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An In-Depth Analysis of Safety Management Practices: Case Studies from The DHA Commercial Area in Lahore

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Abstract:
This paper applies detailed case studies to the analysis of safety management methods within the DHA business segment of Lahore. It explores the effectiveness of multiple safety processes and identifies their influence on construction risk management, compliance with defined regulations, and occupational health & safety. The report provides practical suggestions to policy-makers, business owners, and the safety managers through highlighting the best practices and frequent challenges. These outcomes would aim at enhancing safety management practices across the region by increasing safety standards and enhancing risk-reducing strategies. The questionnaire was distributed to professionals who work in the construction sector of Lahore, and the findings revealed that the present condition of the on-site safety management practices is rated as a poor one. The report also highlights the need to enhance and implement safety measures. Findings indicate that government agencies and building companies often consider the existing limitations only as a formal means of governmental control, focusing more on maximization of profits rather than the safety of persons. This is to underline how much is needed to make changes so that the safety procedures are observed and given highest priority.

Keywords: Safety Management; Construction Industry; DHA Lahore; Pakistan; Risk Mitigation; Regulatory Compliance; On-Site Safety Practices

Aim and Objective:

The focal point of this research is to critically evaluate the present day safety management policies adopted in the Lahore DHA commercial sphere of operation, with special attention being paid to the manner, in which the construction and operational sites respond to workplace risks and the regulating standards. The study aims to comprehend the general functionality of the current safety systems through the examination of process in place by the businesses to control the risks, safeguard employees and ensure secure working conditions. This involves understanding the strengths that have aided the compliance, as well as the weaknesses that have contributed to the lack of consistency of safety performance (Bhatti et al., 2024). The focus of the study is to bring about practical advice that will result in the improvement of safety levels in the business environment of DHA. To attain this purpose, the study has a number of specific goals. First, it examines the viability of the safety measures in the chosen commercial buildings that assesses the way in which these processes operate in actual conditions. Second, it determines the common problems that companies face such as operational hurdles, management gaps, and cultural issues that influence safety compliance. Third, it evaluates the level of compliance of the current practices with the regulatory requirements of the Pakistani country and accepted industry standards. The study also aims at capturing effective practices that have been seen in the field, and these are strategies that can make safety outcomes better and can be implemented in other sectors. Upon examining this, the study then develops evidence-based recommendations that look forward to enhancing the safety measures, the quality of oversight, and the sustenance of performance. Lastly, it offers insights to be part of appropriate stakeholders, including policymakers, property developers, contractors, and safety managers, which can be used to promote safer commercial environments and decrease the risk of accidents in the rapidly changing city setting of DHA.

Literature Review:

The implementation of safety management in the construction industry depends on properly organized Safety Management Systems (SMS) that serve as the guidelines of identifying, controlling, and reducing dangers in the construction sites. Systematic works on risk assessment, incident reporting, worker training, enforcement of personal protective equipment (PPE) and safe operation of machinery and tools are set up by international standards of OHSAS 18001, ISO 45001, and OSHA construction regulations (29 CFR 1926). Studies performed in developing countries, such as India, Bangladesh, and Vietnam, all point to lack of training, awareness, and enforcement as being the key contributors to the number of accidents that occur in the construction domain, which proves that there is a difference between the requirements indicated by regulatory frameworks and applied to the construction site (Shah et al., 2023). These appeals provide the necessary safety standards, including the protection of working at heights, the use of standardized scaffolding practice, equipment protection, electrical safety precaution, and the duty of a contractor to provide PPE, including helmets, high-visibility vests, and safety shoes (Shah et al., 2023a). There is also a need of fire safety measures. However, the application of these rules is still not uniform, especially to small- and mid-sized projects that are not given the attention that the national infrastructure development projects have in standards and practice. In DHA Lahore, other rules further offer a framework. These are the new DHA Building Bylaws (2023), construction safety circulars, and compulsory NOC-related monitoring procedures. The building control officers at DHA conduct periodic inspections but even with all these measures safety breaches may still occur with lack of on-site supervision, use of subcontractors and budgetary based compromises (Gul et al., 2025). Consequently, the policy-implementation disconnection remains a problem to the consistency of safety regulations in the DHA commercial development industry.

	Focus Area	Key Points	Issues Identified
Safety Management in Construction	Global Safety Frameworks	• SMS as foundation of risk mitigation • Standards: OHSAS 18001, ISO 45001, OSHA • Processes for hazard identification, training, PPE, incident reporting	• Inadequate worker training. • Weak enforcement in developing countries
Pakistan-Specific Safety Frameworks	National Regulations	• Pakistan Building Code (2016) • Factories Act 1934 • Labor laws requiring fall protection, scaffolding, machine guarding, electrical safety, PPE, fire safety	• Poor enforcement outside large infrastructure projects
DHA Bylaws and Standards	Local/Institutional Guidelines	• DHA Building Bylaws (2023) • Construction Safety Circulars • NOC-based oversight • Routine inspections by DHA officers	• Underreporting of violations • Insufficient supervision • Budget-driven compromises

Table 1 Safety Management Systems; Drawn by author

Methodology

The study methodology will use a mixed methodology to explore the practices in safety management within the DHA commercial construction sector in Lahore. Despite the formal regulatory direction taken by occupational safety standards, including OHSAS 18001 (Certification Europe, n.d.), there are still gaps in compliance in the industrial world, which are seen as a lack of continuity across implementation and a poorly organized on-site management system. In order to investigate these problems, there were various supplementary methods of data collection. They were also given to 50-60 construction companies in structured questionnaires and 29 valid responses were received which provided quantitative data on safety policies, employee training, and emergencies preparedness. The semi-structured interviews conducted with project managers, engineers and architects offered the background information about the organizational behaviour, managerial priorities and common safety issues. Observations in active DHA commercial sites were conducted to evaluate safety practices, such as the use of PPE, hazard communication, reporting incidents, and the observance of the written protocols. Triangulation was supported by secondary data based on government publications, industry guidelines, and academic literature (HSE, 2015; Naoum, 2007), which helped to compare local results with the international best practices. The combination of survey data, professional perspective, observational data, and established guidelines make the study have a complete picture of the safety performance of the sector. The method also makes it possible to identify the pragmatic weaknesses and organizational issues to varying safety management among commercial construction sites in DHA.

	Focus Area	Key Points
Questionnaires	Distributed to 50–60 firms; 29 responses analyzed	Quantify safety policies, training frequency, and on-site procedures
Interviews	Conducted with architects, engineers, and project managers	Capture professional insights and managerial attitudes about safety
On-site Observations	Field visits to DHA commercial buildings	Evaluate real-time practices such as PPE use and hazard control
Secondary Data Review	Government reports, academic studies, and safety standards	Benchmark findings and validate industry compliance patterns

Table 2 Methodology used in the research; Drawn by Author

This paper examines safety management of high-rise project in the DHA Lahore, especially in Phase 8, the Commercial Belt. The safety management procedures of various high rise buildings in Lahore and a brief overview of business district are addressed in this paper.

Sector Bwc Phase 8c- Commercial Apartment Buildings:

This proposal is comprised of three plazas which have the same commercial apartments which are facing parks that enhance the outlook of the buildings. The construction is designed by Design Man Associates that is located in Phase 8C of DHA Lahore. There are five Kanals per plaza with a total of fifteen Kanals within the project. It currently has 35-40 employees that are on day shifts with another 15-20 employees on night shifts. Each of the plazas consists of eight stories altogether, one basement floor, one on the ground floor, seven storeys above, and one storey in construction. The continuous work has serious safety concerns. It has been observed and revealed in interviews that the workers do not have the right tools, do not include safety rules, and do not know safety management methods. Although no accidents have been heard, these issues point to major gaps in safety management of this major project.

Figure 1Commercial apartment plaza taken by author

Results:

There appears to be a concerning ignorance of safety procedures at the location. Employees lack knowledge about safe tool handling techniques and safety management procedures. Additionally, there are items strewn all over the site's front, which could endanger anyone who enters.

Important safety gear is also conspicuously missing: workers are using tools without gloves and are not donning helmets or other protective gear. The likelihood of mishaps and injuries at the location is greatly increased by this disdain for fundamental safety precautions.

Figure 2Frame Structure mounded to super structure taken by author

Sky Garden Tower:

Habib Rafique Limited oversees this 6-kanal mixed-use plaza on Lahore's Jail Road. Now, the site is in the excavation phase. Four supervisors oversee the work of thirty to forty employees during the day. The absence of night shifts is noteworthy. The location follows strict safety management procedures and is orderly. The strict observance of safety regulations is confirmed by observations

made on fifteen distinct days and at varied times. To prevent unauthorised entry to restricted areas, appropriate safety measures, such as reflective tape and clear signage, are in place, and the project hires labour that has received training and counselling. The labour force present at the site has received extensive training in the usage of equipment, supplies, and tools. Employees are selected according to the requirements of the jobs, guaranteeing that each position has the right level of experience. Safety is the top concern, and all employees are outfitted with the right protective gear, such as gloves, safety shoes, helmets, and clothes. Furthermore, throughout building, machinery is positioned strategically to maximise safety and effectiveness. Workers receive thorough training on operating machinery and job duties prior to starting work. Now, work is still being done on the site, and excavation is taking place. Strict observance of safety management guidelines is revealed by observations and interviews. The organisation supplies the required safety equipment, and many supervisors make sure that employees are appropriately attired and adhere to safety regulations when working on-site.

Figure 3Different sign boards taken by author

Figure 4Labour on site with gadgets taken by author

Results:

After visiting seven or eight buildings in Lahore, I can attest that this location strictly enforces safety management procedures **to** safeguard workers. Because they have received extensive counseling, employees are skilled in using resources and instruments. By reducing injuries, the deployment of appropriate safety equipment has improved worker protection. Even in cases where students follow the correct safety procedures, a noteworthy problem is the company's lack of cooperation with the students.

Comparison:

Because appropriate safety equipment and measures are used, sites with strong safety management practices have fewer accidents. The personnel employed at these facilities has education and expertise about the materials, equipment, and operational protocols, encompassing operations such as welding, which are carried out with due caution.Well-implemented safety management significantly reduces risks (Li & Poon, 2013), while poor safety culture correlates with higher incident rates (Masood et al., 2014).

A clear contrast emerged between both sites:

	Weak Safety Site (BWC Phase 8C)	Strong Safety Site (Sky Garden Tower)
PPE Availability	Rare	Fully enforced
Training	Minimal	Extensive
Signage	Lacking	Comprehensive
Site organization	Poor	Highly structured
Accident likelihood	High	Low

Table 3 Comparison of Case Studies; Drawn by Author

As was previously indicated, the study's data was gathered through the distribution of questionnaires. They were personally delivered to more enterprises in addition to being emailed to 50–60 businesses. Architects, engineers, project managers, and contractors made up many responders who worked in the construction sector. Only 29 representatives from the 60 firms who received the questionnaire replied. The target audience's hectic schedules and time constraints could be the cause of the low response rate. Pie charts are used to show the answers to each question in the upcoming section of the chapter, which will also analyze and report the results.

Question 1: For a continuous task, how many labourers are assigned to the site?

Outcomes:

- 16 responders stated they had between 11 and 22 employees on the job.
- 6 respondents said they had between 22 and 33 employees.
- Five respondents said that the number of people working on-site varied from 32 to 42.
- With an average of 42 employees on-site, 2 organizations responded.

Based on the responses, it was found that 55.2% of participants had worked on projects with 11–22 workers, 20.7% on projects with 22–32 workers, and 24.1% on projects with 32 workers or more. These results serve as a vital foundation for the investigation, enabling it to examine the connections among project size, labour force, accident risk, and the application of safety management techniques. Furthermore, this data will enable us to examine whether the size of the project affects the importance and rigour with which safety management is prioritised and executed.

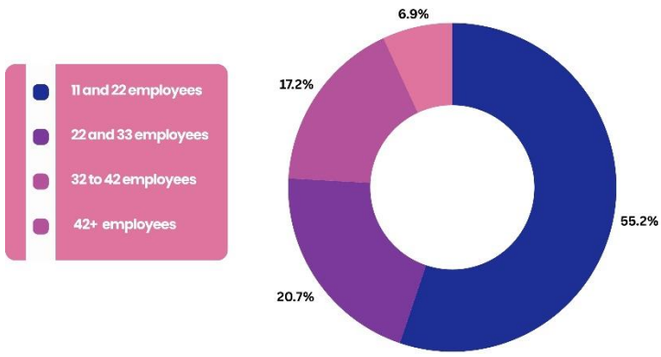

Figure 5Analysis and results; Drawn by Author

Question 2:Does your organization have a strategy in place for on-site safety management?

Outcomes:

- 19 people answered yes
- 10 people answered no

Most respondents (65%) stated that their companies have an on-site safety management policy in place. It appears that most construction companies, regardless of the type of project, have implemented safety management procedures because a significant number of these comments were provided by professionals with at least five years of experience working on diverse projects. This trend, however, is not true in all organisations, as 35 percent of respondents reported that theirs does not have a similar plan. This implies that a large percentage of construction firms may fail to observe safety measures. In order to have effective safety management and compliance, it is necessary to develop an extensive safety policy.

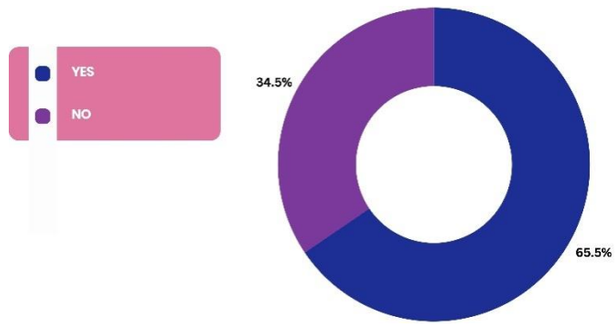

Figure 6Analysis and results; Drawn by Author

Question 3: Does your company provide on-site safety management training??

Outcomes:

- 19 respondents answered No
- 11 answered with a yes

The poll shows that 63.3 percent of the participants claim that their companies do not provide on-site safety management training. This under-training is critical since it predisposes the possibility of accidents caused by the human error that does not only harm the brand of the company but also leads to significant financial and human costs. Although majority of the respondents indicated its existence in their respective organisations, it seems that the safety policies are not being implemented adequately given the absence of the relevant training. Conversely, twenty-five percent of them confirmed that they are also being trained by their organisations, which mean that even though they are not very common in Pakistan, there are also such practices.

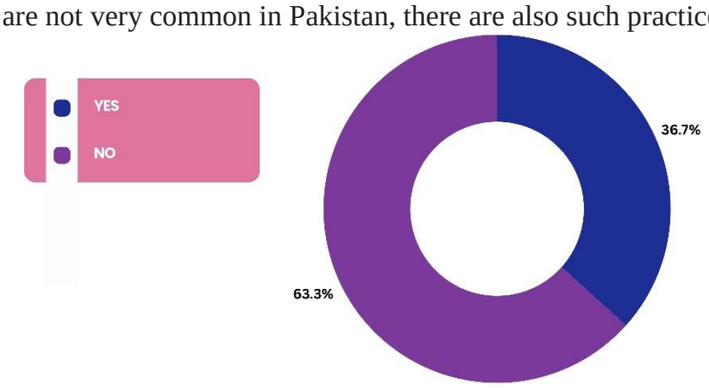

Figure 7Analysis and results; Drawn by Author

Question 4: Does your organization maintain records of on-site accidents or near-misses??

Outcomes:

- 13 respondents attested that their business kept track of on-site accidents.
- 16 responders said their business did not keep an eye on any near-misses or accidents that occurred on the premises.

The recording of on-site mishaps and near-misses is necessary to evaluate the performance of an organization and prevent such situations in the future. This information does not only enhance research that may lead to safer management processes but also assists in the process of learning how to react and prevent such experiences. The figure 16 indicates that 40% of the respondents opined that their organisations are tracking the on-site accidents and near-misses whereas 60 percent of the respondents opined that their organisations do not maintain such data. These findings show that there is a grave flaw in safety management at the workplace that is symptomatic of non-commitment to stringent safety measures.

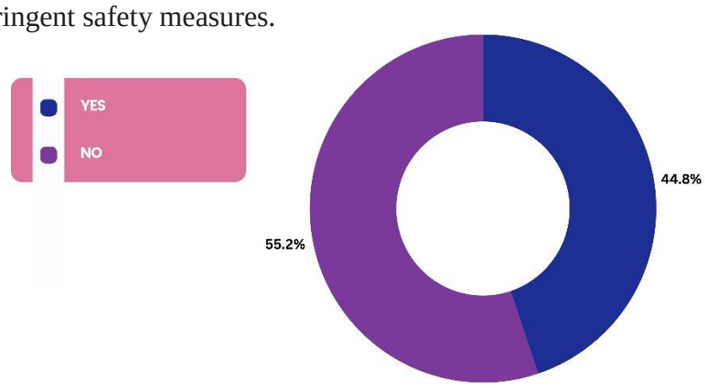

Figure 8Analysis and results; Drawn by Author

Question 5: Were any on-site accidents reported to the appropriate government authorities?

Outcomes:

- 9 respondents attested to the fact that on-site incidents were reported to the relevant government officials.

- 20 respondents said that when issues happen, they aren't reported to the appropriate government agencies.

A more widespread problem with official reporting is revealed by the preceding query regarding internal accident records. According to Figure 9, 69% of respondents stated that their companies failed to notify the relevant government authorities about on-site accidents. One possible reason for this lack of reporting is a desire to avoid responsibility or bad press. This underreporting is a result of a substantial data gap on incidents relating to building in Pakistan, specifically in DHA Lahore. To improve safety management and enforcement standards, only 31% of respondents reported accidents to government authorities.

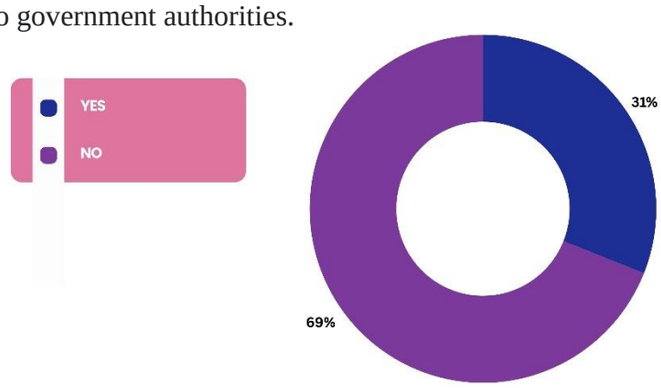

Figure 9Analysis and results; Drawn by Author

Question 6: Do you think that project documentation and on-site adherence to safety management rules are consistent?

Outcomes:

- 7 respondents attested to the regular observance of safety management procedures in documentation and on-site operations.
- 9 participants indicated that they were unsure, responding with "maybe."
- 13 respondents said that on-site safety management procedures are not always followed exactly as they are described in the documentation.

This question aims to find out how respondents feel about the level of adherence to safety management rules in both documentation and on-site practices.The results draw attention to problems with safety management procedures that earlier queries had highlighted. About 44.8% of those surveyed said that although safety procedures were documented, they were not carried out successfully. Furthermore, 31% expressed uncertainty, maybe because of their unwillingness to criticise their own companies. Just 24.1% of respondents said their companies adhered to safety procedures both in written documentation and on the job. The findings, which are shown in Figure 10, reveal a worrying lack of dedication on the part of construction companies to security and safety management.

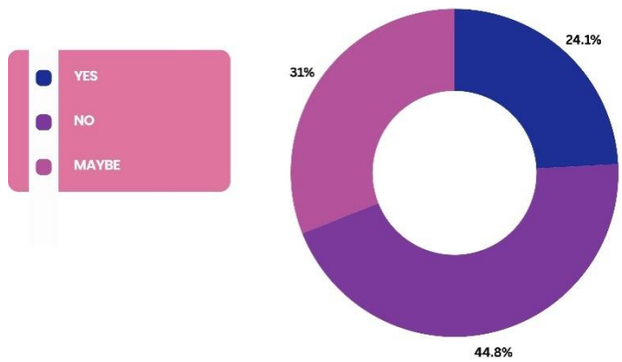

Figure 10Analysis and results; Drawn by Author

Question 7: Are stop points, trash management, hazardous materials, or assembly points marked with signs on the property?

Outcomes:

- 13 respondents indicated that safety precautions were not posted on the premises by responding "no."
- 4 respondents provided a "maybe" response, indicating ambiguity in the existence of safety precautions. "Yes," was the response given by
- 12 respondents, who confirmed that all safety-related information was prominently displayed on the premises, including meeting places, hazard warnings, trash management, and stop signs.

It is essential for worker safety to use on-site signage for managing emergencies and communicating with co-workers. Signage that is effective in preventing accidents includes alerts about dangerous products, fire escape routes, and helmet zones. The results are displayed in Figure

11. Of the respondents, 46.3% indicated there were no such signs on their locations, 37.5% said signs were supplied, and 16.2% were unsure.A prevalent problem in Pakistan's construction sector, especially for high-rise structures in DHA Lahore, is the absence of warning and hazard signage. For warning the public and employees about potential risks and safety precautions, appropriate signage is crucial. Neglecting to put these indications into practice may have dire repercussions, such as accidents, monetary losses, and legal action. According to the research, there could be a connection between the high number of on-site mishaps and near-misses in the construction industry and poor signage.

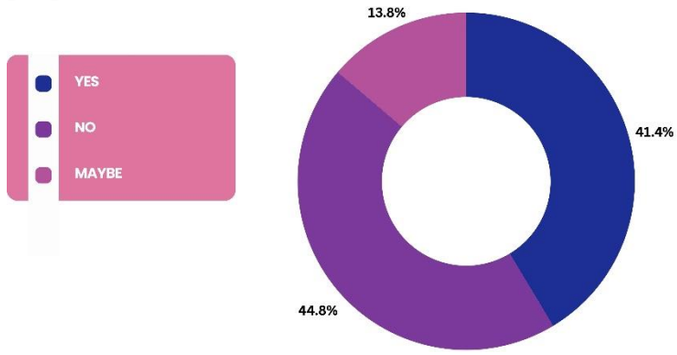

Figure 11Analysis and results; Drawn by Author

Question 8: Is there a designated assembly point or evacuation plan in place for emergencies?

Outcomes:

- 19 respondents attested to the presence of signs designating hazardous items, assembly locations, waste management, and stop places.
- 2 respondents provided a "maybe" response, indicating ambiguity on the existence of these indicators.
- 8 responders said "no," indicating that there are no established meeting spots or emergency evacuation plans in place.

Every job site should have assembly locations and evacuation protocols that are well-defined in case of an emergency. The safe evacuation of employees and the reduction of hazards are two major benefits of putting these strategies into action. As seen in Figure 12, 65.5% of survey participants attested to the existence of specified meeting places and evacuation protocols at their locations. On the other hand, 6.9% expressed uncertainty and 27.6% stated that no such plans were in place. Although most construction companies have evacuation plans, which is positive, a significant portion of workers still lack safety training, which is cause for concern.

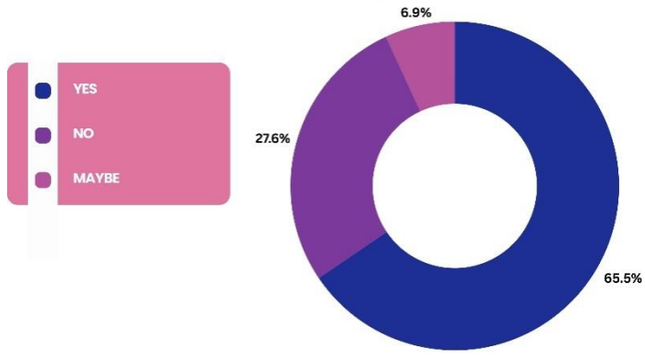

Figure 12Analysis and results; Drawn by Author

Question 9: Does your company supply steel-toed boots, hard helmets, gloves, and high-visibility vests to its employees as necessary safety gear?

Outcomes:

- 16 respondents said "yes," attesting to the fact that workers are given necessary safety gear.
- Eight respondents said "no," suggesting that there is no safety equipment offered.
- 5 businesses admitted that they provide some health and safety gear to their employees.

Crucial safety equipment is provided to workers on the job site, according to 55.2% of respondents (Figure 13). This equipment includes hard hats, gloves, steel-toed boots, and high-visibility vests. Wearing the proper personal protection equipment (PPE) is essential for preventing accidents and serious injuries on construction sites because of the predominance of heavy machinery and hazardous instruments there. Nevertheless, according to 27.6% of businesses, they do not supply this safety gear, putting employees at risk for serious and even deadly mishaps. Furthermore, 17.2% of respondents indicated that safety equipment is offered. This suggests that safety precautions need to be strengthened because the availability of PPE may be uneven and constrained by financial resources.

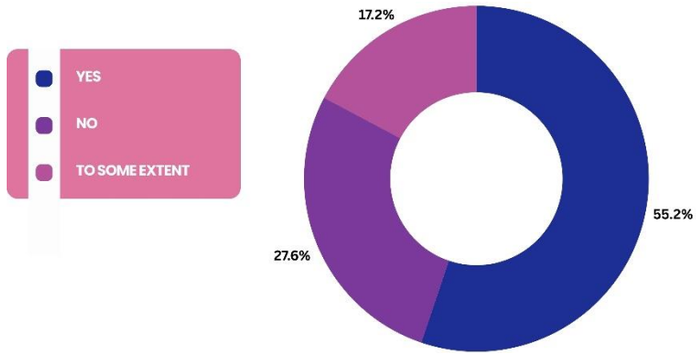

Figure 13Analysis and results; Drawn by Author

Question 10: Who, in your opinion, ought to oversee overseeing on-site worker safety?

Outcomes:

- Eight respondents said that the project manager alone oversees overseeing worker safety on the job site.
- 4 respondents stated that the contractor bears sole responsibility.
- Both the contractor and the project manager were chosen as responsible parties by three respondents.
- According to three responses, the contractor, customer, and project manager should all take joint responsibility for safety management.
- None of the respondents chose labor to oversee overseeing safety.
- All the previously stated stakeholders were given responsibility for the on-site worker safety by 11 respondents.

Respondents were given the choice of answering "project supervisor," "client," "contractor," "worker," or "all of the above" when asked who should oversee on-site worker safety. According to Figure 14, 37.5% of respondents think the project manager is primarily in charge, 29% think the contractor is, 7.9% think the client is, and none think the worker is. Nonetheless, 46.3% of respondents think that everyone bears some blame. This shows that there is agreement that all project levels must work together to provide good safety management.

Figure 14Analysis and results; Drawn by Author

Question 11: On a scale of 1 to 5, how well do you believe that the safety management practices documented on paper are implemented on-site?

Outcomes:

- Two respondents gave practical implementation top priority.
- 10 respondents thought it was the second most significant.
- It was ranked as the third most significant by 13 respondents.
- 3 respondents thought it was the fourth most significant.
- One individual thought it was the fifth most significant.

This question is meant to find out how participants feel about safety management strategies being used in Pakistan's construction sector. According to Figure 15, 46.4% of participants gave implementation a score of three out of five, 35.9% gave it a score of two, 11.8% gave it a score of four, and 6.4% gave it a score of one or five. These answers imply that although many organisations have safety regulations in writing, there is a deficiency in their actual implementation. The information shows that although there are some safety procedures in place, major advancements are required to accomplish efficient safety and health management.

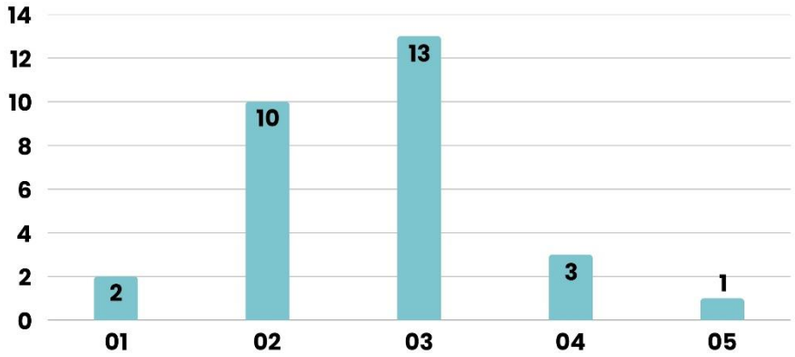

Figure 15Analysis and results; Drawn by Author

Question 12: **Do you think that proper safety management requires training?

Outcomes:

- 26 respondents agreed that encouraging effective safety management requires education.
- 3 people thought it was not that big of a deal.

To promote a work environment where safety management is a top concern, education is essential. In Pakistan, it might be difficult to establish appropriate safety standards due to the country's low literacy rate and largely unskilled labour force from rural areas. In addition to addressing communication problems and encouraging a more methodical approach to safety management, training aids in overcoming resistance to safety equipment. The data shows that 89.7% of respondents concur that education is necessary for effective safety management.

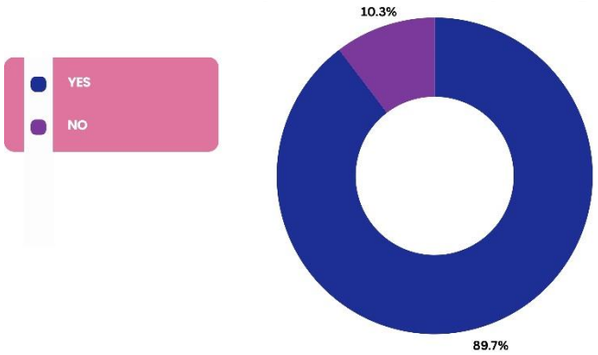

Figure 16Analysis and results; Drawn by Author

Question 13: What emergency plans are in place for on-site incidents, such as emergency exits, first aid equipment, and fire extinguishers?

The answers show what emergency protocols building sites have in place. First aid kits and fire extinguishers are found in most organisations;however, they are frequently not maintained properly. In the event of an injury, the victim is sent to a hospital or emergency medical services are contacted, and management is informed. But the absence of well-defined protocols and thorough planning for managing these kinds of situations suggests that not much is done to assist site workers in times of need.

Discussion

According to the survey, Pakistan has a wide variety of construction projects, most notably in DHA Lahore. It emphasises that although though many construction companies have safety regulations in writing, they frequently lack efficient safety management procedures. With a range of five to forty years of experience, the participants highlight how commonly insufficient real-world safety management is, which reflects a poor safety culture and regular disregard for the law. In the report, it is argued that though the government rules may be numerous, many businesses find it hard to implement them and thus, fail to take necessary safety measures and enforce the emergency procedures and safety equipment. These issues are aggravated by such factors as the insufficiency of education and financial constraint which recurrently compromise safety measures in the name of cost-reduction, however, as some of the businesses which are ethically driven and adopt proper safety standards indicate. Such a growth would enhance the status of the industry, attract external investment, and show that the industry cares about social responsibility.

Conclusion:

The current research paper analyzes the safety management practice within the commercial sector of the DHA in Lahore and concludes that the levels of safety compliance within the construction firms differ. Although there are businesses that exhibit excellent safety practices and a well-implemented structuring and execution of safety measures, most others lag behind in the same case, often due to the lack of sufficient equipment, poor training, and the lax application of the safety laws. The findings underscore the urgency with which better safety protocols in the entire

industry are required. The establishment of stringent compliance with safety regulations, proper training investment, and alignment of policy and practice can significantly improve safety of workers and quality of outcomes in construction industry.

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