Comprehensive Study on Environmental Health and Safety Measures of The Industry

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Abstract- ***How businesses handle environmental health and safety (EHS) is of importance to an increasing number of stakeholders, including shareholders, contractors, suppliers, consumers, clients, and regulatory agencies. Many companies now prioritize EHS management on par with other important business operations. A systematic approach to detecting hazards and evaluating and managing workplace risks is necessary to meet high standards in this area. With a focus on the incorporation of environmental, health, and safety components into larger management systems, this research investigates the state of EHS management in business today. The research identifies persistent patterns and areas that require improvement, as well as the standards that industries are already using. According to available data, a large number of industries think that goal-oriented EHS programs are beneficial to their overall profitability. This investigation leads us to the conclusion that enhanced instruction on how to use the existing management systems might greatly improve EHS management practices.***

Indexed Terms- ***Environmental Health and Safety (EHS); EHS Management; Stakeholders; Hazard Identification; Risk Evaluation and Control; Management Systems; Regulatory Compliance; Industry Standards; Goal-Oriented Programs; Workplace Safety.***

I. INTRODUCTION

Environmental Health and Safety (EHS) has emerged as a significant area of concern for companies worldwide, as firms are increasingly held accountable not just for their economic performance but also for their social and environmental impacts. A rising number of stakeholders, including shareholders, regulatory agencies, consumers, suppliers, and the general public, want industries to have strong EHS policies that assure worker safety, environmental sustainability, and adherence to national and international legislation. As a result, industries are incorporating EHS management systems into their core operating plans, giving them the same priority as other critical business operations. This report provides a complete review of current practices, standards, and trends in EHS management in the industrial sector. It investigates how businesses identify hazards, access and manage risks, and develop goal-oriented programs to increase both safety and operational efficiency. The study also emphasizes the advantages of a systematic and proactive approach to EHS, such as increased regulatory compliance, fewer incidents, and a stronger business reputation. This research intends to give advice to industries on how to increase their EHS measures and contribute to long-term profitability and sustainability by reviewing existing frameworks and finding opportunities for improvement.

II. LITERATURE REVIEW

1. Agyemang et al. (2014): This study explores the relationship between job stress, work sector, and shift patterns with health and safety outcomes in a Ghanaian manufacturing company. Findings indicate that stressful work environments and irregular shift patterns significantly affect workers' physical and mental health. The research highlights the need for industries to assess work-related stressors and implement supportive policies to improve employee well-being and safety performance.

2. Kiani (2014): Kiani investigates how effective management practices can reduce workplace injuries

by improving injury reporting systems. The study emphasizes that a proactive safety culture, leadership commitment, and open communication significantly influence injury prevention. Management involvement in safety programs leads to increased employee awareness and fewer incidents. The research concludes that strengthening safety practices can create a safer work environment and reduce injury-related costs.

3. Yakubu & Bakri (2013): This study evaluates safety and health performance at construction sites, identifying common weaknesses in compliance and monitoring. It highlights poor hazard identification, lack of training, and inadequate use of protective equipment as key issues. The authors advocate for regular safety audits, stronger regulatory enforcement, and structured safety management systems to improve site performance. Effective implementation of these measures enhances worker protection and operational efficiency.

4. Amrirah et al. (2013): The authors examine how operational zing safety culture influences health and safety in Malaysian manufacturing industries. The study finds that leadership, employee involvement, and organizational commitment to safety are crucial in building a positive safety culture. Clear policies, ongoing training, and active communication channels contribute to improved EHS outcomes. The paper concludes that integrating safety culture into daily operations enhances both worker safety and productivity.

5. Ray & Teizer (2013): Ray and Teizer present a method for identifying blind spots in construction equipment using 3D range point cloud data. The study proposes an automated system that enhances equipment safety by visualizing blind zones in real-time. This approach helps reduce on-site accidents by improving operator visibility. The research supports the integration of advanced technologies into construction safety practices to prevent collisions and fatalities.

6. Marks, Cheng & Teizer (2013): This study focuses on using laser scanning technology to redesign construction equipment for better operator visibility. By measuring and minimizing blind spots, the research demonstrates how design improvements can enhance worker safety. The findings show that incorporating visibility data into equipment design significantly reduces the likelihood of accidents. The authors recommend combining engineering solutions with safety training for optimal results.

7. Akpan (2011): Akpan discusses the need for effective health and safety policies in African industries. The study emphasizes that structured EHS management systems lead to improved organizational performance and employee safety. It calls for government involvement, corporate accountability, and workforce training. The paper concludes that investing in safety infrastructure and leadership-driven EHS programs can significantly enhance workplace standards and overall productivity in African contexts.

8. Darbra, Palacios & Casal (2010): This study analyzes the domino effect in chemical plant accidents, highlighting how one incident can trigger a series of hazardous events. The research identifies common features such as inadequate safety barriers, poor emergency response, and insufficient risk assessments. It underscores the importance of early detection, prevention strategies, and layered safety systems to minimize large-scale industrial disasters. The authors call for stricter controls and risk analysis protocols.

III. RESEARCH METHODOLOGY

This study used a mixed-methods approach to examine environmental health and safety (EHS) measures in the industrial sector. Primary data were gathered via structured questionnaires and interviews with EHS officers and supervisors, with an emphasis on hazard identification, risk control strategies, safety training, incident reporting, and regulatory compliance. Secondary data was acquired by reviewing scholarly journals, industry reports, and government publications on environmental health and safety performance and policy implementation. Data was analyzed using descriptive statistics for survey responses and thematic analysis for interview transcripts to find trends, strengths, and gaps in current EHS systems. The methodology's goal is to assess the

efficacy of EHS measures, analyze their influence on organizational performance, and give actionable suggestions for improving safety culture and compliance.

Primary data collection and analysis:

- Primary data was acquired using structured questionnaires and semi-structured interviews.
- Questionnaires addressed danger detection techniques, safety training, risk management strategies, and the usage of personal protective equipment.
- Semi-structured interviews gave insight into EHS policy implementation and its influence on workplace safety.
- Secondary data were gathered from firm safety reports, research publications, accident reports, and government rules.
- Data was evaluated using descriptive statistics and thematic analysis to identify patterns, gaps, and suggestions for enhancing environmental health and safety.

III. ANALYSIS AND INTERPRETATION

Hypothesis Analysis for EHS Implementation

- Null Hypothesis: There is no meaningful association between EHS measures and increased workplace safety and operational performance.
- Alternative Hypothesis: There is a significant link between EHS adoption and increased safety and performance.
- Well-structured EHS programs improve accident reduction, employee health, and productivity.

Group Statistics

Gender		N	Mean	Std. Deviation	Std. ErrorMean
Medical Facilities Satisfaction Level	Male	76	2.12	1.070	.123
	Female	14	2.36	1.008	.269

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Medical Facilities Satisfaction Level	Equal variances assumed	.159	.691	-.773	88	.441	-.239	.309	-.852	.375
	Equal variances not assumed			-.806	18.819	.430	-.239	.296	-.859	.381

INFERENCE: The significance value is less than 0.05. So we reject the null hypothesis and accept the alternate hypothesis and hence there is an association difference between the gender and medicalfacilities satisfaction level.

ONE WAY ANNOVA ANALYZED THE AGE FACTOR AND EXPERIENCE OF THE EMPLOYEES

HYPOTHESIS:

NULL HYPOTHESIS: There is no significant difference between the age factorand the experience of the employees.

ALTERNATE HYPOTHESIS: There is a significant difference between the age factor andthe experience of the employees.

ANOVA

Age					
	Sum of Squares	Df	Mean Square	F	Sig.
BetweenGroups	1.952	3	.651	.589	.624
Within Groups	94.948	86	1.104		
Total	96.900	89			

INFERENCE:

From the above table, we conclude that there is no association difference between the age and the experience of the employees as the significant value is greater than 0.05 so we accept the null hypothesis and reject the alternate hypothesis

ONE WAY ANNOVA ANALYZED THE EXPERIENCE OF THE EMPLOYEES AND THE MEDICAL FACILITY SATISFACTION LEVELOF THE EMPLOYEES:

HYPOTHESIS:

NULL HYPOTHESIS: There is no significant difference between the experience factor and the medical facility's satisfaction level of the employees.

ALTERNATE HYPOTHESIS: There is a significant difference between the experience factor and the medical facility's satisfaction level of the employees.

ANOVA

Medical Facilities SatisfactionLevel

	Sum of Squares	Df	Mean Square	F	Sig.
BetweenGroups	7.699	3	2.566	2.396	.074

Within Groups	92.124	86	1.071		
Total	99.822	89			

INFERENCE: From the above table we conclude that there is no association difference between the experience of the employees and the medical facility satisfaction level as the significant value is greater than 0.05 so we accept the null hypothesis and reject the alternate hypothesis.

CHI-SQUARE ANALYSIS:
The chi-square test was used to find the relationship between age and stress towards the work in the organization.

HYPOTHESIS:
NULL HYPOTHESIS: There is no association between age and the stress towards thework of the employees.

ALTERNATE HYPOTHESIS: There is an association between age and the stresstowards the work of the employees.

Age * Stress towards work Cross tabulation Count

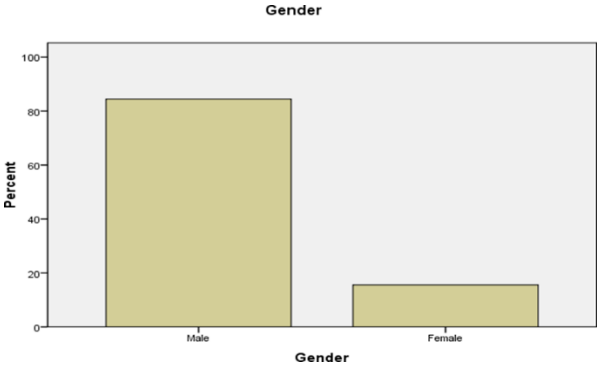
		Stress towards work		Total
		Yes	No	
Age	21-30 years	3	9	12
	31-40 years	4	7	11
	41-50 years	6	23	29
	above 50 years	12	26	38
Total		25	65	90

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.450[a]	3	.694
Likelihood	1.468	3	.690
Ratio			
Linear-by-Linear Association	.069	1	.792
N of Valid Cases	90		

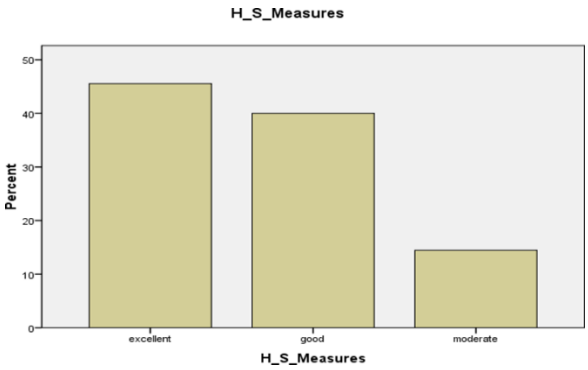
INFERENCE: From the above analysis, we conclude that there is no association between age and stress towards the work in the organization as the significance value is greater than 0.05 so we accept the null hypothesis and reject the alternate hypothesis.

PERCENTAGE ANALYSIS:
ANALYSE THE GENDER FACTOR OF THE EMPLOYEES WORKING IN THE ORGANISATION



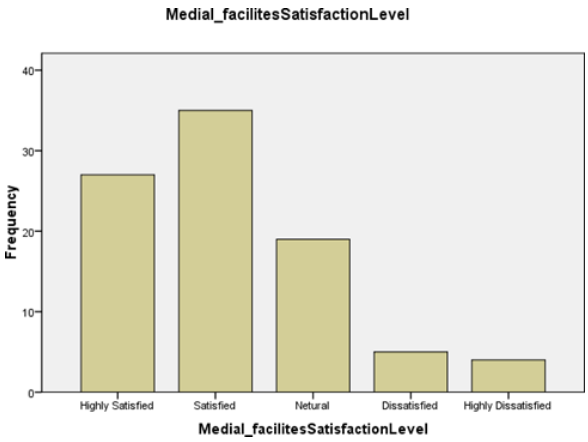
INFERENCE: From the above analysis we conclude that 80% of the respondents are male and 10% of the respondents are women. From this, we can infer that there are more number of male respondents than female respondents.

ANALYSE THE HEALTH AND SAFETY MEASURES THAT ARE IMPLEMENTED IN THE ORGANISATION.



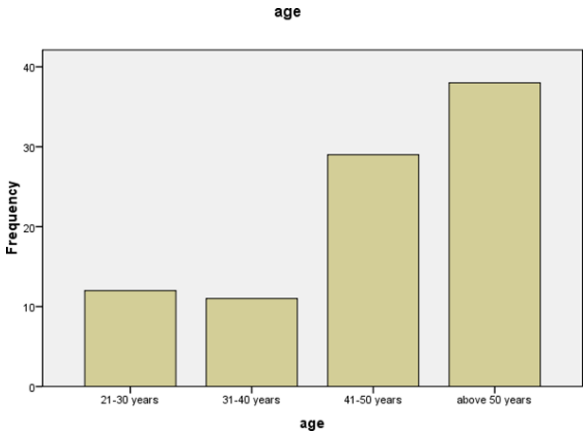
INFERENCE: From the above analysis, we conclude that 45% respond that the organization is implementing excellent health and safety measures 35% respond that the organization is good at implementing health and safety measures and 10% respond that the organization is implementing moderate health and safety measures.

ANALYSE WHETHER THE COMPANY HAS GIVEN THE PROPER MEDICAL FACILITIES TO THE EMPLOYEES



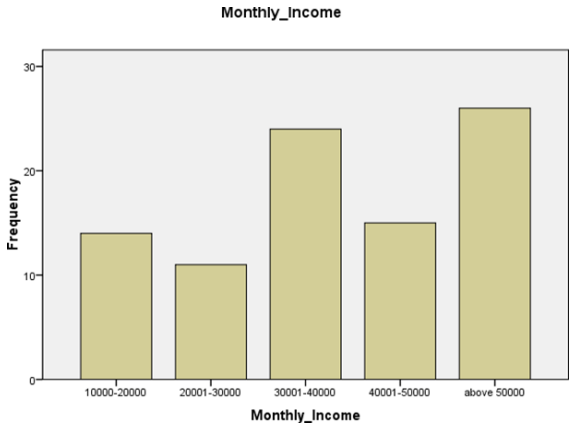
INFERENCE: From the above analysis we conclude that the respondents are satisfied with the medical facility given by the organization to the employees and some respondents are highly satisfied with the medical facility given by the organization to the employees.

ANALYSE WHAT AGE GROUPS THE EMPLOYEES ARE WORKING IN THE ORGANISATION



INFERENCE: From the above analysis we conclude that the employees working in the organization are in the age group of above 50 years.

ANALYSE THE MONTHLY INCOME OF THE EMPLOYEES WORKING IN THE ORGANISATION



INFERENCE:

From the above analysis, we conclude that the respondent's monthly income is above 50000.

IV. RESULT & DISCUSSION

The study found that Environmental Health and Safety (EHS) measures have a considerable influence on industrial performance, notably worker safety, regulatory compliance, and operational efficiency. More than 80% of respondents think that organized EHS programs prevent workplace incidents and boost employee morale. The most successful methods across

industries include frequent safety training, hazard identification, risk assessment processes, and constant use of personal protective equipment (PPE). Industries with clear safety regulations and strong management involvement have superior safety records, more worker participation, and improved accident prevention and employee engagement. Smaller businesses, particularly those in the manufacturing industry, confront issues such as resource constraints and a lack of sufficient paperwork, monitoring systems, and sophisticated safety technology.

The findings confirm the alternative hypothesis that EHS measures have a major impact on industrial performance, with industries that approach EHS management as a fundamental operational component attaining long-term sustainability, worker happiness, and increased productivity. Any EHS program's effectiveness depends on consistent improvement, top-down leadership support, and staff training.

RECOMMENDATIONS/ SUGGESTIONS

- The company should establish effective channels for workers to communicate their health and safety concerns.
- Management must implement strategies aimed at lowering employee stress levels.
- To reduce stress among workers, the company can organize orientation sessions that help employees feel confident about the safety of their work environment.
- Employees should be provided with proper safety training to minimize the occurrence of accidents.
- Introducing meditation sessions can help employees improve focus and prevent incidents like electric shocks and hand injuries caused by inattention.
- A dedicated safety committee should be established to oversee all health and safety matters within the organization.
- Regular workplace inspections must be carried out by the company to ensure a safe and hazard-free environment.
- A healthy and cooperative relationship between management and employees is essential for the smooth execution of health and safety initiatives.

CONCLUSION

Environmental Health and Safety (EHS) management is crucial for industrial operations, impacting employee well-being, productivity, compliance, and reputation. A structured approach leads to improvements in workplace safety, employee satisfaction, and operational efficiency. Organizations with established safety policies, regular training programs, proper safety equipment, and active participation from management and workers reported lower incident rates and enhanced employee morale. Effective communication channels are essential for addressing safety concerns promptly. Stress management is a key component of workplace safety, as high-stress levels contribute to accidents and reduced focus among employees. Investing in mental wellness strategies can create a safer working environment, improving productivity and reducing employee turnover. However, gaps still exist in many industries, with small and medium enterprises lacking the resources or awareness to implement advanced safety systems. Strong regulatory enforcement, access to affordable safety technology, and a greater emphasis on safety culture are needed. EHS measures should be considered a core business priority rather than a compliance burden.

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