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EVALUATING THE FACTORS MILITATING AGAINST HEALTH AND SAFETY PRACTICES IN CONSTRUCTION AND OIL AND GAS INDUSTRIES IN NIGERIA

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Abstract: Based on the number of incidents reported, the construction and oil and gas sectors are among the riskiest in Nigeria. Most of these mishaps are related to inadequate health and safety protocols. In order to enhance health and safety practises, this study is designed to assess the variables militating against these practises in both industries. In order to do this, a closed–ended survey questionnaire was created, distributed, and answered by professionals in both industries. Descriptive statistics were then used to assess the responses. A number of factors, including a lack of commitment from management, high work pressure when deadlines are approaching, inadequate funding for safety management, a lack of awareness of safety among employees, a lack of attention from the government, and a lack of enforcement of safety rules and regulations, were found to have an impact on health and safety practises in both industries. The study also showed that, aside from management's preference for profitability over safety, lax enforcement of safety laws and regulations, and inadequate safety orientation for new hires, there was no discernible difference between the factors militating against health and safety practises in the oil and gas and construction industries. The report indicates that a long–term solution to all of these issues is required in order to improve health and safety practises in both industries.

Keywords: accident, injury, health, safety

INTRODUCTION

Since they employ a larger proportion of the labor force and make significant contributions to the GDP, the construction and oil and gas sectors both contribute significantly to the economic development of many nations. These sectors remain among the riskiest because they have contributed to the numerous accidents that have occurred, despite their economic significance (Williams et al., 2019).

The construction sector is widely recognized for being a hazardous workplace. The sector is known for its many risks, which include exposure to hazardous chemicals, fire, electrocution, and falls from great heights. The International Labour Organization (ILO, 2019) reports that, at almost 30% of all deaths, the construction sector has the highest fatality rate of any economic sector. Likewise, it is well recognized that working in the oil and gas sector entails a number of risks and is a dangerous environment.

Among other things, the industry is characterized by explosive materials, hazardous chemicals, and high–pressure machinery. The oil and gas sector has experienced substantial growth in recent times, making it imperative to enact substantial modifications in order to ensure the safety of its workforce (Lui et al., 2020). Petroleum products provide intrinsic risks that fall under the following categories: mechanical, biological, chemical, psychological, and physical (Agata and Rafa, 2015). In addition to other risks, workers face a significant likelihood of injuries and accidents at work because of petroleum products' combustible nature, their dependence on highly advanced machinery and equipment, the toxicity of heavy metals, and environmental health hazards (Esswein et al., 2016). The oil and gas sector is unquestionably fraught with risks and mishaps that cause serious harm to people and their property, as well as potential loss of production and financial fines.

Studies have indicated that inadequate health and safety protocols account for a significant portion of the incidents that occur in these sectors. Since employers, labor unions, and others adopt policies and provide training to guarantee adherence to safety standards and outcomes, health and safety are essential elements of workplace culture and practices (Edwards et al., 2020). To reduce the negative effects on workers' health, industries should adopt and develop suitable safety measures (Ahmed and Newson–Smith, 2010).

The oil, gas, and construction sectors employ a variety of health and safety practices, including protocols and guidelines intended to keep employees safe. Personal protective equipment (PPE), the placement of safety signage and tags, appropriate training, and worker oversight are a few prevalent health and safety practices in the construction and oil and gas industries. Research has indicated that the adoption of health and safety protocols in both sectors offers several

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advantages, such as decreased rates of diseases, injuries, and fatalities. Applying safety precautions can cut the number of injuries by up to 80%, according to Hallowell et al. (2018). Efficient health and safety procedures can also raise output, lower absenteeism, and enhance employees' general well–being.

Although putting health and safety procedures into practice has many advantages for these industries, there are a number of obstacles that prevent them from being implemented successfully. The ignorance and lack of awareness among employers and employees is one of the problems. It's possible that some employees are unaware of the risks they face and that employers are unfamiliar with the best ways to manage workplace safety.

Insufficient financing for safety programs is another issue. In the construction sector, putting safety programs into place can be expensive, and some companies might not be prepared to make such investments. Furthermore, certain employees might not follow safety protocols because of cultural norms or an absence of enthusiasm. One of the biggest challenges in these sectors is the complexity of their operations. The industry has many stakeholders, including suppliers, contractors, and regulators, which might make it difficult to apply safety procedures uniformly throughout the whole sector.

The absence of a safety culture in the sector is another issue. Certain companies may place a higher priority on profits than on safety, which could result in a contempt for safety rules and guidelines. Furthermore, the industry's high turnover rate may make it challenging to continuously apply safety procedures. Thus, in order to enhance health and safety in these industries, it is necessary to understand all of these problems, which is why this research is necessary.

Therefore, this study is set to appraise the factors militating against health and safety practices in both industries in order to enhance health and safety practices. It is said that conditions in developing nations such as Nigeria are harsher than those in developed nations when it comes to the susceptibility of laborers to risks (Idoro, 2008). The reasons cited for this are that there are no formal H&S laws, insufficient concern, and a lack of accurate records. Furthermore, Okoye & Okolie (2014), who support Idoro (2008), state that hazardous circumstances are present on numerous sites (both large and small) and that workers are exposed to a variety of hazards due to an absence of medical facilities, orientation for new employees, incapacity to identify hazards, and neglect of safety meetings, among other reasons.

METHODOLOGY

The main objective of this study is to assess the variables militating against safety and health practices in the oil and gas and construction sectors. In order to solve the research problem and accomplish the study's goal, a cross–sectional survey research design was used. According to Bryman (2016), this is a strategy in quantitative research where researchers use a survey to determine the opinions, thoughts, behaviors, or characteristics of the population by distributing it to a representative sample or the entire population. Convenience sampling served as the foundation for the main data. When there is insufficient information available regarding the population size and sample frame, the approach is suitable. The conclusion may be indicative of the population with a large number of respondents, even though the results might not be universal. This is consistent with the central limit theorem (CLT).

The overall distribution of sample means approaches a standard distribution as sample size grows, according to the CLT principle (Olanrewaju and Idrus, 2020). A statistically significant number of participants of 30 or more is needed for the validity of the CLT principle.

A two–part questionnaire was developed with the purpose of gathering data, and it was distributed to professionals in the construction and oil and gas industries, with a particular focus on Lagos, Abuja, and Port Harcourt because these cities have the greatest concentration of these industries. The respondents' backgrounds are covered in Section A, and the elements that have been found to have an impact on safety and health practices are covered in Section B. On a five–point Likert scale, with 5 denoting strongly agree, 4 agree, 3 partially agree, 2 disagree, and 1 strongly disagree, the discovered factors militating against health and safety practices were requested to be rated by the respondents in terms of how much they agreed with them.

The gathered data was analyzed using descriptive statistical tools like means, standard deviation, and the Mann–Whitney U Test. As shown in Table 1, the Likert Scale category is split into five distinct weightages for interpretive purposes.

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Table 1: Likert scale and their average index

Likert Scale	Average Index	Weightage
Strongly disagree	1.0≤Mean<1.5	1
Disagree	1.5≤Mean<2.5	2
Partially agree	2.5≤Mean<3.5	3
Agree	3.5≤Mean<4.5	4
Strongly agree	4.5≤Mean≤5.0	5

MANN–WHITNEY U TEST

The nonstop measure was compared among two independent groups using the Mann–Whitney U test to look for any differences. The non–parametric test is a substitute for the t–test for independent variables. The means and medians of the two groups were contrasted using the Mann–Whitney U test in the T–test (Pallant, 2013). On the continuous variable, it changed where the scores of the two groups fell. It then decides if the locations of the two groups differ noticeably at that point. There is a substantial distinction if the sig. (2–tailed) section on the dependent variable for each of the two groups amounts to or less than 0.05 (e.g., 0.03, 0.01, 0.001). If the number is greater than 0.05 (e.g., 0.06, 0.10), there doesn't appear to be much disparity between the two groups (Pallant 2013). The independent sample's effect size is computed using

$$\frac{Z}{\text{Square root of N}}$$

where

N = Total number of respondents in each group

Z = value of z generated in the output box

The outcome is deciphered as follow: 0.1= small effect, 0.3 = moderate effect, 0.5 = large effect (Cohen, 1988; Pallant 2013).

DATA ANALYSIS

Figure 1 illustrates that only 22% of the respondents had worked in the construction company for one to five years, whilst the remaining 78% had been employed there for more than five years. Similarly, just 20.8% of respondents had been working for less than five years in the oil and gas sector, whereas the remainder 79.2% had more than five years of experience. This suggests that the respondents from both sectors had sufficient job experience, which gave them a greater advantage in providing accurate answers to the questions.

Only 31.8% of respondents in the construction industry had a diploma or less, according to the results in Figure 2, while the remaining 68.8% had higher degrees. Similarly, in the oil and gas sector, just 25% of respondents held a diploma or less, with the remaining 75% having more education than that. This suggests that the participants from both sectors possessed sufficient knowledge to accurately complete the survey.

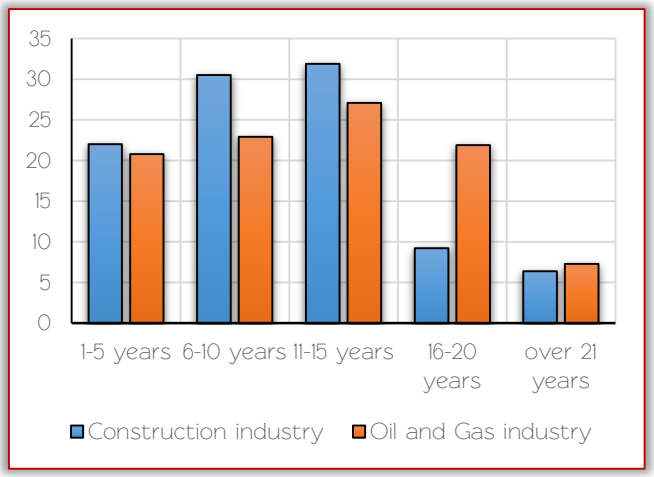


Figure 1: Respondents year of experience

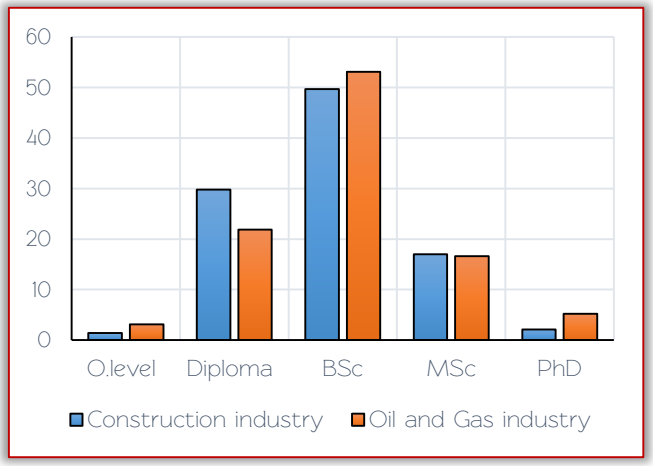


Figure 2: Academic qualification of respondents

Figure 3 demonstrates how responders from both sectors span several hierarchical levels, particularly at the top. This will aid in generalizing the outcome for both industries and shows that the replies accurately reflect the whole industry.

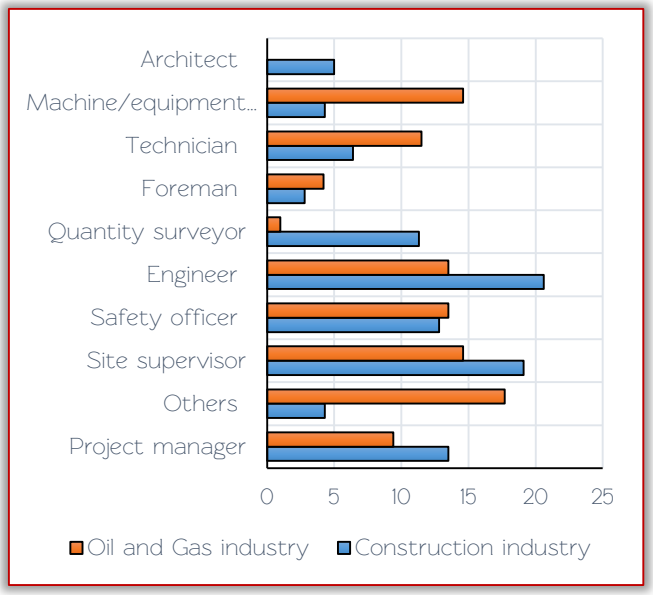


Figure 3: Respondents designation

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For both the construction and oil and gas industries, the Cronbach's alpha coefficient was greater than the required cutoff of 0.70, at 0.892 and 0.786, respectively. Thus, it can be concluded that the data collection instrument was highly reliable. Table 2 presents the degree of agreement or disagreement with the elements identified as impacting safety and health practices in the construction and oil and gas industries, based on the experiences of the respondents.

According to the table, respondents in both the construction and oil and gas industries agree with all the factors in line with the methodology's explanations (see table 1).

This implies that a wide range of factors in both sectors influence health and safety practices. The average value shows that there is consistency across all the variables. The entire average mean was 3.50, while the overall average standard deviation was 1.13. This demonstrates even further how various factors influence health and safety practices.

Table 2: Descriptive statistics

Code	Factors	Construction Mean	Construction Std. D	Oil and gas Mean	Oil and gas Std. D	Overall mean	Overall std. D
FA1	Insufficient dedication from management	3.74	1.16	3.85	1.08	3.80	1.12
FA9	When deadlines loom, work pressure increases.	3.72	1.00	3.56	1.04	3.64	1.02
FA4	Not enough money set aside for safety management	3.59	1.11	3.66	0.97	3.63	1.04
FA3	Employees' ignorance of safety	3.62	1.14	3.62	1.11	3.62	1.13
FA22	Government indifference	3.67	1.09	3.56	1.12	3.62	1.11
FA21	Failure to implement safety laws and regulations	3.81	1.11	3.40	1.32	3.61	1.22
FA2	Absence of enthusiasm for safety issues	3.50	1.12	3.58	1.08	3.54	1.10
FA12	Inadequate information exchange	3.55	1.02	3.52	1.11	3.54	1.06
FA20	inadequate guidelines and standards for health and safety	3.50	1.16	3.52	1.19	3.51	1.17
FA17	Management prioritises revenue over security.	3.67	1.13	3.32	1.09	3.50	1.11
FA24	Employees' ignorance of their rights to safety	3.57	1.10	3.43	1.07	3.50	1.09
FA26	inadequate training on safety for new hires	3.65	1.17	3.34	1.23	3.50	1.20
FA28	Inadequate documentation and record–keeping of accidents	3.55	1.25	3.44	1.20	3.50	1.22
FA27	On building projects, not using resident safety managers	3.54	1.19	3.42	1.10	3.48	1.15
FA16	Significant outsourcing and subcontracting that leads to inadequate safety oversight	3.52	1.07	3.42	1.08	3.47	1.08
FA25	Insufficient and non–existent safety meeting	3.56	1.09	3.37	1.16	3.47	1.13
FA7	Management's failure to decentralise its responsibility for safety	3.51	1.05	3.40	1.08	3.46	1.06
FA11	Insufficient safety gear at work	3.50	1.20	3.42	1.16	3.46	1.18
FA14	After accidents, the information channel is not closed.	3.55	1.13	3.37	1.08	3.46	1.10
FA19	Low academic attainment of workers	3.52	1.10	3.35	1.17	3.44	1.13
FA18	Not enough personnel to oversee and evaluate safety	3.57	1.05	3.28	1.24	3.43	1.14
FA23	Absence of safety instruction	3.45	1.14	3.41	1.25	3.43	1.20
FA5	Language hurdles between managers and employees	3.53	1.09	3.31	1.23	3.42	1.16
FA10	Violating safety practices in order to keep the project on schedule.	3.43	1.12	3.34	1.03	3.39	1.08
FA13	Absence of technical advice	3.44	1.24	3.34	1.17	3.39	1.21
FA15	Corruption and profiteering	3.42	1.18	3.36	1.15	3.39	1.17
FA8	Safety was not taken into account when choosing the subcontractors.	3.50	1.11	3.24	1.13	3.37	1.12
FA6	It is expensive to train a safety officer.	3.26	1.09	3.45	1.08	3.36	1.08

Table 3 illustrates the application of the Mann–Whitney U–test to determine the degree of significance between factors militating against health and safety procedures in the construction and oil and gas sectors. As per the methodology, there is a discernible difference in the way workers perceive the factors influencing health and safety practises between the oil and gas and construction industries for all variables with a significance level of less than 0.05, while there is no such difference for variables with a significance level greater than 0.05.

The table shows that just 10.71% of the variance is noteworthy, with the remaining 89.29% showing no noticeable variance.

According to the table, the construction industry has quite different views on on management focus on profitability than safety (Md = 4.0, n =141) from oil and gas industry (Md =3.0, n = 96), U = 5529.0, z = –2.477 p = 0.013, r = 0.2 the magnitude of effect is small. There was also significant difference on failure to implement safety laws and regulations in the opinion of construction industry (Md = 4.0, n =141) and oil & gas industry (Md =4.0, n = 96), U = 5610.0, z = –2.315 p = 0.021, r = 0.2 the magnitude of effect is small. There was also significant difference on not giving adequate safety orientation to new workers in the opinion of construction industry (Md = 4.0, n =141) and oil & gas industry (Md =3.0, n = 96), U = 5754.5, z = –2.025 p = 0.043, r = 0.1 the magnitude of effect is small.

Table 3: Mann–Whitney U–test

Factors	Mann–Whitney U	Wilcoxon W	Z	Asymp. Sig. (2–tailed)	Construction Median	Oil&Gas Median	R	Decision
FA1	6453.0	16464.0	–0.639	0.523	4.00	4.00	0.0	SE
FA2	6534.0	16545.0	–0.473	0.636	4.00	4.00	0.0	SE
FA3	6763.5	11419.5	–0.009	0.993	4.00	4.00	0.0	SE
FA4	6665.0	16535.0	–0.111	0.911	4.00	4.00	0.0	SE
FA5	6070.5	10726.5	–1.397	0.162	4.00	3.00	0.1	SE
FA6	6217.0	16228.0	–1.104	0.270	3.00	3.50	0.1	SE
FA7	6387.5	11043.5	–0.769	0.442	4.00	4.00	0.0	SE
FA8	5926.5	10582.5	–1.679	0.093	4.00	3.00	0.1	SE
FA9	6210.0	10866.0	–1.126	0.260	4.00	4.00	0.1	SE
FA10	6375.0	11031.0	–0.789	0.430	4.00	3.00	0.1	SE
FA11	6435.0	11091.0	–0.665	0.506	4.00	4.00	0.0	SE
FA12	6630.0	11286.0	–0.278	0.781	4.00	4.00	0.0	SE
FA13	6311.5	10967.5	–0.826	0.409	4.00	4.00	0.1	SE
FA14	6096.0	10752.0	–1.340	0.180	4.00	3.00	0.1	SE
FA15	6503.0	11159.0	–0.528	0.598	4.00	3.00	0.0	SE
FA16	6337.0	10993.0	–0.864	0.388	4.00	3.00	0.1	SE
FA17	5529.0	10185.0	–2.477	0.013	4.00	3.00	0.2	SE
FA18	5861.0	10517.0	–1.811	0.070	4.00	3.00	0.1	SE
FA19	6303.0	10959.0	–0.936	0.349	4.00	4.00	0.1	SE
FA20	6694.5	16705.5	–0.148	0.883	4.00	4.00	0.0	SE
FA21	5610.0	10266.0	–2.315	0.021	4.00	4.00	0.2	SE
FA22	6395.0	11051.0	–0.747	0.455	4.00	4.00	0.0	SE
FA23	6662.5	11318.5	–0.210	0.834	4.00	3.00	0.0	SE
FA24	6206.0	10862.0	–1.124	0.261	4.00	3.00	0.1	SE
FA25	6137.0	10793.0	–1.262	0.207	4.00	3.00	0.1	SE
FA26	5754.5	10410.5	–2.025	0.043	4.00	3.00	0.1	SE
FA27	6108.0	10764.0	–1.321	0.187	4.00	3.00	0.1	SE
FA28	6360.5	11016.5	–0.810	0.418	4.00	4.00	0.1	SE

DISCUSSION

Workplace health and safety procedures can be significantly impacted by a lack of commitment from management (Zaira and Hadikusumo, 2017). For example, it is the management's duty to allocate sufficient resources for health and safety. It could be challenging for employees to successfully implement health and safety procedures without enough cash and personnel. A lack of safety equipment, training, and procedures can arise from inadequate funds and workforce levels caused by poor managerial commitment. Similarly, a lack of accountability for safety issues can result from inadequate management commitment. Employees may feel less responsible for safety if management is not actively participating in safety procedures. This may result in a general culture of complacency and a failure to disclose safety incidents. In a similar vein, excessive job pressure can also have a big effect on workplace health and safety procedures (Li et al., 2018). Employee weariness can raise the risk of mishaps and injuries when they are under a lot of job pressure because of impending deadlines. Employees may find it more difficult to recognize and respond to hazards as a result of fatigue, which can also affect judgment, response time, and decision–making skills. Reduced focus and attention spans brought on by high work pressure can also raise the risk of errors and mishaps. When under a lot of stress, workers may be more prone to ignore safety precautions and hazards. High job pressure might cause employees to make bad judgments that can result in mishaps and injury. For instance, they might cut corners that raise the possibility of accidents or work quickly to finish jobs without thinking through safety precautions.

Similarly, inadequate funding for safety can have a big influence on occupational health and safety procedures (Olanrewaju et al., 2021). For example, a lack of financing for safety might result in a shortage of safety gear, such as safety goggles, safety harnesses, and personal protection equipment (PPE). This may raise the possibility of mishaps and injury at work. In addition, it could be challenging to give staff members proper safety training without enough resources. This may result in a lack of awareness regarding safety protocols and potential dangers, hence increasing the challenge for staff members to safeguard themselves. Decreased upkeep of safety facilities and equipment can also result from inadequate funding for safety. This may raise the possibility of device malfunction or failure, which could result in mishaps and injuries. In a similar vein, employee ignorance of safety issues can seriously affect workplace health and safety

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procedures. For example, workers may be more prone to participate in risky behaviors or neglect to take necessary safeguards if they are unaware of safety threats and procedures. This may raise the possibility of mishaps and injury at work. Likewise, employees who are unaware of safety protocols may disregard them or fail to follow them. This may result in a disregard for safety rules, raising the possibility of mishaps and injury. Moreover, this may result in less efficiency. Employees may become more frustrated trying to figure out how to do things securely or may decide to forego some duties entirely, which would lower output and raise expenses.

Furthermore, government neglect can have a big influence on occupational health and safety procedures (Uduakobonge et al., 2016). For example, government rules and enforcement are essential in the workplace to guarantee that firms give employees' health and safety top priority. Employers may take short cuts and put profits ahead of the welfare of their employees when the government is unable to effectively oversee and implement these laws. This may result in hazardous working environments, a higher chance of mishaps and injuries, and long–term health issues for staff members. Workplace health and safety practices can also be greatly impacted by the non–enforcement of safety laws and regulations (Williams et al., 2019). For example, safety standards and laws become suggestions and are not taken seriously by employers and employees if they are not properly enforced. This could create an environment where employees don't value safety and can act riskily without worrying about the repercussions. This may lead to an increase in workplace accidents, illnesses, and injuries. This is due to the fact that employees rarely follow instructions unless they are explicitly told to. Similarly, a lack of enthusiasm for safety issues can have a serious detrimental impact on workplace health and safety procedures. Employers and employees that are not motivated to put safety first may cut corners or disregard safety procedures, which raises the possibility of mishaps, illnesses, and injuries. This may also result in complacency, since employees or employers may fail to take the required safety procedures to avoid mishaps and injuries. They can have a false sense of security because they believe accidents are rare or that they have never happened to them.

In a similar vein, poor information flow can make it more difficult to do accurate risk evaluations (Yakubu and Bakri, 2013). This may result in a lack of awareness and comprehension of potential risks, which could lead to the implementation of insufficient safety precautions. Inadequate communication can also result in a lack of knowledge about safety risks and difficulties. As a result, people may be unable to prevent or avoid possible risks, endangering both themselves and other people. A delayed information flow in an emergency can lead to a slower response time, which can be vital in averting injuries and saving lives. Health and safety practices may also be impacted by insufficient health and safety laws and regulations. For example, a lack of precise and comprehensive health and safety standards may raise the risk of accidents since employees may not know exactly how to carry out their jobs in a safe manner. Because it is unclear who is in charge of maintaining a safe workplace, a lack of health and safety standards and regulations can also lead to a lack of accountability among employers and employees. A culture of complacency toward health and safety risks may result from this. Additionally, management may economize on safety precautions when profit is more important to them than safety, which raises the possibility of workplace mishaps and injuries. Due to missed time and higher absenteeism, this may endanger employees and reduce production. In a similar vein, an emphasis on profitability may result in the reduction or elimination of resources that may be used to guarantee a safe workplace, such as safety gear or training. This may result in workers not having the resources to properly reduce possible risks, which raises the possibility of accidents.

Similarly, a worker's ignorance of their rights to safety can have a big impact on health and safety procedures (Okoye & Okolie, 2014). For example, employees who are unaware of their rights to safety may not be aware of the kinds of risks they should be on the lookout for at work. This may result in a failure to recognize possible safety hazards, which may cause mishaps or injury. On the other hand, employees who are unaware of their rights regarding safety could not obtain enough safety instruction from their company. This might lead to employees not understanding how to use safety gear or adhere to protocols, which would raise the possibility of mishaps. In a similar vein, new hires who do not receive a sufficient safety orientation might not fully comprehend the workplace's safety policies and practices. As a result, one may become

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ignorant of potential safety risks and how to address them. Inadequate acclimatization of new employees to the safety policies and practices of their workplace may potentially increase the risk of mishaps or injuries. They might not know how to recognize possible safety concerns or how to use safety equipment properly.

According to Liu et al. (2020), inadequate reporting and record–keeping of accidents can also have a major impact on health and safety procedures. Employers may find it challenging to spot trends and patterns in workplace accidents if incidents are not accurately documented and reported. This may result in a failure to reduce possible hazards and resolve underlying safety issues. Analyzing the advancement of workplace safety can also be hampered by inadequate reporting and record–keeping of accidents. In the absence of precise accident and injury statistics, employers might find it difficult to evaluate the efficacy of safety protocols and implement the required modifications. In order to guarantee a safe and healthy workplace, businesses must keep accurate records of workplace incidents and injuries. Companies should have a system in place for reporting and documenting accidents that occur at work. They should then utilize this data to analyze developments, spot trends, hold employees and departments accountable, and demonstrate why more safety resources are required.

CONCLUSIONS

In the construction and oil and gas sectors, where the majority of incidents have been connected to inadequate health and safety procedures, the significance of occupational health and safety cannot be overstated. Therefore, this study has successfully examined the elements affecting health and safety practises in the oil and gas and construction industries in an attempt to improve such practises. A number of factors, including a lack of commitment from management, high work pressure when deadlines are approaching, inadequate funding for safety management, a lack of awareness of safety among employees, a lack of attention from the government, and a lack of enforcement of safety rules and regulations, were found to have an impact on health and safety practises in both industries. The aforementioned reasons impede the proper implementation of health and safety protocols, resulting in substandard practises that raise the likelihood of accidents. The study also showed that, aside from management's preference for profitability over safety, lax enforcement of safety laws and regulations, and inadequate safety orientation for new hires, there was no discernible difference between the factors influencing health and safety practises in the oil and gas and construction industries. This suggests that factors influencing health and safety procedures in the building sector also have an impact on the oil and gas sector. Therefore, it is necessary to address each of these issues in order to improve health and safety practises in both businesses. This study's practical implication is that it will assist stakeholder groups in both industries in determining where to focus their efforts to enhance health and safety procedures in an effort to lessen the risk of accidents devastating respective sectors.

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