

Impact of Institutional Frameworks on Safety and Health in Construction Sites: *Enhancing Safe Practices in Nairobi*

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Received on 8th February, 2024; Received in revised form 15th March, 2024; Accepted on 5th April, 2024.

Abstract

In Kenya, the enforcement of safety and health regulations at construction sites presents a significant challenge. As a pivotal sector for the nation's economic growth, construction not only generates employment and drives infrastructure advancements, but also inevitably brings increased safety and health risks. Despite governmental efforts to strengthen safety and health standards in Kenyan construction sites, accidents continue, resulting in injuries and fatalities. This study examines the effectiveness of regulatory institutions in enforcing compliance with safety and health practices on Kenyan construction sites. Prior evidence, largely anecdotal, indicated suboptimal performance by these institutions, a claim yet to be substantiated empirically. Therefore, this research sought to provide empirical validation. The study surveyed 896 registered construction sites in Nairobi. A random sample of 210 sites were chosen using simple random and convenience sampling for comprehensive quantitative and qualitative analyses. Data was gathered through structured questionnaires and observation checklists, with a response rate of 78.4%. Findings indicate that regulatory institutions significantly influence adherence to safety and health practices, albeit with a compliance rate of only 62%. It is concluded that safety and health regulation compliance at Kenyan construction sites is inadequate. Inefficiencies within regulatory bodies are identified as a key factor in this shortfall. The study advocates for a policy overhaul by these institutions to more closely align with and effectively address the present safety and health realities in Kenya's construction sector.

Keywords: Safety and health, construction sites, regulation, regulatory institutions, Nairobi city county

INTRODUCTION

The International Labour Organization (ILO) estimates that at least 60,000 fatal accidents occur on construction sites globally each year, equating to one fatal incident every 10 minutes (Lingard, 2013). The prevalence of such accidents is compounded by the nature of construction work: the mobility of facilities, the multiplicity of agencies involved, the use of ad-hoc labor, a diverse array of contractors, and the industry's inherent characteristics (Jaafar et al., 2018). In Kenya's construction sector, project development is the collective responsibility of four primary stakeholder groups: the client/owner, consultants, contractors, construction workers and the approving entities or the regulatory bodies (Ndumia, 2015). Construction sites are dynamic environments, with resources and personnel in constant flux (Li et al., 2022). Construction workers face risks that are higher than those in other industries, making their occupational safety

critical (Berhanu, 2019). As the ILO stipulates, a fundamental human right for every worker is the assurance of their ability to return home in the same state of health as when they started their day (James, 2011). On-site, workers engage in a variety of activities, each carrying its own set of inherent risks (Purohit et al., 2018). They face direct risks associated with their tasks, as well as indirect risks from the activities of coworkers and the operation of heavy machinery (Hagelskjaer, 2014).

According to Hämäläinen et al. (2006), the fatality rate in the construction industry of developing economies is likely to surge with the increasing rate of urbanization. The legal and institutional frameworks governing construction safety and health in many of these countries have been largely ineffective, contributing significantly to the industry's shortcomings (Ndumia, 2015). Given

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these adverse effects impacting the construction industry, the regulation of safety and health practices emerges as a matter of pressing concern for all sector stakeholders.

The United Nations Department of Economic and Social Affairs (UN DESA) (2018) forecasts that by 2050, over 68% of the world's population will reside in urban areas. This urban population boom, driven largely by rural-to-urban migration, will necessitate the development of more infrastructure and high-rise buildings to accommodate the burgeoning numbers. Correspondingly, Nairobi's population is anticipated to swell to over 6 million by 2030, a significant increase from its current figure of 4.3 million (KNBS, 2019). This projection underscores the urgent need for robust and responsive safety and health regulations in construction to manage the impending growth effectively.

Construction site safety and health is often a disregarded aspect during the construction phase of projects (Soltanzadeh, 2022). Accidents or incidents of ill-health on construction sites not only affect the workers' livelihood, but also impede project progression and tarnish the contractor's reputation (Ismail et al., 2022). In Kenya, the high unemployment rate coupled with minimal barrier to entry has driven many young people, often poor and unskilled, into the construction industry where they adopt the prevailing safety and health practices (Mitullah & Wachira, 2003).

Despite the enactment of the Occupational Safety and Health Act 2007, Kemei et al. (2015) note that the Kenyan construction industry reports approximately 64 fatalities per 100,000 construction workers annually. By comparison, the United Kingdom maintained an average fatal accident rate of 1.31 per 100,000 workers between 2014 and 2018 and reported 1.61 fatalities per 100,000 construction workers in 2019 (HSE, 2019). In China, there were 4.5 deaths per 100,000 construction industry workers in 2018 (CSY, 2019), while the US construction industry had a fatal accident rate of 9.5 per 100,000 workers, and South Africa recorded 25.5 fatalities per 100,000 workers (Kemei, 2019). Therefore, when compared to these countries, the Kenyan construction sector experiences a disproportionately high number of fatalities relative to its investment in the industry. This is graphically represented in **Figure 1**.

In Kenya, as in many other developing economies, the sluggish state of the formal economy has funneled numerous workers into the informal sector, including the construction industry, which has become one of the most significant employment sectors (Mitullah and Wachira, 2003; KNBS, 2019). Given this employment trend, ensuring workplace safety for construction workers is vital, as stipulated by the Constitution of Kenya (GoK, 2010). The GoK (2010) lays the groundwork for all pertinent laws and regulations, yet legislative progress towards safeguarding construction industry workers has been markedly slow, with no substantial regulations developed to this end (Bucha, 2021).

Safety and health in Kenyan construction are of paramount importance yet are frequently overshadowed by the competing demands of cost, quality, and timeliness. Despite a substantial body of regulations, the persistently high incidence of accidents indicates that the current approach to safety management is characterized more by its reactivity than by preventive measures. A significant number of accidents go unreported, often attributable to the workers' lack of awareness and inadequate training concerning their rights. Moreover, the accurate collection of accident data is impeded by substandard record-keeping from safety officers and perfunctory documentation processes within government entities.

This study articulates a comprehensive regulatory institutional framework designed to bolster safety and health protocols at construction sites in Nairobi, introducing strategies for these regulatory institutions and propel the application of improved regulations throughout the Kenyan construction sector. The proposed model underscores the essential need for stringent regulatory frameworks that ensure the safety and protection of construction sites, ultimately affirming the fundamental promise of secure and healthier construction environments in Nairobi.

THEORY

Overview of the Kenyan Construction industry

In 2022, Kenya's construction sector grew by 4.1%, mirroring a cement consumption increase of 0.4 million tonnes, signaling enhanced construction activity (KNBS, 2023). Furthermore, Nairobi witnessed a 58% revenue boost from building plan

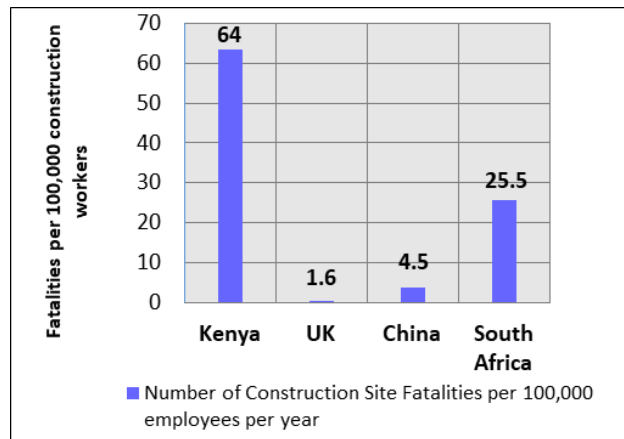


FIGURE 1
 Number of Construction site Fatalities in selected countries

Source: Kemei, 2019

approvals, totaling KSh 162.5 billion a rise driven by rapid urbanization and government focus on infrastructure (NCC, 2023; Hosono, 2022). Accommodating growth, Nairobi's zoning laws now allow high-density buildings in formerly low-density areas, necessitating improved safety and health standards due to the surge in construction demands in populous neighborhoods like Kilimani and Lavington.

The industry's workforce is a tapestry of specialists and laborers, including consultants, contractors, and site supervisors, all collaborating to bring projects to fruition (Leyian, 2022). The construction sector is a cornerstone of socio-economic development, significantly contributing to the Gross Domestic Product and providing livelihoods for a vast number of Kenyan workers, both skilled and unskilled (ILO, 2019; KNBS, 2022). This has been affirmed by various academic inquiries (K'Akumu, 2007; Mitullah and Wachira, 2003).

In alignment with the Bottom-Up Economic Transformation Agenda (BETA) especially within the housing and settlement pillar the Government of Kenya has pledged ongoing support for affordable or social housing initiatives. The state plays a pivotal role in the construction sector as both a substantial employer and a key investor in major infrastructure programs, including transportation, electricity generation, and social housing demonstrating its commitment to progress and to ensuring the welfare of its citizenry (Government Delivery Services, 2023; CaK, 2017).

In 2011, Kenya established the National Construction Authority (NCA) to regulate and improve the construction sector's safety and quality, as specified in the NCA Act of 2011. NCA is tasked with enhancing project standards and ensuring safety compliance by registering contractors, accrediting construction workers, and certifying sites. It wields the Authority to issue suspension orders for non-compliance, offering a remediation period before possibly lifting the suspension, contingent on regulatory satisfaction.

Existing safety and health institutional frameworks in the construction industry in Kenya

Institutional frameworks, essential for governing behaviors within systems, significantly impact the function and efficacy of economic, political, and social organizations (Achieng & Kaunda-Arara, 2022). Regulatory bodies dictate and enforce rules, shaping these structures and ensuring efficiency (Muthaka et al., 2004). Government regulations further formalize institutions' roles in citizen protection, establishing foundational principles for their operation (OECD, 2010, 2015). In concurrence with Hudson et al. (2019), governments typically pursue regulation to:

1. Protect citizens
2. Enhance efficiency in service delivery
3. Reduce information asymmetry between the regulator and the public
4. Foster the development of community projects
5. Prevent regulatory capture
6. Secure credible commitment to national agendas

Regulatory measures are broadly seen as pivotal in public service sector reforms (Boehm, 2007). Such measures are often regarded as mechanisms that constrict certain behaviors to prevent undesirable outcomes (Harlow & Rawlings, 2019). A regulatory framework represents a structured approach to reforming and enacting regulations effectively and coherently (Hefer, 2016). Policymakers either create new frameworks aligned with specific objectives, such as enhancing construction safety, or adapt existing models for regulatory projects (OECD, 2008).

In many developing nations, such as Kenya, regulatory systems are often outdated replicas of those from developed countries, insufficiently adapted to local developmental stages or cultural nuances (Kheni & Braimah, 2014). This leads to less effective occupational health and safety (OHS) administration compared to advanced countries, where legal and institutional OHS frameworks are more comprehensive (Kheni, 2008). Consequently, the inadequate enforcement of OHS regulations and prevalent poor safety practices on construction sites can be attributed to these weak legal and institutional structures.

The 2010 Kenyan Constitution ensures fair labor practices and environmental rights, forming the cornerstone for workplace safety laws like the Occupational Safety and Health Act of 2007. This Act is reinforced by other legislation concerning the environment, public health, construction, mining, and employment. These regulations, as noted by Hefer (2016), are integral to a resilient legal framework for addressing labor and safety issues. Internationally, the ILO champions safety through conventions, particularly Convention No. 155 of 1981, which mandates member nations to implement, regularly review, and enforce safety measures. This includes inspections, enforcement systems, and penalties for violations, all aimed at maintaining a safe and healthy working environment across all industry sectors. In Kenya, however, the duplication of mandates observed in various legislative acts has led to significant difficulties in managing different economic industries (Ringera, 2011). Agencies charged with implementing safety and health regulations are often perceived as ineffectual, lacking the necessary authority to enforce these mandates effectively (Kamau, 2014).

Review of Safety and Health Regulations in the Construction Industry

The construction industry is uniquely dynamic and constantly evolving, with diverse resources being deployed at different project phases (Kemei, 2019). The Occupational Safety and Health Act (OSHA) of 2007 alone appears insufficient in addressing the distinctive safety and health concerns pervasive in this industry. By contrast, the United Kingdom experiences fewer construction-related accidents, possibly attributable to the Construction (Design and Management) Regulations of 2015 (CDM 2015), which delineate safety and health responsibilities for all construction stakeholders. The CDM Regulations 2015 extend from groundwork and temporary constructs to restoration, encompassing all related activities.

In the UK, the Health and Safety Executive (HSE) serves as the national agency responsible for regulating and enforcing workplace health, safety, and welfare, as well as conducting occupational risk research. The HSE functions under the Department for Work and Pensions and, as of 2020, had employed a workforce of 79,538 individuals (DWP's headcount and payroll data, 2020). The Kenyan Directorate of Occupational Safety and Health Services (DOSHS) is analogous to the HSE, operating as one of five technical departments within the Ministry of Labour and Social Protection.

The Construction Regulation of 2014 in South Africa, establishing the Construction Industry Development Board Act of 2000 (Act No. 38 of 2000), specifies the duties and responsibilities of parties within the construction process. Within this framework, Construction Safety and Health Officers are required to be registered in accordance with the Project and Construction Management Professions Act, Act 48 of 2000. Conversely, Kenyan DOSHS registers safety advisors whose qualifications may not fully align with industry demands. In South Africa, compliance with safety and health standards is enforced at the construction project registration stage by the Construction Industry Development Board (CIDB).

To advance safety in Kenya's construction industry, integrating accredited safety officers into the project registration phase is crucial.

Early hazard identification can thus improve safety outcomes. Meanwhile, China's approach is defined by 'Regulation on Quality Administration of Construction Projects', outlining each stakeholder's duties in quality assurance. Additionally, the Ministry of Construction (MOC) oversees specific safety regulations across the Chinese provinces. However, the fragmented enforcement of occupational safety laws across industries undermines supervisory effectiveness, according to Wu and Chi (2015).

In Kenya, there is a pressing need for a comprehensive overhaul in the form of intense and unified restructuring, as well as an evolution toward an integrated regulatory system specifically for construction site safety and health. Such a system ought to incorporate regulations that consider the unique attributes of the construction sector (Muiruri, 2012). A tailor-made suite of safety and health regulations would address numerous issues associated with unsafe construction practices in Kenya (Kemei, 2019). These regulations should encompass all facets of construction safety, from the initial design and planning stages through to maintenance phase.

Upgrading Kenya's regulatory framework to include specific safety measures for construction sites could greatly improve workplace conditions, leading to reduced accidents and injuries. Active involvement of industry experts and stakeholders ensures the regulations are effective and adaptable to various construction environments. The registration and regulation of dedicated safety personnel for site inspections is also essential for enforcing safety standards (Boadu et al., 2021). Similar construction-focused safety regulations, rooted in general occupational safety and health acts, have been effective in many countries.

Regulatory Compliance Challenges in Kenya: Causes of Regulation failure

Governmental effectiveness is gauged by how well regulations meet policy objectives. Pre-adoption regulation analysis is typical, but post-implementation review is often overlooked. Effective evaluation focuses on the intended impact of regulations, which can be undermined by inconsistent laws and poor oversight. Coglianese (2012) cites reasons for regulatory failure such as design issues and insufficient remedies. Beecher (2019) points to inadequate enforcement and

limited resources as obstacles to compliance. Peltzman (2010) suggests that regulations might inadvertently lead to adverse behaviors, a risk especially in developing countries.

Research concerning construction safety in Kenya has uncovered significant inadequacies within the legal and regulatory frameworks. Investigations conducted by scholars such as Ogetii, Kirombo, Umeokafor, and Leyian have brought to the forefront critical issues such as ineffective leadership, communication breakdowns, ambiguity in role definition, workforce heterogeneity, a deficit in protocol expertise, insufficient training, pervasive corruption, and a scarcity of personal protective equipment. Despite comprehensive proposals set forth for regulatory bodies, a tailored regulatory model dedicated to the enhancement of safety and health on construction sites has not been actualized. Muiruri & Mulinge (2014) identified a pronounced lack of managerial commitment to safety measures in Nairobi, with profit maximization often taking precedence over the upholding of standards. Furthermore, they observed that construction workers demonstrate a limited awareness of safety matters, and the implementation of safety norms suffers from lax enforcement.

There is a growing consensus among stakeholders for the development of a comprehensive and effective regulatory model by regulatory institutions. This study seeks to design such a model for the incumbent institutions with the objective of improving safety and health standards at construction sites in Nairobi, as hypothesized as shown in **Figure 2**.

RESEARCH METHODS

According to Kothari (2004), the formula for computing the sample size for a large population or population greater than 10,000 is

$$n_1 = \frac{z^2 pq}{E^2}$$

For the finite population or population less than 10,000 the computation for the sample size is adjusted to reduce the size of the sample. The formula is therefore computed as follows;

$$n = (n_1) / \left(1 + \left(\frac{n_1 - 1}{N} \right) \right)$$

Therefore, this study considered all the active

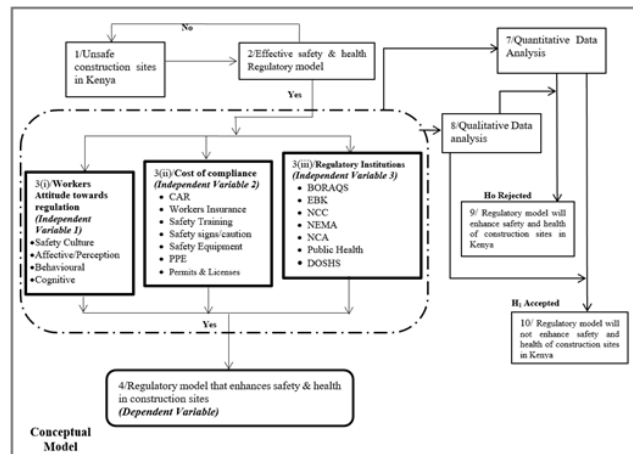


FIGURE 2
 Conceptual Framework and Model
 Source: Author, 2023

registered constructions projects within Nairobi County as of December, 2022. The sampling frame contained a population size of 896 construction sites which was categorized as a finite population or population less than 10,000 as shown below;

$$n = (n_1) / \left\{ \left(1 + \left(\frac{n_1 - 1}{N} \right) \right) \right\}$$

$$n_1 = \frac{z^2 pq}{E^2}$$

$$n_1 = \frac{1.96^2 0.5 \times 0.5}{0.05^2} = 384$$

Where;
 n is the sample of population less than 10,000
 n₁ is the sample size of population greater than 10,000
 N is the size of the total population
 Z² is the square of the z score for 95% confidence level which is 1.96
 p is the population mean (0.5)
 q is the value of (1 - p)
 E is the margin of error
 E² is the square of the margin of error

$$n_1 = \frac{1.96^2 0.5 \times 0.5}{0.05^2} = 384$$

$$n = \frac{384}{1 + \frac{383}{896}}$$

n = 268

Research Onion Summary

The "research onion" is a metaphorical construct developed by Saunders et al. (2012), designed to delineate the various stages of a research study. This model is arranged in concentric layers, commencing with the outermost layer, which encompasses the research philosophy, and progressing inwards through layers that include research approach, strategy, time horizon, data collection methods, and data analysis techniques. The research onion paradigm is instrumental in guiding researchers to methodically consider each element, thereby ensuring that the research design and methodology achieve coherence and are conducted with the appropriate level of scholarly rigor. **Table 1** is a synthesis that articulates the preferences selected from the research onion pertinent to this study as described by Saunders et al. (2012) and highlighted on **Figure 3**.

Table 1 summarizes the study's research methodological preference as guided by the research onion.

RESULTS AND DISCUSSION

Questionnaire Response Rate

In this study, a total of 268 questionnaires were physically distributed across various construction sites within Nairobi City County with the help of research assistants. These questionnaires were administered to the safety officers or site supervisors who were present at the construction sites. 210 questionnaires were completed and returned for analysis, yielding a response rate

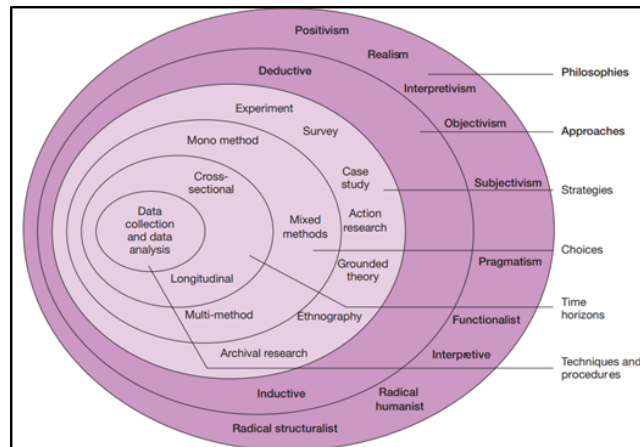


FIGURE 3

Research Onion

Source: Saunders et al., 2019

TABLE 1

Summary of the study's research methods

No	Methodology	Selected Choice	Remarks
1	Philosophy	Pragmatism	Pragmatism values the creation of theories that solve real-world issues, as exemplified in this study, and aligns well with the use of mixed methods.
2	Research approach	Deductive approach	This study began with a theoretical framework, followed by re-search questions, which were tested after data were collected and analyzed.
3	Research strategy	Surveys	Surveys were conducted through data collection from a representative sample using structured questionnaires and an observation checklist.
4	Research choice	Mixed method approach	Mixed method designs provide a better understanding of re-search issues than either qualitative or quantitative approaches alone
5	Time Horizon	Cross-sectional study	The preferred research method was a time-efficient and re-source-effective cross-sectional study, analyzing data from a sample at a single time point.
6	Data collection method	Questionnaires	Questionnaires were chosen for their efficiency in gathering data from many participants quickly and their ease of distribution for completion at the respondents' convenience
		Observation Checklist	Observation checklists was preferred because it provided a structured framework for systematically recording specific behaviors and events of interest in real time at the construction sites
7	Sampling Method	Simple random sampling	This is a probability sampling technique ensuring each population member has an equal chance of selection, providing an unbiased and representative sample.
		Convenience sampling	Convenience sampling was used to collect qualitative insights that provide depth and context to the quantitative findings obtained from a simple random sample.

Source: Author, 2023

of 78.4%. This rate is considered robust for the purposes of statistical generalization. Saunders et al. (2003) suggest that a return rate ranging from 30% to 50% is acceptable for generalizing sample findings to the broader population. Mugenda and Mugenda (2003) state that a response rate of 50%-59% is considered adequate, 60%-69% is viewed as good, and a rate above 70% qualifies as an excellent response rate for analysis. The details of the response rates are presented in **Table 2**.

Reliability

In the context of this research, 'reliability' is understood as the degree of consistency, stability, and replicability present in the measurement or procedural aspects of the study (Chiang, 2015). To assess the reliability of the data gathered, a test using Cronbach's alpha test was employed. This test aimed to quantify the consistency of the data obtained concerning the effects of existing regulatory institutions on safety and health in

TABLE 2

Questionnaire response rate

Questionnaires	Number	Percentage
Total Issued	268	100
Total returned	210	78.4
Total Unreturned	58	21.6
Response Rate		78.4

Source: Author, 2023

construction sites. The outcomes of the reliability test, as recorded through Cronbach's alpha, yielded values exceeding 0.7. These figures underscore the reliability of the results, as detailed in **Table 3**.

Relationship between Existing Regulatory Institutions and Level of Safety and Health Practices

The study findings in **Table 4**, indicate a simple linear regression analysis that was conducted to examine the relationship between the predictor variable "Existing Regulatory Institutions" and the dependent variable. Its model summary table presents the quality-of-fit measurements of the model. This coefficient (R-squared) is 620; which indicates that about 62.0% of the variance of the dependent variable could be caused by the variable that predicts it "Existing Regulatory Institutions." This indicates a significant level of relationship

between the two variables, which suggests that the variable relating to existing safety and health regulatory institutions greatly contributes to explaining the variance in the dependent variable.

ANOVA for Existing Safety and Health Regulatory Institutions

The findings in **Table 5** gives the significance of the ANOVA table that provides the outcome of the model, comprising the sum of regression squares the residual total sum of squares the total sum of squares degree of freedom (df) mean squares, F-value and the significance degree (p-value). The ANOVA results indicate that the regression model was statistically significant ($F(1, 209) = 338.843$, $p < .001$). This suggests that the predictor variable "Existing Regulatory Institutions" significantly contributed to the variance in the dependent variable "Level of safety and health practices." Regression sums of squares that reflects the variation that is explained by the model was 1900.203 and the remainder sum of the squares that represents the unexplained variation or the error in the model is 1166.448.

Regression Coefficients for Existing Regulatory Institutions

From the findings in **Table 6**, the predictor variable "Existing Regulatory Institutions" had a significant positive effect on the dependent variable "Level of safety and health practices." The unstandardized coefficient for "Existing Regulatory Institutions" was .589 ($B = .589$, $SE = .032$), suggesting that, on average, for each one-unit increase in "Existing Regulatory Institutions," the level of safety and health practices in the construction sites increased by approximately .589 units. The standardized coefficient (Beta) for "Existing Regulatory Institutions" was .787, indicating the standardized effect size of the predictor variable. This means that a one-standard deviation increases in "Existing Regulatory Institutions" is associated with a .787 standard deviation increase in the level of safety and health practices.

The study aimed to develop a regulatory model to enhance safety and health at construction sites in Nairobi, with an emphasis on assessing the impact of regulatory institutions on safety practices. It found that these institutions play a crucial role in setting and enforcing safety standards within the Kenyan construction industry, accounting for approximately 62.0% of the variance in

TABLE 3
 Reliability test

Variable	Cronbach's Alpha	No. of Items	Comment
Existing regulatory Institutions	.751	22	Accepted

Source: Author, 2023

TABLE 4
 Relationship between existing regulatory institutions and level of safety and health practices

Coefficients^a

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.787 ^a	.620	.618	2.36811

a. Predictors: (Constant), Existing Regulatory Institutions

Source: Author, 2023

TABLE 5
 ANOVA for existing safety and health regulatory institutions

ANOVA ^a						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1900.203	1	1900.203	338.843	.000 ^b
	Residual	1166.448	208	5.608		
	Total	3066.652	209			

a. Dependent Variable: level of safety and health practices
 b. Predictors: (Constant), Existing Regulatory Institutions

Source: Author, 2023

TABLE 6
 Regression coefficients for existing regulatory institutions

<i>Coefficients^a</i>						
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	-.127	.286		-.446	.656
	Existing Regulatory Institutions	.589	.032	.787	18.408	.000

a. Dependent Variable: Level of safety and health practices

Source: Author, 2023

safety practices. This underscores the necessity for rigorous oversight and enforcement to boost compliance and enhance safety and health on construction sites. Supporting this perspective, the study's findings are consistent with research by

Mosadeghrad (2014) and Muñoz-La Rivera et al. (2021), which examined determinants of safety in construction projects.

CONCLUSION

In conclusion, this study highlighted the influential role of regulatory institutions in dictating safety and health practices at construction sites. A considerable association was detected between the efficacy of existing regulatory frameworks and the prevalence of safety and health practices, underlining the utility of a robust regulatory system replete with effective oversight and regulatory mechanisms to ensure adherence to safety standards and to prevent workplace injuries and accidents.

By presenting these findings, the research offers critical insights into the factors that dictate safety and health standards at construction sites in Nairobi. Through dimensional analysis of the efficacy of regulatory structures, stakeholders in the construction sector and policy makers are better equipped to create safer and healthier work environments. Such improvements are pivotal for the well-being of the construction workforce.

RECOMMENDATIONS

The study emphasizes the critical function of regulatory institutions in the enforcement of safety and health guidelines within construction sites. It advocates for the creation and implementation of safety regulations tailored specifically to the singular needs of the construction sector, distinguishing it from other industries. These regulations should encompass diligent monitoring of compliance with safety protocols, guarantee systematic site inspections, and facilitate prompt and proportionate responses to any violations.

It is critical that there be synergistic collaboration among regulatory bodies, construction entities, and industry stakeholders to cultivate well-rounded safety standards. Improving accountability and transparency within these institutions can significantly enhance their influence and efficacy. The enactment of stringent safety regulations complemented by a system that judiciously combines penalties for non-compliance with incentives for adherence can engender a culture of safety, minimize accidents, and recognize those who consistently uphold high standards. Additionally, the study accentuates the necessity for the registration and regulation of construction safety personnel. It calls for the clear delineation

of their professional code of conduct and the standardization of procedures governing their registration, ensuring that only qualified individuals undertake these critical roles.

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