved to address issues of safety and health.

Therefore, construction sector's employees' effectiveness problems have remained a great concerned in the society. For example, Rihana & Hossan's 2015 study concentrated on major practices that determine employee efficiency in the construction sector on Egyptian building grounds. On the other hand, Peter &

John's 2016 study focused on safety precautions and worker performance in a Nigerian construction company. Lastly, but not exhausting the list, whilst Alfred & Naim 's 2015 study majored on instructional procedures followed by Malaysia construction sector as he believed it was critical to make sure the rational procedure used aligns with those indoctrinated by Occupational Safety and Health Association (OSHA). Affirmatively, these mentioned above researchers looked at situations beyond Kenyan borders.

As a result, the goal of this study is to look into the outcomes of ergonomic exercises on worker performance in construction sector. For empirical review, China Bridge Corporation Kenya Limited has been used to determine the outcomes of ergonomic exercise in Kenya's construction sector. Particularly, ergonomic practices employed by China Road Bridge and Corporation Kenya Limited namely safety instructions, information, resources, and precautionary procedures have been used to study worker effectiveness in the construction industry. Therefore, this study meant to determine if there exist a positive relationship between ergonomic exercises and worker effectiveness in construction sector.

1.3 Objectives of the Study

1.3.1 General Objective

The purpose was to investigate the effect of ergonomic practices on worker effectiveness at China Road and Bridge Corporation Kenya Limited, Nairobi City County.

1.3.2 Specific Objectives

i. To determine the effect of safety communication on worker effectiveness in China Road and Bridge Corporation Kenya Limited.

ii. To assess the effect of safety tutorials on employee's performance in China Road and Bridge Corporation Kenya Limited.

iii. To determine effect of safety precaution measure on employee's performance in China Road and Bridge Corporation Kenya Limited.

iv. To determine the effect of safety resources on worker effectiveness in China Road and Bridge Corporation Kenya Limited.

1.4 Research Questions

i. How does safety communications influence worker effectiveness in China Road and Bridge Corporation Kenya Limited?

ii. How does safety tutorials policy influence worker effectiveness in China Road and Bridge Corporation Kenya Limited?

iii. To what extent do safety precaution measures influence worker effectiveness in China Road and Bridge Corporation Kenya Limited?

iv. How does a safety resources influence worker effectiveness in China Road and Bridge Corporation Kenya Limited?

1.5 Significance of the Study

Construction industry administration and staff in Kenya will be able to come up with an occupational environment devoid of safety and health dangers, together with safety precautions. Scholars, academicians, and researchers willing to participate in conducting comparable research could utilize this report to make comparisons their results to the results of this study. Management will be able to identify safety needs and gaps, which will aid in the improvement of occupational safety regulations in Kenya's construction sector.

1.6 The Scope of Study

The study focused on the influence of ergonomic practices on worker efficacy in China Road and Bridge Corporation Kenya Limited. The presented study was limited to safety tutorials, safety communication, safety precautions measures and safety resources in China Bridge Corporation Limited.

The study was conducted in Nairobi City County, where the China Road and Bridge Corporation Kenya Limited is located. The unit of analysis was all employees in Nairobi station. The employees included; top management, middle level management and casual workers. The study utilized descriptive research design and mixed research method whereby questionnaires, interviews and observations was used to gather information from the respondents.

1.7 Limitations of the Study

Because of the projected lack of privacy and fear of persecution, respondents were hesitant to engage in the study. The researcher mitigated this by constantly reminding the respondents of anonymity and the importance of participating in the study. The researcher further, designed questionnaires and interview to ensure confidentiality section.

The study also faced challenge of illiteracy from respondents. The researcher mitigated this by personally administering and conducting questionnaires and interviews respectively using relevant translation of questions to ensure collection of the correct data.

Because of the enormous quantity of workers in the China Road and Bridge Corporation Kenya limited, Nairobi work station and availability few resources and

time, the researcher was unable to include all employees. Therefore, a sample size of 200 individuals was used for the study to present the whole population.

1.8 Organization of the Study

The project was broken down into chapters. Employee performance, safety communication, safety tutorials, safety precautions, and safety resources are among the study factors discussed in the first chapter. It also emphasized the research topic, research aims, the study's significance, study scope, and limits. The second chapter was devoted to a thorough assessment of the literature on the primary research variables. This led to a conceptual framework that depicts the interconnections between the variables undergoing investigation. The third chapter explains the research technique and how the variables were operationalized, together with the analytical models that were applied to analyze the hypotheses. Chapter four includes data analysis and interpretation. While chapter five includes the research summary of the findings, conclusions, recommendations and suggestions for further studies.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This section expounds on theoretical literature related to the research to show relevance of variables under study. The chapter reviews literature related to ergonomic practices and worker effectiveness. The research was based on an empirical examination of ergonomic hazard management approaches, together with periodicals and textbooks on occupational safety and health monitoring. Finally, the part highlights on criticism of the literature, the gaps in research and conceptual framework.

2.1 Theoretical Literature

The study relied majorly on the compensating wage differentials, value expectancy models, health belief model, behavior engineering model and human performance improvement model.

2.1.1 Behavior Engineering Model

The research was driven by Behavior Engineering Model (BEM) proposed by Thomas Gilbert, which is an element of the Human Performance Technology model that focuses on the environmental factors that affect production at work (Gilbert, 1978). The Behavioral Engineering Model was employed to discover impediments to organizational effectiveness, together with staff efficiency, in a structured manner.

The BEM differentiates between an individual's behavioral repertoire and the circumstances in the workplace setting that help or hinder productivity, (Katherine, et al, 2013). Gilbert's HPT model, as per Cox, Frank, and Philibert (2006), demonstrates that effectiveness is a negation of both behavior and outcome.

Furthermore, Gilbert argued that the environmental enhancements, which are primarily the duty of employers because they are responsible for the recruiting, coaching, and terminating people in a sector, provide the most power for improving effectiveness, (Katherine, 2013).

The model also emphasizes the difference between personal and environmental aspects that influence quality and productivity. Environmental issues are the beginning point for investigation because they are the most significant impediments to excellent organizational success and employee productivity, (Chevalier, 2003). In addition, according to Chevalier, (2003) "when the environmental supports are strong, then employees are better able to do what they are expected of them."

Gilbert's HEM concept opines that there are six items that can help people, groups, and organizations perform better (Katherine, 3013). The model provides the framework for evaluating all of the six aspects that determine personal and collective work productivity: data, supplies, motivations, intentions, capability, and experience and expertise (Pershing, 2006). Furthermore, as per Katherine (2006), the assistance provided by the workplace setting is classified into three components that determine achievement: information, resources, and incentives.

According to Katherine (2006), Gilbert splits productivity issues into two categories: environment and individual, with the latter listing three additional variables that are inside the individual and the former listing three additional aspects that are within the workplace setting. The concept subsequently divides causative factors into three categories, each of which has an impact on

effectiveness. Information, instrumentation, and motivation are some of these components.

Katherine (2006), goes on to say that articulating reasonable goals, offering required standards in the workstation, and delivering timely, cognitively relevant evaluation are all factors that influence staff productivity. To complete the assignment, ensure that the necessary supplies, instruments, timeframe, and methods are available. Incentives guarantee that the right mix of financial and non-financial rewards are in place to motivate employees.

The model will be significance to the study since it will guide industries to consider all the six factors that may affect worker effectiveness and address the accordingly. Managers or supervisors should identify various barriers that may hinder employees from working effectively thus low productivity.

2.1.2 Compensating Wage Differentials (CWD)

The study further was guided by Adam Smith**'s** Compensating Wage Differentials (CWD) model. The (CWD) model suggests that tasks with disagreeable properties will require higher wages than tasks with pleasant characteristics (Smith, 1976). It also argues that staff must be paid for unfavorable workplace surroundings, with workplace safety being one of the most significant qualities (Black, *et al.,* 2003). As a result, economists are concerned in the connection between occupational risk and wage rates since it provides insight into how the work force functions (Kniesner *et al.,* 2012), whilst the legislators are focused since the concept is employed to approximate how much individuals appreciate work environment and their wellness.

Compensating wage differentials is therefore, meant to compensate employees for nonwage characteristics of the task. This means that if the work to be accomplished is unpleasant, the organization then, must possibly offer a higher wage to attract and retain workers and otherwise (Thaler & Rosen, 2009).

The theory further, stresses that workers who work in a risk or unsafe areas should be paid highly as compared to those working at safe areas (Rosen, 2009). According to this idea, the presence of economic dynamics assures that enterprises with a terrible workplace environment incur wage surcharges as a mechanism of recruiting and maintaining important human resources.

Workers who are hazard apprehensive will seek positions in firms that guarantee a safe workplace environment, whereas workers who are less averse to hazard will be more inclined to work on activities where the expense of providing safety is higher. According to such an allelic pairing technique, occupations with a greater risk of accidents or diseases should, in isostacy, give compensatory rents beyond the economic optimum pay rate (Rosen, 2009).

The higher the employees detest for risk, the higher the bonus required for moving from a safe to a risky task, and the higher the retainer price (Kniesner *et al.*, 2012). It is proven that risks will minimize worker effectiveness unless he or she is paid for working at a risk environment. Therefore, resources allocated for the same will definitely improve performance, (Rosen, 2009).

2.1.3 Health Belief Model

Furthermore, the study was inspired by the Health Belief Model (HBM), which reveals why individuals find it difficult to develop illness preventive methods or

screening tests for timely identification of illness. The concept also shows that a worker's perception in the risk of sickness, together with their confidence in the efficiency of the proposed health practice or action, might forecast whether or not they would embrace it (Linden, 2013).

Linden (2013) goes on to say that the framework is built on two constituents of health-related phenomena: the need to prevent diseases or recovery, and the belief that a specific medical intervention will minimize or eliminate occupational illnesses. According to Kim (2020), an individual's perspective is typically determined by their awareness of the rewards and constraints associated with health habit.

Linden, (2013; Kim, 2020) states that the framework was constructed from the following six constituents; purported vulnerability (an individual's interpretive perception of the likelihood of developing a sickness or illness), expected intensity (one's sentiments about the seriousness of developing a disease or illness), purported gains (an individual's perception of the efficacy of diverse measures accessible to reduce the danger of health issues), purported impediments (an individual's thoughts on the difficulties in carrying out a prescribed health practice), stimulus to reaction (the trigger that kicks off the judgment process to take a prescribed health activity) and finally, self-efficacy (a measure of an individual's credence in his or her capacity to accomplish a task satisfactorily).

2.2 Empirical Review

2.2.1 Safety Communication and Worker effectiveness

There exists a strong correlation between safety communication and worker effectiveness. A study by Lingard, Pirzadeh, & Oswald confirms this by

concluding that existence of proper communication networks facilitates a conducive working environment sustainable for worker's growth. In their study **"**Talking Safety: Health and Safety Communication and Safety Climate in Subcontracted Construction Workgroups," the authors analyzed the relationship between intragroup communication initiatives and creation of workgroup safety environment which directly affects worker effectiveness (Lingard, Pirzadeh, & Oswald, 2019). For their study to be successful, the authors majored on studying relationship between intragroup communication initiatives and creation of workgroup safety environment Australian construction industry. Where they collected data from 39 construction companies by leveraging social network analysis to examine outcomes of intragroup communication on worker effectiveness in construction sector. Successfully, they observed that workers-workers and supervisors-to worker's communication channels highly increased worker effectives in construction industry. In the study, the researchers noted that intragroup communication particularly supervisors-worker's communication channel increased worker effectiveness since employees are engaged in hazards prevention plans, precaution against threatening hazards, and informed on prevailing safety measures. Empirically, the researchers in this study greatly demonstrated how safety communication in construction industry results to a higher worker effectiveness.

2.2.2 Safety Tutorials and Worker effectiveness

Loosemore and Malouf's study shows the imperative relationship between safety tutorials and worker effectiveness. In their study, they concluded the safety tutorials increase worker effectiveness with a correlation of 1.2 (Loosemore and Malouf, 2019). To research on their study "Safety training and positive safety

attitude formation in the Australian construction industry", they surveyed 228 construction employees in Australia. Keenly, these researchers engaged construction employees who have already undergone safety trainings or tutorials. Despite the study debiting positive relationship between safety tutorials and worker effectiveness, Loosemore and Malouf observed that safety tutorials fails to completely change constructions workers' safety attitudes. Gender, age and education are some the factors that the study's authors observed to interfere with the construction workers' safety attitude despite them being scheduled into relevant safety tutorials. Thus, this study has added vale in the project since it has helped me evaluate China Road and Bridge Construction Company's safety tutorial program against its capacity to feature demographic characteristics; the study researchers noted that failure to feature demographic characteristics, such as age, education, and sex greatly lowers safety tutorials' effectiveness since employees' safety altitude remains low, thus lowering worker effectiveness.

2.2.3 Safety Precaution measures and Worker effectiveness

Zacharatos, Barling, & Iverson's 2005 study supported the positive relationship between safety precaution measures and worker effectiveness. In their study, "High-Performance Work Systems and Occupational Safety," they concluded that safety precaution measures used by Malaysia constructions companies need to be more mechanised. Recommending, the authors advised companies to leverage safety precautions namely safety compliance, safety motivation, safety initiatives, and safety knowledge as they facilitate a conducive working environment consecutively increasing worker effectiveness (Zacharatos, Barling, & Iverson's, 2005). To successfully conduct their study, they gathered data, from 138 organizations in Malaysia, explaining safety precautions measures used by

companies in different sectors. As far as my study on the relationship between ergonomic exercise and worker effectiveness in Kenya construction industry, this study plays a significant role as it gives insight on how organizations safety precaution initiatives relate positively with worker effectiveness.

2.2.4 Safety Resources and Worker effectiveness

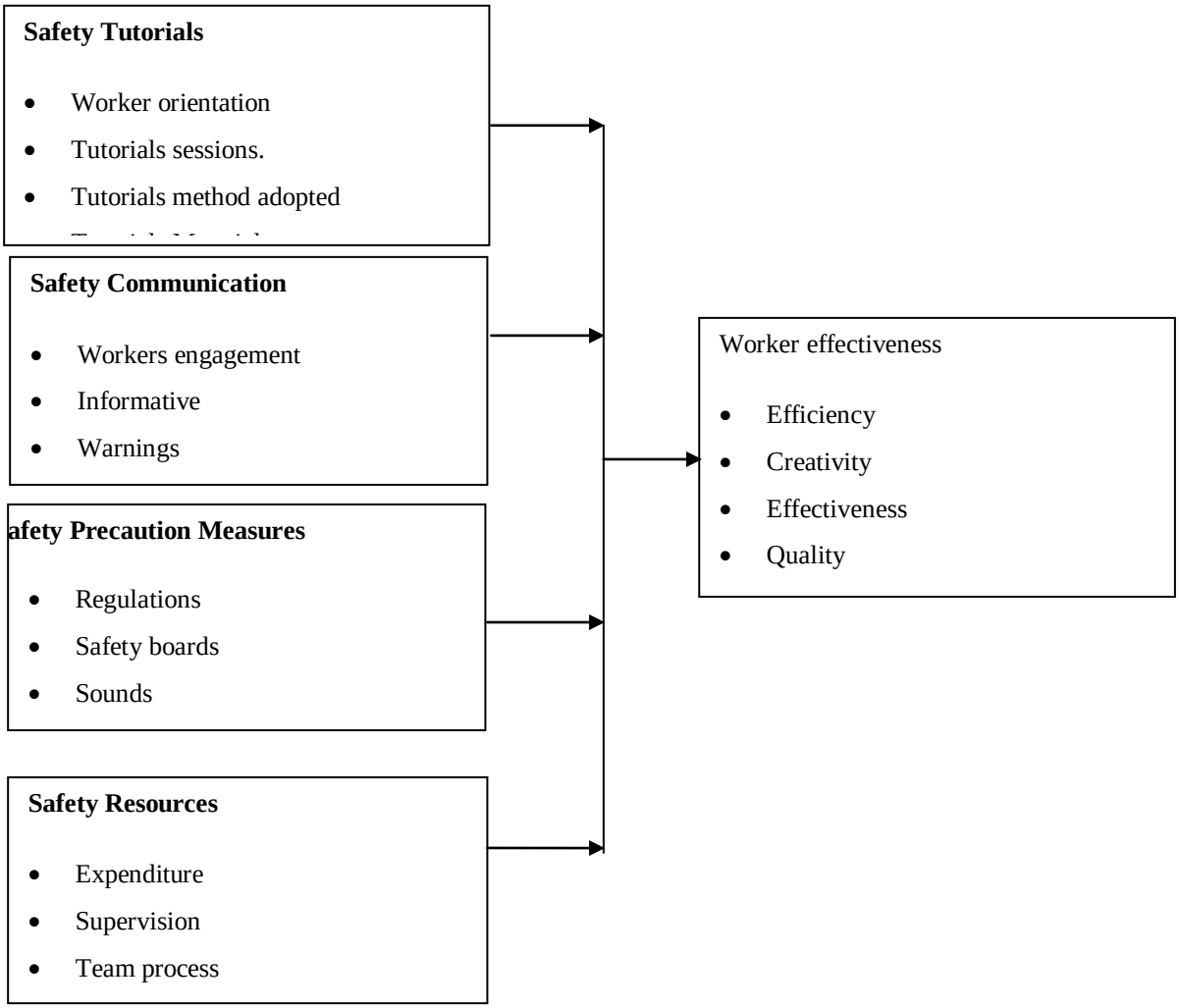
Mitropoulos and Memarian's study justify that present of safety resources highly determines worker effectiveness. Specifically, their study on "Team Processes and Safety of Workers: Cognitive, Affective, and Behavioral Processes of Construction Crews", that safety resources namely teamwork and supervisions plans help in accident preventions thus increasing worker effectiveness (Mitropoulos and Memarian, 2012). The need to prove that majority of United State construction company's occupational facilities overlook the role played by team process and supervision resources motivated them to conduct this study. Hence, the researchers conducted this research by studying the relationship between safety resources used by United States' constructions companies and worker effectiveness. And the researchers concluded that most construction companies in United State play a significant role of increasing worker effectiveness as they used safety resources such as expenditure, OSH infrastructure, and human capital. However, the researches emphasized that constructions companies should purpose to increase worker effectiveness by leveraging an additional safety resource i.e. team process. Without doubt, thus study will significantly help me analyse whether China Road and Bridge Construction company's safety resources contribute towards its current worker effectiveness initiatives.

2.3 Summary of the literature Review

Author	Tittle	Literature Review
Zacharatos, Barling, & Iverson (2005)	High-performance work systems and occupational safety	With reference to Zacharatos, Barling, and Iverson, occupation safety or precaution account for high-performance work safety which lead to high worker effectiveness. They concluded that a few of Malaysia construction companies that leverages occupational safety precaution particularly increase workers' productivity, motivation, and sense of belonging. On the other hands, they points out that construction companies that fails or have minimal safety precautions such as safety compliance, safety motivation, safety initiatives, and safety knowledge records lower worker effectiveness since the available working environment is unconducive.
Lingard, Pirzadeh, & Oswal (2019)	Talking safety: Health and safety communication and safety climate in subcontracted construction workgroups	These authors concluded that ergonomic exercise particularly safety communication nourishes worker effectiveness positively. Affirmatively, they observed intra group communication between workers-workers and supervisor-workers communication create a conducive working environment. However, they noted if safety communication plans that fails to emphasize on hazards prevention plans, risks precautions, and safety measures lowers worker effectiveness.
Mitropoulos, & Memarian, (2012)	Team processes and safety of workers: Cognitive, affective, and behavioral processes of construction crews	The relationship between safety resource and worker effectiveness is positive. In this study, the researchers observed safety resources namely team processes highly increase worker effectiveness as the workers' job satisfaction increases as well. Emphasizing, they observed that most construction companies' safety resources such as supervision and expenditure fails to result to a higher worker effectiveness due to failure to employee team processes resource.
Loosemore, & Malouf (2019)	Safety training and positive safety attitude formation in the Australian construction industry	This study's authors keenly unveiled that safety training impact worker effectiveness positively. In their study to determine why construction industry's worker effectiveness is low despite them having relevant safety training programs, they noted that worker's safety altitude remains low. After a careful engaging the workers being sampled, they found out failure to feature demographic characteristics such as age, sex, and education while designing safety training programs consecutively lowering worker effectiveness.

2.3 Conceptual Framework

The framework depicts the connection between the variables under investigation. The interconnection in the dependent and independent variables is depicted in diagrammatic form in Figure 2.1.



Independent Variables **Dependent Variable**

Figure 2.1: Conceptual Framework

Source: Researcher, 2022

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The research design, study area, target population, study sample, sampling methodology, data collection instruments, data analysis, findings presentation, and ethical issues were all covered in this chapter.

3.2 Research Design

The research was undertaken through a descriptive research design. When data is gathered to characterize people, organizations, places, or occurrences, descriptive research is employed, according to Creswell (2003). Means, frequency tables, percentages, and standard deviations are all examples of descriptive statistics. Self-administered questionnaires were used as the primary data gathering tool in the project. To investigate the effect of ergonomics on worker effectiveness in Kenya's construction sector, data on worker effectiveness, safety communication, safety tutorials, safety preventative measures, and safety resources was gathered. Data was examined through Statistical Package for Social Sciences (SPSS).

3.3 The Target Population

According to Mugenda & Mugenda (2008), the target group should have some observable features that the researcher may use to extrapolate the study's findings. China Road and Bridge Corporation has both male and female workers in various departments which comprises of following levels top management, middle level management and casual laborers. The respondents were selected employees from various levels. According to the China Road and Bridge Corporation Kenya Human Resource Department, (2020), there are 400 employees in Nairobi station thus the target population for the study. The study targeted the Top management,

Middle management and Casual laborers from the various construction sites. The targeted population is as depicted in Table 3.1.

Table 3.1: Target Population

Level	**Population**	**Percentage (%)**
Top management	40	10
Middle management	80	20
Casual laborers	280	70
Total	**400**	**100**

Source*: author* 2022

3.4 Sample Size and Sampling Technique

The sample size used was 200 respondents obtained from the targeted population of the employees operating in China Road and Bridge Corporation Kenya Limited, Nairobi station, 2022. The sample size was obtained through Taro Yamane (1967) sample size formula of a known population of the total target population which is 400 employees. According to Sauders *et al*. (2007), any research investigation should have a sample size of 10% or more of the overall study population in order to be statistically significant. The unit of observation was top management, middle management and casual laborers from each construction site of China Bridge Corporation Kenya Limited 2020.

Yamane (1967) formula was used to calculate sample size

$n = \mathrm{N}/(1 + \mathrm{N} * \mathrm{e}2)$

n= 400/(1+(400*0.05^2)

n= 400/1+400(0.0025) =200

Respondents were chosen using a stratified random sample approach from the three primary classifications of upper executives, middle managers, and manual workers. Since it is efficient in collecting raw data from geographically distant groups, this selection strategy was chosen. The method is also both cost- and time-effective. A sample, on the other hand, is a tiny group drawn from a large population, (Mugenda & Mugenda, 2003). Each strata sampled, the individual sample size was obtained using Probability Proportional to Size (PPS) formulae. The table below shows the sample distribution of the employees:

s= $= \frac{nNi}{N}$ where s= strata sample size, n= sample size Ni= strata population and N=total population

Table 3.2: Sample Size

Level	**Population**	**Sample**	**Percentage (%)**
Top management	40	20	10
Middle management	80	40	20
Casual laborers	280	140	70
Total	**400**	**200**	**100**

Source: *Author,* 2022

3.5 Data Collection Tools

A semi-structured questionnaire was used in this study because it is simple to create and deliver. It also offers a plain and comparatively uncomplicated method to the examination of mindsets, ideals, convictions, and reasons, (Robson, 2012). As a result, the study employed a questionnaire that included the open and closed-

ended questions in order to note quantitative and qualitative data and capture the factual information about the topic. Likert inquiries was included in the instrument to collect data on the effects of ergonomic procedures on staff performance.

According to Kothari (2014), when conducting descriptive research and conducting surveys (which could be sample or census surveys), primary data was acquired by contact questionnaires with respondents.

3.6 Data Collection Procedures

Data collecting procedure, as per Gall, Gall, & Borg (2013), is the action of acquiring raw and unprocessed data that can be transformed into substantive data through the empirical data analysis process. The investigator was first applied for an authorization from NACOSTI in order to gather data from the licensed logistics companies. Primary data was gathered by distributing questionnaires to upper executives, middle managers, and manual employees at each China Road and Bridge Corporation Kenya Limited construction worksite. The research employed a semi-structured questionnaire to collect open-ended and closed-ended replies. Before beginning the research, approval from the university was requested. To maximize the response rate, the surveys was disseminated and retrieved later.

3.7 Pilot Testing

A trial study was conducted by the researcher to pre - test and verify the survey tool (questionnaire). The pilot research was conducted among authorized logistics organizations in Nairobi. The pretesting composed of 5% to 10% of the target sample, according to the thumb rule, (Cooper & Schindler, 2011). A pretest comprises 1-10% of the sample population, as per Render et al (2012). The

pretesting involved 20 participants, or 8% of the total sample population, who were not be incorporated in the ultimate study.

3.7.1 Validity of the Research Instrument

The suitability or extent to which a tool assesses what it is designed to assess (Kothari, 2004) is construct validity, whereas the content validity of the survey tool was verified with the supervisor's professional input. This was accomplished by performing trials to assess the suitability and effectiveness of the questionnaire, so assessing the research's efficiency and providing for required revisions to the data gathering devices. This was accomplished by providing the research tools to the supervisor to review for inconsistency, vagueness, and misspelling. This approach of data collection, according to Kothari (2004), is effective in in-depth investigations and yields reliable results.

3.7.2 Reliability of the Research Instrument

The extent to which a survey tool produces accurate findings after multiple trials is known as dependability, (Mugenda & Mugenda, 2003). As per Kombo and Tromp (2006), dependability means to how constant outcomes are throughout time. Test dependability and internal coherence are two often cited measures of a scale's dependability. Cronbach's Coefficient Alpha was used to evaluate the questionnaire's internal coherence, which was used to assess its dependability. This is a technique of determining the consistency of test results by administering a single test. The research tool's dependability was determined using a 0.7 threshold (Cronbach, 1951).

The questionnaire reliability was conducted using Cronbach's Coefficient Alpha. The questionnaire’s Cronbach's Coefficient Alpha was 0.96, implying a high

internal consistency in the data collected, using a questionnaire from China Road and Bridge Corporation's employees. The Data tab ranks the Cronbach's Coefficient Alpha (0.96) excellent, meaning the research study's finding is reliable. Table 3.3 summarizes the questionnaires'' feasibility.

Table 3.3: Reliability Test

Cronbach's Coefficient Alpha	Number of Items	Interpretation
0.96	**4**	**Excellent**

Source: Author (2022)

3.8 Ethical Consideration

Every participant gave their acceptance informally, and China Road and Bridge Corporation Kenya Limited gave their permission. Every participant gave their consent informally, and the investigator engaged all appropriate organizations. Informal authorization was obtained by asking participants if they are willing to engage in the questionnaire filling process. Only those who were willing were allowed to fill them out. The respondent was notified that involvement in this study is entirely optional, and that withdrawal from it is acceptable. No one was punished if they refuse to partake in the study.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

4.1 Introduction

The section presents and analyses data collected from a sample of 200 participants. Data analysis systematically modifies, organizes, and presents data to produce useful results. Because of the nature of the qualitative data, the study used descriptive statistics to compile the final results. The descriptive analysis included mean, standard deviations, frequencies, and percentages. The study results were presented in tables, graphs, and charts for easy reading and understanding. SPSS v21 was used to analyse the data for descriptive and inferential statistics.

4.2 Response Rate

Out of the 200 questionnaires issued, 190 questionnaires were received back satisfactorily filled giving a 95% response rate. As shown in table 4.1 below.

Table 4.1: Response Rate

Response	Number	Percentage
Respondent	190	95%
Non-Respondent	10	5%
TOTAL	200	100%

Source: Author (2022)

Saunders, Lewis, Thornhill and Bristow (2019) proposed that a response rate of 50% is adequate for data analysis, a rate of 60% is good for data analysis and a response rate of 70% and over is very good for data analysis. This implies that this study's response rate is considered very good for data analysis.

4.3. Demographic Profile of the Respondents

The demographic profile of the respondents is discussed in this section. It outlines the respondents' gender, age distribution, education and the duration the respondent had worked in the company.

Table 4.2: Demographic Profile of the Respondents

Variable	Attribute	No. of respondents	Percentage of respondents (%)
Gender	Male	163	87
	Female	27	13
Age of Respondents	Less than 24 years	81	43
	25-30 years	55	29
	31-40 years	37	19
	Above 40 years	17	9
Education	Certificate	97	51
	Diploma	60	32
	Undergraduate	21	11
	Postgraduate	11	6
Duration Worked	Less than one year	65	34
	1-5 years	74	39
	6-10years	34	18
	Above 10 years	17	9

Source: Author (2022)

From the results shown in table 4.2 above, majority (87%) of the respondents were male while the rest (13%) were female. However, the gender of the study respondents was not balanced. Concerning the age distribution of the respondents, majority (43%) of the respondents were less than 24 years, followed by (29%) those in the 25 – 30 years age bracket, then (19%) those in the 31 – 40 years age bracket and finally the least (17%) belonged to the above 40 years age bracket. Concerning education, majority of the respondents (51%) had attained a certificate, then (32%) those who had attained a diploma, followed by (11%) those who had attained an undergraduate certificate. The least of the respondents (6%) had attained a post graduate certificate. From the findings, it is deduced that the respondents mostly comprised of the youngsters.

On the duration worked, majority (39%) of the respondents had worked in the companies for between 1-5 years, then (34%) those that had worked for less than one year, then followed by (18%) those who had served for 6 – 10 years. The least (9%) of the respondents had served in the organization for above 10 years. From the results, it can be deduced that majority of the respondents had adequate experience and knowledge to address the research questions.

4.4 Descriptive Statistics

The descriptive statistics summarizes the responses on specific variables that were received in relation to each of the four independent variables and on the dependent variable.

4.4.1 Safety Communication

The researcher sought to determine the effect of safety communication on worker effectiveness by the construction companies. The respondents were to tick the degree to which Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5 in relation to safety communication by the construction companies.

Table 4.3: Safety Communication and Worker Effectiveness

Statement	1	2	3	4	5	N	Mean	Std. Dev
The company safety handbooks are readily accessible	15	12	75	72	16	190	3.3263	0.99674
The use of verbal safety communication is much more effective than written	14	12	35	66	63	190	3.8000	1.18277
The management has communicated a clear objective regarding safety	16	19	26	73	56	190	3.7053	1.22905
All the accidents happen are always reported	12	13	61	69	35	190	3.5316	1.07721
The Company encourages suggestions on safety and health improvement	14	13	37	72	54	190	3.7316	1.16226

There is good feedback from management on reported safety Issues	15	19	32	70	54	190	3.6789	1.21153

Source: Author (2022)

From table 4.3 above, the respondents were neutral on whether the company safety handbooks are readily accessible, as shown by (Mean=3.3263). The respondents accepted that the use of verbal safety communication is much more effective than written, as shown by (Mean=3.8000). The respondents also accepted that the management has communicated a clear objective regarding safety, as shown by (Mean=3.7053). The respondents acknowledged that all the accidents that happen are always reported, as shown by (Mean=3.5316). The respondents accepted that the company encourages suggestions on safety and health improvement, as shown by (Mean=3.7316). The respondents also accepted that there is good feedback from management on reported safety Issues, as shown by (Mean=3.6789).These findings were in line with findings from a study by Abuashour and Hassan (2019) who also established that operational workers in the petrochemical oil and gas exploration sector in Malaysia detect a safety communication at the workplace they concentrate their efforts on performing other tasks rather than on the safety measures.

4.4.2 Safety Tutorials

The researcher sought to determine the effect of safety tutorials on worker effectiveness by the construction companies. The respondents were to tick the degree to which Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5 in relation to safety tutorials by the construction companies.

Table 4.4: Safety Tutorials and Worker Effectiveness

Statement	**1**	**2**	**3**	**4**	**5**	**N**	**Mean**	**Std. Dev**

Performing safety tutorials has reduced the cost associated with accidents	9	10	49	86	36	190	3.6842	0.99483
Safety concerns are prioritized in tutorials programs	22	16	42	87	23	190	3.3824	1.16145
The Company provide health and safety introductory tutorials to new workers before commencing work	24	29	55	67	15	190	3.1053	1.14987
Safety tutorials given to employees are adequate in assessing hazards in the workplace	15	23	44	101	7	190	3.3263	1.00730
Employees received safety awareness tutorials before being assigned to work on-site	13	63	57	26	31	190	2.9947	1.18410

Source: Researcher (2022)

From table 4.4 above, the respondents accepted that performing safety tutorials has reduced the cost associated with accidents, as shown by (Mean=3.6842). The respondents were neutral on whether safety concerns are prioritized in tutorials programs, as shown by (Mean=3.3842). The respondents were also neutral on whether the company provide health and safety introductory tutorials to new workers before commencing work, as shown by (Mean=3.1053). The respondents were neutral on whether safety tutorials given to employees are adequate in assessing hazards in the workplace, as shown by (Mean=3.3263). The respondents were neutral on whether employees received safety awareness tutorials before being assigned to work on-site, as shown by (Mean=2.9947). According to David Biggins, Mike Phillips and Peter O'Sullivan (2017) conducting safety tutorials significantly reduces the cost associated with accidents. In their study, the results

suggest that the continues safety tutoring, as well as improving health and safety standards, makes a positive contribution to industrial relations.

4.4.3 Safety Precaution Measures

The researcher sought to determine the effect of safety precaution on worker effectiveness Measures by the construction companies. The respondents were to tick the degree to which Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5 in relation to Safety Precaution Measures by the construction companies.

Table 4.5: Safety Precaution Measures and Worker Effectiveness

Statement	**1**	**2**	**3**	**4**	**5**	**N**	**Mean**	**Std. Dev**
The safety board are well demarcated within the Company	7	8	100	61	14	190	3.3526	.82736
The Company has safety and health rules and procedures	8	53	97	26	6	190	2.8368	.82917
The company safety regulation and approaches are sufficient to prevent accidents from occurring	3	56	99	31	1	190	2.8474	.72219
There is regular safety inspection within the Company	2	65	66	31	26	190	3.0737	1.04665
The Company has a checklist to ensure safety procedures are followed before the start of a job	8	31	76	70	5	190	3.1737	.88272

Source: Author (2022)

From table 4.3 above, the respondents were neutral on whether the safety board are well demarcated within the Company, as shown by (Mean=3.3526). The respondents were also neutral on whether the company has safety and health rules and procedures, as shown by (Mean=2.8368). The respondents were neutral on

whether the company safety regulation and approaches are sufficient to prevent accidents from occurring, as shown by (Mean=2.8474). The respondents were neutral concerning the statement that there is regular safety inspection within the Company, as shown by (Mean=3.0737). The respondents were also neutral on the statement that the company has a checklist to ensure safety procedures are followed before the start of a job, as shown by (Mean=3.1737). These findings were in line with those by David Biggins, Mike Phillips and Peter O'Sullivan (2017) who observed that healthy safety precaution significantly contributed to worker effectiveness therefore reducing the cost associated with accidents.

4.4.4 Safety Resources

The researcher sought to determine the effect of safety resources on worker effectiveness in the construction companies. The respondents were to tick the degree to which Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5 with the statements in relation to Safety Resources by the construction companies.

Table 4.6: Safety Resources and Worker Effectiveness

Statement	1	2	3	4	5	Total	Mean	Std. Dev
The contractors keep accident registers at sites	3	3	83	101	0	190	3.4840	.61486
Are there enough resources for safety inspections at your workplace	10	66	73	41	0	190	2.7632	.84934
Employees are sufficiently compensated in case of an accident at work	4	82	96	6	2	190	2.5684	.61123
Safety supervisors are frequently involved in the administration of drug testing	4	54	93	29	10	190	2.9316	.85484
All employees are provided with personal protective equipment	23	18	62	74	13	190	3.1895	1.10118

The contractor has subscribed to WIBA	1	24	71	91	3	190	3.3737	.74347

Source: Author (2022)

From the findings in table 4.6, the respondents were neutral on the statement that the contractors keep accident registers at sites, as shown by (Mean=3.4840). The respondents were neutral on whether there are enough resources for safety inspections at your workplace, as shown by (Mean=2.7632). The respondents were neutral on whether employees are sufficiently compensated in case of an accident at work, as shown by (Mean=2.5684). The respondents were also neutral on whether the safety supervisors are frequently involved in the administration of drug testing, as shown by (Mean=2.9316). The respondents agreed with the statement that all employees are provided with personal protective equipment, as shown by (Mean=3.1895). The respondents were neutral on whether the contractor has subscribed to WIBA, as shown by (Mean=3.3737). These findings were in agreement with those by Mitropoulos and Memarian (2012) who observed that that safety resources such as teamwork and supervisions plans help in accident preventions thus increasing worker effectiveness.

4.4.5 Employee Effectiveness

The researcher sought to determine the level of employee effectiveness in relation to ergonomic practices at the China Road and Bridge Corporation Kenya Limited. The respondents were to tick the degree to which Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5 with the statements in relation to employee effectiveness.

Table 4.7: Level of Employee Effectiveness

Statement	**1**	**2**	**3**	**4**	**5**	**N**	**Mean**	**Std. Dev**

Creativity at construction sites helps to reduce accidents	4	4	3	81	98	190	4.3947	.80801
Effective engagement with employees on safety measures helps to reduce accidents	0	0	24	59	107	190	4.4368	.70201
Elaborate safety communication has helped to minimize fatalities in construction worksites	4	10	14	102	60	190	4.0737	.88786
Work efficiency has helped to minimize fatalities at construction worksites	2	4	11	97	76	190	4.2684	.75351
The company employees are satisfied with the Company's ergonomic practices	0	4	6	114	66	190	4.2737	.62475

Source: Author (2022)

Table 4.7 above shows the level of employee effectiveness. The findings show that respondents agreed that creativity at construction sites helps to reduce accidents, as shown by (Mean=4.3947). The respondents agreed that effective engagement with employees on safety measures helps to reduce accidents, as shown by (Mean=4.4368). The respondents were in agreement with the statement that elaborate safety communication has helped to minimize fatalities in construction worksites, as shown by (Mean=4.0737). The respondents agreed that work efficiency has helped to minimize fatalities at construction worksites, as shown by (Mean=4.2684). The respondents also agreed that the company employees are satisfied with the company's ergonomic practices, as shown by (Mean=4.2737).

4.5 Inferential Statistics

Regression analysis was undertaken to estimate the relationship between ergonomic practices and worker effectiveness. Regression analysis helps to assess the strength of the relationship and also model the future relationship between the variables. Regression analysis also helps to verify the bearing of ergonomic

practices on worker effectiveness at China Road and Bridge Corporation Kenya Limited.

4.5.1 Model Summary

Regression analysis entails identifying the relationship between the independent and the dependent variables. The technique is used to find the equation that represents the relationship between the variables. Multiple regressions provide an equation that predicts one variable from two or more independent variables. The study adopted multiple regression as follows;

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.323[a]	.105	.085	.30195

a. Predictors: (Constant), Safety Resources, Safety Tutorials, Safety Precaution, Safety Communication

The regression model summary in table 4.7 above shows the extent to which the model predicts changes in the dependent variable. The results show that the coefficient of determination is 10.5% which indicates the proportion of the variation in the worker effectiveness at China Road and Bridge Corporation Kenya Limited that is explained by ergonomic practices adopted by the company as shown by adjusted R Square of .105. This means that 10.5% of the observed variation in the worker effectiveness at China Road and Bridge Corporation Kenya Limited can be explained by the ergonomic practices that include, safety communication, safety tutorials safety precaution measures and safety resources. This shows that the model has a low predictive power.

4.5.2 Analysis of Variance

Analysis of Variance was conducted through F test statistics to ascertain whether the relationship between the study variables is significant or not.

Table 4.8: Summary of ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.972	4	.493	5.406	.000[b]
	Residual	16.867	185	.091		
	Total	18.839	189			

a. Dependent Variable: Worker Effectiveness

b. Predictors: (Constant), Safety Resources, Safety Tutorials, Safety Precaution, Safety Communication

From the findings as shown in table 4.8, out of the total variance of 18.839, the independent variables (Safety Resources, Safety Tutorials, Safety Precaution, Safety Communication) can only explain 1.972. The F-value is given by the Mean Square Regression (.493) divided by the Mean Square Residual (.091), yielding F=5.406. The p-value associated with the F value of 5.406 is very small (0.000) implying that the independent variables are reliable predictors of the dependent variable.

A comparison of the p value from the table which is 0.000 with the alpha value of 0.05, shows that the alpha value is greater than p value which points out that the effect of ergonomic practices on work effectiveness at the China Road and bridge corporation Kenya Limited is statistically substantial at 95% confidence level. This also means ergonomic practices (Safety Resources, Safety Tutorials, Safety Precaution, Safety Communication) can be used to reliably predict the level of work effectiveness at the China Road and Bridge Corporation Kenya Limited.

4.5.3 The Estimated Model

A regression coefficients review was further carried out to ascertain the relationship between the specific independent variables and the dependent variable at 95% confidence level. The results of the analysis are as shown in Table 4.5.

Table 4.9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.854	.369		10.439	000
	Safety Communication	-.100	.044	-.169	-2.280	.024
	Safety Tutorials	.062	.049	.0.91	1.255	.211
	Safety Precaution	.222	.059	.266	3.777	.000
	Safety Resources	-0.28	.074	-0.28	-.381	.704

Source: Author (2022)

The predicted value of worker effectiveness when all other variables are 0 is 3.854. The findings further show that a unit increase in safety communication will reduce the level of worker effectiveness by 0.100. It is also established that a unit increase in safety tutorials will increase the level of worker effectiveness by 0.062. The findings also establish that the level of worker effectiveness increases by 0.222 with a unit increase in Safety Precaution and that a unit increase in safety resources reduces the level of worker effectiveness by 0.28.

The coefficient for Safety Communication (-.100) is statistically significant since its p-value is .024, which is smaller than 0.05. The coefficient for Safety Tutorials

(.062) is not statistically significant at the 0.05 level since the p-value of .211 is greater than .05. The coefficient for Safety Precaution (.222) is statistically significant because its p-value of .000 is smaller than 0.05. The coefficient for Safety Resources (-0.28) is not statistically significant because its p-value of .704 is greater than .05.

The coefficient of determination table above shows that safety tutorials and safety precaution variables have a positive effect on the level of worker effectiveness while safety communication and safety resources have a negative effect. Nonetheless, the four variables have a combined positive effect on the level of worker effectiveness at the at the China Road and Bridge Corporation Kenya Limited.

The results can further be summarized in the following model:

$Y= \beta_0 + \beta_1 X_1 + \beta 2 X_2 + \beta 3 X_3 + \beta 4 X_4 + \varepsilon$

$Y= 3.854 - 0.100 X_1 + 0.062 X_2 + 0.222 X_3 - 0.280 X_4 + \varepsilon$

Where:

Y – Worker Effectiveness (Dependent Variable)

X_1- Safety Communication (Independent Variable)

X_2- Safety Tutorials (Independent Variable)

X_3- Safety Precaution (Independent Variable)

X_4- Safety Resources (Independent Variable)

β_0 - Is the constant of the model

$\beta_1 - \beta 4$ Are the regression coefficients

ε – Stochastic error term estimate

The standardized beta coefficients for Ergonomic practices (Safety Communication, Safety Tutorials, Safety Precaution and Safety Resources) are -.100, .062, .222 and -0.28 respectively which shows that the relationship between ergonomic practices and the level of worker effectiveness is weak.

4.5.4 Research Question Review using the Multiple Regression Mode

Considering the results outlined in the regression table above, we can see that the coefficients of safety communication and safety resources negatively affected the dependent variable while those of safety tutorials and safety precautions positively affected the dependent variable. Only safety communication variable and safety precaution had a statistically significant effect on the worker effectiveness in China Bridge Corporation Kenya Limited. The conclusion therefore is that all the four independent variables affected the dependent variable. However, some variable have a positive affect others have a negative effect as discussed below:

i) How does safety communication influence worker effectiveness in China Bridge Corporation Kenya Limited?

The coefficient of safety communication variable is significant, with a p-value of .024, indicating that a one unit increase in safety communication would result in a -0.100 unit decrease in worker effectiveness in China Road and Bridge Corporation Kenya Limited. The findings are in line with those of Naji, Isha, Alazzani, Saleem and Alzoraiki (2022) who assessed the mediating role of safety communication between safety culture and employee's safety performance and established a partial negative relationship between variables.

The implications of these findings are that if effective safety communication is implemented in the workplace, it leads to reduced worker effectives requiring the organization to reevaluate its safety communication policies. Additionally, this study could provide employers with a better understanding of how to create effective safety communication that can help reduce the risk of workplace accidents, injuries, and other safety risks. Furthermore, the findings from this study inform on safety protocols and regulations, as well as provide employers with guidance on how to effectively communicate safety information to their employees.

ii) How does safety tutorials policy influence worker effectiveness in China Bridge Corporation Kenya Limited?

The coefficient of safety tutorials variable is positive but not significant, with a p-value of .211, indicating that a one unit increase in safety tutorials would result in a .062 unit increase in worker effectiveness in Bridge Corporation Kenya Limited. The findings are in line with those of Segbenya and Yeboah (2022) who examined the effect of occupational health and safety on employee performance in the Ghanaian Construction Sector and establish that the construction sector in Ghanaian lacks regular health and safety induction, orientation and refresher courses for construction workers which causes frequent occupational accidents and diseases affecting workers in the sector.

The implications are that the safety tutorials policy could be used as evidence to support the implementation of more safety tutorials in the organization. Given the finding that the safety tutorials variable is positive but not significant also implies that there is a need to re-evaluate existing safety tutorials policies.

iii) To what extent do safety precaution measures influence worker effectiveness in China Bridge Corporation Kenya Limited?

The coefficient of safety precaution variable is also significant, with a p-value of 0.000, indicating that a one-unit increase in safety precaution would result in a 0.222-unit increase in in worker effectiveness in China Road and Bridge Corporation Kenya Limited. The findings were in line with those of Onoh (2021) who reviewed the effect of safety practices on job performance and established that those safety precautions have a very good effect on their job performance of health care workers.

The implications for these findings are that employers may be able to reduce workplace accidents and injuries by implementing safety measures and those workers may be more productive and effective when a safe working environment is provided. The results of the study could also lead to better workplace policies, procedures, and practices and help employers create a more efficient, productive, and safe work environment for their employees.

iv) How do safety resources influence worker effectiveness in China Bridge Corporation Kenya Limited?

The coefficient of safety resources variable is not significant, with a p-value of 0.704, indicating that a one unit increase in safety resources would result in a -0.28 units decrease in worker effectiveness in China Road and Bridge Corporation Kenya Limited. The findings differ with those of Yang, Kim and Seongseok (2021) who reviewed the effectiveness of safety cost budgeting for apartment construction

in South Korea and established that allocating funds to ensure the health and safety of your employees enhanced their performance.

The implications of these findings are that companies should periodically review their safety resources to ensure that they are being translated into safe and effective employee environment to prevent waste of resources. This could lead to improved productivity, quality of work, and employee morale. Companies should also consider the cost-benefit analysis to determine if the investment in safety resources is worth the potential increase in worker effectiveness. Additionally, companies should ensure that safety resources are regularly updated and maintained to ensure optimal worker effectiveness.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS, RECOMMENDATIONS

5.1 Introduction

This Chapter presents in summary, the findings from data analysis, conclusions made and the recommendations for policy and practice.

5.2. Summary of Findings

5.2.1 Effect of Safety Communication on Worker Effectiveness

The study descriptive analysis established that at the China Road and Bridge Corporation Kenya Limited, the safety handbooks are readily accessible moderately and that the use of verbal safety communication is much more effective than written. The research also establishes that the management has communicated a clear objective regarding safety and that all the accidents that happen are always reported. The researcher also establishes that the China Road and Bridge Corporation Kenya Limited encourages suggestions on safety and health improvement and that there is good feedback from management on reported safety Issues.

The study regression analysis shows that safety communication has a negative but significant effect on worker effectiveness at the China Road and Bridge Corporation Kenya Limited as shown by a p-value of 0.024. The findings are similar to those of Abuashour and Hassan (2019) who also established that operational workers in the petrochemical oil and gas exploration sector in Malaysia detect a safety communication at the workplace they concentrate their efforts on performing other tasks rather than on the safety measures. The findings however differ with those of Naji et al (2022) who assessed the mediating role of safety communication between safety culture and employee's safety performance in

petrochemical industry in Malaysia and found that safety communication partially mediates the relationship between safety culture and safety performance hence affecting positively the effectiveness of employees. The difference might have resulted from the measurement of the study variables.

5.2.2 Effect of Safety Tutorials on Worker Effectiveness

The study descriptive analysis established that performing safety tutorials has reduced the cost associated with accidents at the China Road and Bridge Corporation Kenya Limited. The researcher also established that safety concerns are prioritized in tutorials programs and that the company provides health and safety introductory tutorials to new workers before commencing work. The study further established that safety tutorials given to employees are adequate in assessing hazards in the workplace and also that, employees at the China Road and Bridge Corporation Kenya Limited received safety awareness tutorials before being assigned to work on-site.

The study regression analysis shows that safety tutorial policy has a positive effect on worker effectiveness but the effect is not significant as shown by a p-value of 0.211. The findings imply that when safety tutorials are increased by one unit, worker effectiveness at the China Road and Bridge Corporation Kenya Limited improves by 0.062. A study by Segbenya and Yeboah (2022) on the effect of occupational health and safety on employee performance in the Ghanaian Construction Sector also found similar results.

5.2.3 Effect of Safety Precaution on Worker Effectiveness

The study's descriptive analysis established that at the China Road and Bridge Corporation Kenya Limited, the safety board is well demarcated within the

Company. The study also found that the company has safety and health rules and procedures and that the company safety regulation and approaches are sufficient to prevent accidents from occurring. The study also found that there is regular safety inspection at the China Road and Bridge Corporation Kenya Limited and that the company has a checklist to ensure safety procedures are followed before the start of a job.

Further, the regression analysis established that the safety precaution variable is the most influential variable for worker effectiveness. The researcher further established that the safety precaution variable positively and significantly affects worker effectiveness as shown by a p-value of 0.000. A study Onoh (2021) that examined the effect of safety practices on job performance found that safety precautions positively and significantly influenced job performance of health care workers.

5.2.4 Effect of Safety Resources on Worker Effectiveness

The study's descriptive analysis established that the contractors keep accident registers at sites and that there are enough resources for safety inspections at the company workplace. The study established that employees at the company are sufficiently compensated in case of an accident at work. It can also be established from the findings that the safety supervisors are frequently involved in the administration of drug testing. The study established that all employees at the China Road and Bridge Corporation Kenya Limited are provided with personal protective equipment and that the contractor has subscribed to WIBA.

The study's regression analysis revealed that safety resources negatively affected the worker effectiveness at the China Road and Bridge Corporation Kenya Limited

as shown by a standardized beta coefficient of -0.28. The researcher further established that the relationship between safety resources and worker effectiveness is not significant as shown by a p-value of 0.704. These findings differ with those of Yang et al. (2021) whose study on apartment construction in South Korea found that allocating funds to ensure the health and safety of your employees enhanced their performance.

5.2.5 Level of Employee Effectiveness

The study's descriptive analysis established that the creativity at the construction sites helps to reduce accidents at the China Road and Bridge Corporation Kenya Limited. The study also established that effective engagement with employees on safety measures helps to reduce accidents. It can also be established from the findings that elaborate safety communication has helped to minimize fatalities in construction worksites. It was also established from the findings that work efficiency has helped to minimize fatalities at construction worksites and that the company employees are satisfied with the company's ergonomic practices.

5.3. Conclusions of the Study

5.3.1 Safety Communication

The findings show that safety communication has a negative and significant effect on worker effectiveness at the China Road and bridge corporation Kenya Limited. This implies that a unit increase in safety communication will reduce the level of worker effectiveness.

5.3.2 Safety Tutorials

The study established that safety tutorials policy has a positive effect on worker effectiveness at the China Road and bridge corporation Kenya Limited. The

relationship between safety tutorials and worker effectiveness is not significant. This implies that a unit increase in safety tutorials will result to an increase in the level of worker effectiveness.

5.3.3 Safety Precaution

The study revealed that safety precaution has a positive and significant effect on worker effectiveness at the China Road and Bridge Corporation Kenya Limited. This implies that a unit increase in safety precaution will lead to an increase in the level of worker effectiveness.

5.3.4 Safety Resources

The study established that safety resources have a negative effect on the level of on worker effectiveness at the China Road and Bridge Corporation Kenya Limited. The relationship between safety resources and worker effectiveness is not significant. These findings imply that a unit increase in safety resources result to a decrease in the level of worker effectiveness.

5.4 Recommendation for Policy and Practice

5.4.1 Safety Communication on worker effectiveness

Given that safety communication has a negative and significant effect on worker effectiveness at the China Road and Bridge Corporation Kenya Limited, the organization needs to re-evaluate its safety communication policies to help create a safe work environment and encourages workers to make smart decisions. The organization should ensure its workers are properly informed about potential hazards so that they can take appropriate action to protect themselves and their colleagues. Additionally, having an effective safety communication system in place will help reduce accidents and injuries in the workplace.

5.4.2 Safety Tutorials on worker effectiveness

The study highly recommends the use of tutorials to improve worker effectiveness. Tutorials are an excellent way to train and orient workers on how to use new systems or processes, as well as to refresh their understanding of existing systems or processes. Tutorials can also provide workers with a comprehensive understanding of the overall workflow, allowing them to see how their individual tasks fit into the big picture. This can help workers become more efficient and effective in their roles, as well as help them to identify and address issues quickly. Overall, the use of tutorials can be an invaluable tool for increasing worker effectiveness.

5.4.3 Safety Precaution on worker effectiveness

It is highly recommended implementing safety precautions in the workplace as they have been proven to increase worker effectiveness. Safety precautions provide workers with the confidence and knowledge that their safety is being protected, allowing them to focus more on their job tasks. By implementing safety precautions, workers have the opportunity to have a greater level of job satisfaction, as well as improved morale and motivation. Additionally, safety precautions reduce the risk of accidents and injuries, resulting in fewer lost days of work and improved overall productivity.

5.4.4 Safety Resources on worker effectiveness

Given that safety resources negatively affect worker effectiveness at the China Road and Bridge Corporation Kenya Limited, the organization needs to re-evaluate its investment in safety resources to ensure that they are being translated into safe and effective employee environment to prevent waste of resources. The safety

resources enable workers to access information on how to stay safe on the job and be aware of potential risks. This allows them to be more proactive in their safety practices, making them more effective in their work. Additionally, Safety Resources can provide workers with the necessary tools and resources to ensure that all safety protocols are followed.

5.5 Suggestions for Further Studies

The study recommends that further studies be done on ergonomic practices on worker effectiveness in other construction companies in Kenya, especially private corporations for benchmarking purposes. Since ergonomic practices accounts for 10.5% of changes in worker effectiveness, more research should be done to determine the other factors that account for the rest 89.5%. Another study can also be done to test other Ergonomic strategies such as health safety, workplace arrangement, wellness, and workers' involvement and their effect on the worker effectiveness.

REFERENCES

Adams, J. S. (1965). *Inequity in social exchange*. In L. Berkowitz (Ed.), advances in experimental psychology. New York: Academic Press.

Adan, E. (2004). *Factors affecting Safety on Construction Projects. Department of Civil*.

Alfred, G., & Naim, A. M. (2015). A Review on the Effectiveness of Safety Tutorials Methods for Malaysia Construction Industry. *Journal Teknologi (Sciences & Engineering)*, 74:2, 9–13.

Armstrong, M. (2006). *A Handbook of Human Resource Management Practice 10th ed*. London: Kogan Page Limited.

Aswathappa, K. (2001). *Organizational Behaviour*. Mumbai: Himalaya Publishing House.

Bennis, W. G. (1999). *Reinventing Leadership: Strategies to Empower the Organization*. NewYork: Morrow/Avon.

Berkowitz, L. (1965). *Advances in experimental social psychology*. New York: Academic Press Inc.

Black, Dan A. and Thomas J. Kniesner (2003): "On the Measurement of Job Risk in Hedonic Wage Models," *Journal of Risk and Uncertainty, Journal of Risk and Uncertainty*, 27(3): 205-220.

Boles, M., Pelletier, B., & Lynch, W. (2004). The relationship between health risks and work productivity. *Journal of Occupational and Environmental Medicine*, 46(7), 737-745.

Buchholz, K. (1982). *Biotechnology in Europe, Keynotes FAST-Biosociety workshop*. Dechema: Frankfurt.

Cameron, K. S. (2016). Exploring the Relationship between Organizational Virtuousness and Performance. *American Behavioural Scientists*, 47, 766-790.

Chan, D. W., & Aghimien, D. O. (2022). Safe working cycle: is it a panacea to combat construction site safety accidents in Hong Kong? *Sustainability*, *14*(2), 894. https://www.mdpi.com/2071-1050/14/2/894

Cox, J., Blake, F., & Philibert, N. (2011). Valuing the gilbert model: An exploratory study. *Performance Improvement Quarterly, 19*(4), 23-41.

Creswell, J. W. (2003). *Research design*: Qualitative, quantitative and mixed method approaches 2nd ed. London: Sage

Cronbach, L. J. (2014). *Coefficient alpha and the internal structure of tests*. Psychometrika, Vol. 22(3), pp. 297-334

De Vos, A., & Meganck, A. (2008). What HR managers do versus what employee's value: Exploring both parties' views on retention management from a psychological contract perspective. *Personnel Review*, 38(1), 45-60.

Endkwa, D. O. (2013). *Perceived Influence of Occupational Health and Safety Practices* on Job Satisfaction among Employees in Chemelil Sugar Company Limited, Kenya.

Enshassi, A. (2007). *Factors affecting labor productivity in building projects. Journal of Civil Engineering and management*, 245-254.

Folger, R., & Cropanzano, R. (1994). Organizational justice and human resource management. Thousands Oak: *Sage Publications*.

Fomenky, N. F. (2015, January). The impact of motivation on employee performance. In *Global conference on business & finance proceedings* (Vol. 10, No. 1, p. 332). Institute for Business & Finance Research.

GCR. (2022). Kenyan workers' strike halts Chinese railway project. *Global Construction Review.*

Gilbert, T. F., (1996). Human Competence: Engineering Worthy Performance: *International Society for Performance Improvement.* Tribute Edition. New York: McGraw-Hill, Silver Spring, MD

Goetzel, R. Z., & Ozminkowski, R. J. (2006). *What's holding you back: why should (or shouldn't) employers invest in health promotion programs for their workers?* N.C> Med. J , 67,428-430.

Gomez, L. R., & Mejia, D. B. (1995). Managing Human Resources. ISBN 013185349X, 9780131853492: *Prentice Hall International*.

Gordon, G. G. (1965). *The relationship of satisfiers and dissatisfiers to productivity, turnover and morale, American Psychologist*. 20, 499-502.

Greenberg, J. (1989). Cognitive reevaluation of outcomes in response to underpayment inequity. *Academy of Management Journal*, 32(1), 174-184.

Herzberg, F. (1957). *The motivation of work*. New York: Wilsey.

Herzberg, F., Mausner, B. Y., & Snyderman, B. B. (1966). *The motivation to work (2nd e*d.). New York, NY: John Wiley and Sons.

International Society for Performance Improvement. (2010) What is HPT? Retrieved from http://www.ispi.org.

John, S., & Lukumon, O. (2013). Strategies for Effective Management of Health and Safety in Confined Site Contruction. *Australasian Journal of Construction Economics and Building*, 13 (4) 50-64.

Katherine, C.; Chair, K; Burton, M; Evans, M & Lockee, B, (2013) An Exploration on the Use of Gilbert's Behavior Engineering Model to Identify Barriers to Technology Integration in Public School*; Virginia Polytechnic Institute and State University*.1-8.

Kniesner, Thomas J., W. Kip Viscusi, and James Ziliak, 2010. "Policy relevant heterogeneity in the value of statistical life: New evidence from panel data quantile regressions," *Journal of Risk and Uncertainty.* 40 (1): 15-31.

Kniesner, Thomas J., W. Kip Viscusi, Christopher Woock, and James P. Ziliak, 2012. "The Value of a Statistical Life: Evidence from Panel Data," *The Review of Economics and Statistics.* 94 (1): 74-87.

Kothari, C. (2004). Research Methodology: Methods and Techniques (2nd ed.). *New Delhi: New Age International*.

Kothari, C. R (2010) *Research Methodology*: Methods and Techniques, second revised Edition, New Age International (P) Ltd Publishers New Delhi.

Laurence, R. M. (2000). *Managing Job Stress: An Employee Assistance/Human Resource Management Partnership, Personnel*. Review, vol 24 Iss:1, pp.41-50.

Lingard, H., Pirzadeh, P., & Oswald, D. (2019). Talking safety: Health and safety communication and safety climate in subcontracted construction workgroups. *Journal of construction engineering and management*, *145*(5), 04019029.

Loosemore, M., & Malouf, N. (2019). Safety training and positive safety attitude formation in the Australian construction industry. *Safety science*, *113*, 233-243.

Martínez-Rojas, M., Soto-Hidalgo, J. M., Martínez-Aires, M. D., & Rubio-Romero, J. C. (2022). An analysis of occupational accidents involving national and international construction workers in Spain using the association rule technique. *International journal of occupational safety and ergonomics*, *28*(3), 1490-1501. https://www.tandfonline.com/doi/abs/10.1080/10803548.2021.1901433

Masu, S. (2006). *An Investigation into the causes and impact of Resource mix practices the performance of construction firms in Kenya*.

Mattke, S., Liu, H., Caloyeras, J., Huang, C. Y., Van Busum, K. R., Khodyakov, D., & Shier, V. (2013). *Workplace wellness programs study*. Rand health quarterly, 3(2).

Mbiti, T. K. (2008). *A System Dynamics Model of Construction Output in Kenya*, PhD Thesis. School of Property and Construction Project Management.

Mbuya, E., & Lema, N. M. (2004). Towards development of a framework for integration of safety and quality management techniques in construction

projects delivery process. *Approval of the Institute of Graduate Studies and Research*.

Mhurchu, C. N., Aston, L. M., & Jebb, S. A. (2010). *Effects of worksite health promotion interventions on employee diets: a systematic review*. BMC public health, 10(1), 62.

Michael, O. N. (2011). Kenya: A Building Regulatory System Gone Haywire. *Architectural Association of Kenya Newsletter journal*, pg 20-22.

Miner, J. B. (1980). Theories of organizational behavior. Hinsdale, III : Dryden.

Mitropoulos, P., & Memarian, B. (2012). Team processes and safety of workers: Cognitive, affective, and behavioral processes of construction crews. *Journal of Construction Engineering and Management*, *138*(10), 1181-1191.

Mohammed, S. (2003). Scorecard approach to benchmarking organizational safetey culture in construction. *Construction Engineering & Management*, 129(1): 80-88.

Muchungu, P. (2012). *The contribution of human factor in the performance of construction firms in Kenya*. Unpublished PhD Thesis,Nairobi: University of Nairobi .

Mugenda, O. M., & Mugenda, A.G. (2008). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi. Acts Press.

Naji GMA, Isha ASN, Alazzani A, Saleem MS & Alzoraiki M (2022). Assessing the Mediating Role of Safety Communication Between Safety Culture and Employees Safety Performance. Front. Public Health 10:840281. doi: 10.3389/fpubh.2022.840281.

Namara, N., & Mbera, Z. (2016). The Role of Occupational Health and Safety Measures in Successful Completion of Construction Projects in Rwanda: Evidence from Nyarutarama Property Developers Ltd. *European Journal of Business and Social Sciences,* Vol. 5, No. 01, April 2016.

Natarajan, K. (1993). *Principles of management*. Delhi: Himalaya Publishing House.

Negash, F. (2022). Appraising Legal and Institutional Framework to Implement OSH Rule in Ethiopian Construction Industry: Prospects and Constraints. Available at SSRN 4196079.

Ngechu, M. (2006). Understanding the research process and Methods: *An Introduction. Nairobi: Star bright Services*

Nyakego, J. B. (2014). Impact of Prosecution on Compliance to Requirements of Safety and Health in Workplaces in Kenya.

Ojha, A., Seagers, J., Shayesteh, S., Habibnezhad, M., & Jebelli, H. (2020). Construction safety training methods and their evaluation approaches: a systematic literature review. In *Proceedings of the 8th International Conference on Construction Engineering and Project Management, Hong Kong* (pp. 188-197).

OSHA, P. (2006). *Occupational Safety and Health Administration*. US Department of Labour.

Paul, K. (2013). *The effect of office concepts on worker health and performance: a systematic review of the literature*. London W1T 3JH: Taylor & Francis.

Paul, T. M. (2003). *Contemporary Ergonomics.* United Kingdom: WS Atkins.

Pershing, J. A. (2006). Handbook of human performance technology principles, practices, and potential. Third Edition: John Wiley & Sons, Inc.

Peter, U. O., & John, U. E. (2016). Building Construction Workers' Health and Safety Knowledge and Compliance on Site. *Journal of Safety Engineering,* 5(1): 17-26.

Pheng, L. S., & Hou, L. S. (2019). The economy and the construction industry. In Construction quality and the economy (pp. 21-54). Springer, Singapore.

Rihana, E.-n., & Hossan, H. (2015). Development of a Safety Performance Index for Construction Projects in Egypt. *American Journal of Civil Engineering and Architecture*, Vol. 3, No. 5, 182-192.

Robson, C. (2002). Real World Research: *A Resource for Social Scientists and Practitioner Researchers*. Oxford: Blackwell

Salkind, N. J. (2010). Encyclopedia of Research Design. California: SAGE Publications,Inc.

Samuel, O. O. (2014). A Study of Safety Management in the Nigerian Construction Industry. *IOSR Journal of Business and Management (IOSR-JBM*), Volume 16, Issue 3. Ver. V

Saunders, M.N., Lewis, P. and Thornhill, A. (2007) Research Methods for Business Students, Pearson Education India. (Mar. 2014), 1-10.

Schultz, A. B., & Edington, D. W. (2007). Employee health and presenteeism: a systematic review. *Journal of occupational rehabilitation*, 17(3), 547-579.

Segbenya M, & Yeboah E. (2022). Effect of Occupational Health and Safety on Employee Performance in the Ghanaian Construction Sector. Environ Health Insights. 2022 Nov 19; 16: 11786302221137222. Doi: 10.1177/11786302221137222. PMID: 36419673; PMCID: PMC9677299.

Servant, J. C. (2005). China's trade safari in Africa. *African Renaissance*, *2*(4), 58-63.

Susanne, T. B., & Llandis, G. B.-P. (2013*). Improving safety culture: the impact of the construction induction tutorials on the construction industry in Western Australia*. Edith Cowan University Research Online.

Vink, P., Koningsveld, E. A., & Molenbroek, J. F. (2006). Positive outcomes of participatory ergonomics in terms of greater comfort and higher productivity. *Applied ergonomics*, 37(4), 537-546.

Wachira, I. N. (2009). Labour Productivity in the Construction industry in Kenya. *International Symposium on Customer Satisfaction-A Focus for Research and Practice*, pp 1-9.

Wainaina, G. M., & Mutogoh, H. (2022). Motivation in Sharing Economy-Based Service Triads: Operations of a Ride-Sharing Company. *Journal of Service Science and Management*, *15*(3), 164-181. https://www.scirp.org/journal/paperinformation.aspx?paperid=118101

Wilcox, S., Stringfellow, B., Harris, R., & Martin. (2000). *Management and productivity. Washington*: Transportation research board.

Won, D., Hwang, B. G., & Chng, S. J. (2021). Assessing the effects of workforce diversity on project productivity performance for sustainable workplace in the construction industry. Sustainable Development, 29(2), 398-418.

Yang, K., Kim, K. & Seongseok G. (2021). Towards Effective Safety Cost Budgeting for Apartment Construction: A Case Study of Occupational Safety and Health Expenses in South Korea. *Sustainability* 13, no. 3: 1335. https://doi.org/10.3390/su13031335.

Yap, J. B. H., & Lee, W. K. (2020). Analysing the underlying factors affecting safety performance in building construction. Production Planning & Control, 31(13), 1061-1076.

APPENDICES

Appendix I: Letter of Introduction

Dear Valued Participant,

I am a Kenyatta University postgraduate student pursuing a master's degree. I'm presently gathering information for my research project, which aims "***to investigate the influence of ergonomic practices on employee performance in China Bridge Corporation Kenya Limited (C.B.C).***" In light of the foregoing, I respectfully request your participation in completing the questionnaires or providing feedback to the questions that I will present in the questionnaires appended herewith. Please read the instructions carefully and react appropriately to the questions as directed. This will assist me in gathering the essential data for analysis and, as a result, achieving the research's objectives.

The data you submit will be kept private and will only be used for this research and nothing else.

Yours sincerely,

Enock A. Ong'uti

Student Researcher

Appendix II: Questionnaire

Part A: Demographic Data

Please fill out the following particulars:

1. What is your gender?

   Male [ ] b) Female [ ]

2. What is your age group?

   Less than 24 years [ ] b) 25-30 years [ ]

   31-40years [ ] d) Above 40 years [ ]

3. Indicate your highest achievement of Education.

   Certificate [ ] b) Diploma [ ]

   Undergraduate [ ] d) Postgraduate [ ]

4. Duration you have served in the construction companies.

   Less than one year [ ] b) 1-5 years [ ]

   6-10years [ ] d) Above 10 years [ ]

Part B: Safety Communication

5. The statements below relate to safety communication by the construction companies. Using the key (Where: Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5). Tick the degree to which you agree with the assertions in reference to safety communication.

Statement	**1**	**2**	**3**	**4**	**5**
The company safety handbooks are readily accessible					
The use of verbal safety communication is much more					

effective than written					
The management has communicated a clear objective regarding safety					
All the accidents happen are always reported					
The company encourages suggestions on safety and health improvement					
There is good feedback from management on reported safety Issues					

6. How do you communicate safety issues to employees in your organization?.....
.....
.....

Part C: Safety Tutorials

7. The statements below relate to safety tutorials by the construction companies. Using the key (Where: Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5). Tick the degree to which you agree with the assertions in reference to safety tutorials.

Statement	**1**	**2**	**3**	**4**	**5**
Performing safety tutorials has reduced the cost associated with accidents					
Safety concerns are prioritized in tutorials programs					
The company provide health and safety introductory tutorials to new workers before commencing work					
Safety tutorials given employees is adequate to enable assess hazards in the workplace					

Employees received safety awareness tutorials before been assigned to work on site					

8. What are some of the safe tutorials programs you provided that are provided in your company?

   .....

   .....

   .....

   .....

Part D: Safety Precaution Measures

9. The statements below relate to safety precaution measures by the construction companies. Using the key (Where: Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5). Tick the degree to which you agree with the assertions in reference to safety precaution measures.

Statement	**1**	**2**	**3**	**4**	**5**
The safety board are well demarcated within the company					
The company has safety and health rules and procedures					
The company safety regulation and approaches are sufficient to prevent accidents occurring					
There is regular safety inspection within the company					
The company has a checklist to ensure safety procedures are followed before the start of a job					

10. What are some of the issues encountered by the executives in making sure that workers have a safe and healthy workplace condition?

    .....

    .....

    .....

    .....

Part E: Safety Resources

11. The statements below relate to safety resources by the construction companies. Using the key (Where: Strongly Disagree -1; Disagree-2; Neutral-3; Agree-4; Strongly Agree -5). Tick the degree to which you agree with the assertions in reference to safety policies.

Statement	**1**	**2**	**3**	**4**	**5**
The contractors keep accident registers at sites					
Are there enough resources for safety inspections at your workplace					
Employees are sufficiently compensated in case of accident at work					
Safety supervisors are frequently involved in the administration of drug testing					
All employees are provided with personal protective equipment					
The contractor has subscribed to WIBA					

12. Do you think company's safety budget has catered for all ergonomic issues?.....
.....
.....

Part F: Worker effectiveness

13. Kindly indicate the magnitude to which you grade the following statements regarding worker effectiveness CRBC on a Likert scale 1 to 5. Whereby 5= Very high magnitude, 4= high magnitude, 3= Moderate magnitude, 2 = low magnitude, 1= Very low magnitude.

Statement	**1**	**2**	**3**	**4**	**5**
Creativity at construction sites helps to reduce accidents					
Effective engagement with employees on safety measures helps to reduce accidents					
Elaborate safety communication has helped to minimize fatalities in construction worksites					
Work efficiency has helped to minimize fatalities at construction worksites					
The company employees are satisfied with the company ergonomic practices					