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## ASSESSMENT OF SAFETY CLIMATE AND HEALTH IN CONSTRUCTION SECTOR

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### ABSTRACT

This research assessment explores the critical relationship between safety climate and health in the construction sector, acknowledging its inherent risks and the need for comprehensive evaluations. Emphasizing the industry's economic importance and high-risk nature, the assessment examines factors such as safety policies, leadership commitment, hazard recognition, and worker well-being. The aim of the research is to enhance safety climate by evaluating construction workers' safety practices and awareness, and to assess the impact of occupational health measures on the well-being of workers in the construction industry. The findings aim to shed light on the current state of safety and health in the sector, providing valuable insights for improving safety protocols and health interventions.

**Keywords:** Safety Climate, Health Assessment, Construction Industry, Occupational Health, Workplace Safety.

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### I. INTRODUCTION

#### 1.1 Background

The construction industry, in particular, goes through changes in the working environment and changes of managers and workers depending on the construction site. It is a high-risk industry with a high probability of fatal accidents, such as falls or being crushed by objects. The construction industry is a vital driver of economic growth and infrastructure development across the globe. It is also one of the most hazardous sectors, characterized by a high frequency of accidents, injuries, and health-related issues.

In light of these challenges, assessing safety climate and health within the construction sector has become an essential endeavor. This assessment aims to comprehensively evaluate the working conditions, practices, and organizational culture prevalent in construction companies to ensure the well-being of workers and the overall safety of construction sites.

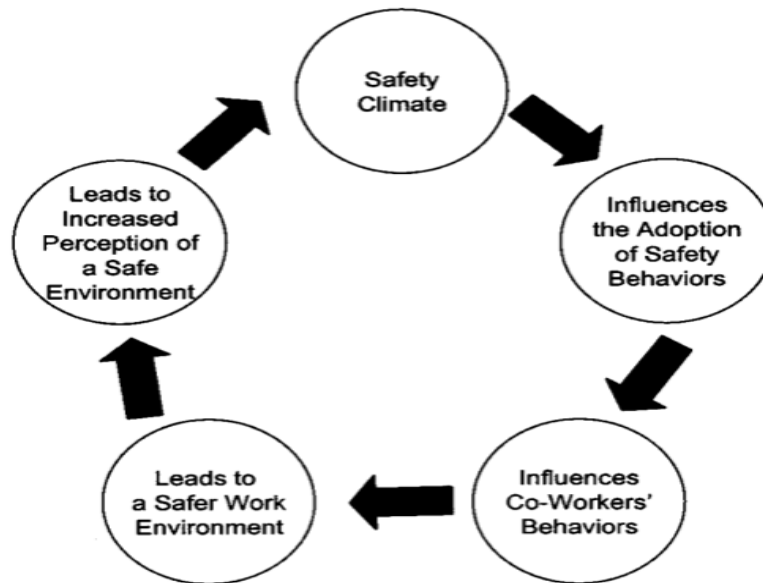
Safety climate and health assessments in the construction sector have gained significant importance in recent years due to a growing recognition of their profound impact on productivity, cost-effectiveness, and, most importantly, the lives of construction workers. It goes beyond mere compliance with regulatory standards and delves into the holistic well-being of the workforce. This assessment involves the examination of various factors, including safety policies, leadership commitment, hazard recognition, communication, training, and the physical and mental health of workers.

Construction activities are inherently risky, involving heavy machinery, complex processes, and exposure to a range of hazards, such as falls, electrical shocks, and exposure to harmful substances. Hence, understanding and improving safety climate and health practices are essential for reducing accidents, injuries, and long-term health issues in the construction sector.

In this assessment, we will explore the methodologies, tools, and key considerations involved in evaluating safety, climate and health within the construction industry. We will delve into the significance of proactive safety measures, the role of leadership and management in fostering a safety-conscious culture, and the importance of worker engagement. Additionally, we will examine the impact of emerging technologies, such as Building Information Modeling (BIM) and wearable devices, on enhancing safety and health outcomes.

**1.2 Safety Climate in the Construction Sector**

Safety climate refers to the shared perceptions and attitudes of individuals within an organization or a specific work environment regarding safety practices, policies, and procedures. In the context of the construction sector, safety climate is concerned with how workers and management perceive and prioritize safety within the construction site. It encompasses the overall safety culture, communication regarding safety issues, the commitment of leadership to safety, and the behaviors and attitudes of workers towards safety.



**Fig: 1.** Influence of safety climate Source: Robyn Gershon et. al., 2000

**1.3 Interconnection of Safety Climate and Health in the Construction Sector**

The interconnection between safety climate and health in the construction sector is a dynamic relationship that significantly influences the overall well-being of workers and the performance of construction projects.

Recognizing and understanding this interconnection is paramount for creating a work environment that not only minimizes accidents and injuries but also promotes the long-term health of individuals involved in construction activities.

**1.3.1 Shared Responsibility For Well-Being:**

The interconnection between safety climate and health underscores the shared responsibility that employers, supervisors, and workers have for the holistic well-being of everyone on the construction site. An organization committed to safety and health fosters an environment where workers feel valued, supported, and encouraged to prioritize their own well-being.

Encouraging regular health check-ups, providing access to healthcare services, and offering wellness programs are not only investments in the long-term health of workers but also contribute to a positive safety climate. By recognizing the dual importance of safety and health, construction organizations can create a culture that not only prevents accidents but also promotes the overall wellness and longevity of their workforce.

**1.3.2 Regulatory Compliance and Organizational Culture:**

The interconnected nature of safety climate and health is reflected in regulatory frameworks governing the construction industry. Regulatory bodies often emphasize the integration of safety and health measures to ensure the comprehensive well-being of workers. Beyond regulatory compliance, fostering a positive safety culture becomes a key organizational objective. Organizations that go beyond mere compliance to cultivate a culture of safety and health often experience increased worker satisfaction, improved productivity, and a positive reputation within the industry.

## II. LITERATURE REVIEW

**Tariq Umar (2018):** This article, therefore, attempts to develop a safety climate assessment tool for the Omani construction industry. A mixed research method consisting of systematic review (N = 32), structured questionnaire (N = 102), and email interview (N = 19) was adopted in this research. An assessment tool that has seven factors and 62 simple questions that the participants have to answer on a Likert scale of 1 to 5 is finally developed. One of the methods that could improve the safety Performance of construction organizations is the safety climate approach, which is helpful to know the existing maturity level of the safety climate and to develop plans to achieve the required level of maturity.

**K.P. Reghunath (2010):** In the present study a questionnaire was framed to ascertain safety climate in major construction organizations across India involved in construction of Thermal power plants, Hydro power plants, Highway projects, Bridge works, Refinery works, High rise works, Pipe line works and Dam works and its content validity was verified. The internal consistency of the questionnaire was tested by using Cronbach's alpha coefficient. Data was collected based on questionnaires from employees working in various construction firms in India. The results of questionnaires were tested statistically by using the Kruskal – Wallis test to ascertain the attitudes of different categories of employees towards safety in the construction industry has always been a major issue.

**Ibrahim Mosly (2019):** This research study aimed to identify the factors influencing the safety climate in the construction industry. A literature review was the main method of data collection, and only journals included on the Web of Science platform were considered in the process of identifying key factors. As a result, 18 factors were identified and grouped into management related safety climate factors, and worker-related safety climate factors. In conclusion, it was found that the organization's management team had the greatest influence on the safety climate; thus, they are considered accountable for safety measures as a result. The construction industry represents a significant share of the economy for any country. Nevertheless, it is considered a dangerous industry, where the level of injuries and deaths is generally high compared to other industries.

**Dongping Fang (2006):** This research is a case study and the results are derived from the data of one company, but the methodology of this research may be useful as a model for further research, and the findings may provide useful information for construction managers and safety practitioners in the construction industry to improve their safety culture. Because of the characteristics of decentralization and mobility in the construction industry, safety culture is crucially important. A comprehensive safety climate questionnaire survey was conducted with all sites and employees of a leading construction company and its subcontractors. The results also confirm the feasibility of exploring common factors of the safety climate in the construction industry.

**Mudan Wan. (2018):** This study establishes a hierarchical linear model (HLM) of safety climate, individual safety awareness, and safety behavior to examine the multilevel relationships between them. Data were collected using questionnaires from workers in different teams on the construction site in China. The results indicate that organizational safety climates affect individual safety behaviour and safety awareness. In addition, there is a positive correlation between individual safety awareness and safety behavior, and the safety climates have a positive moderating effect on the relationship between them. The final conclusion offers a path for the current practice of safety management in the construction industry. The vast majority of accidents in construction are generated by unsafe behaviors.

**Okolie, K. C (2012):** The purpose of this paper was to explore the influence of national culture on the construction worker's safety climate in South East Nigeria. The study employed the survey research method for the investigation. Structured questionnaires were administered to a sample of site operatives and management staff/personnel involved in construction projects in the study area. The responses were analyzed using the Product-Moment Correlation Coefficient (r) to determine the relationship between national culture dimensions and safety climate. A two-tailed t-test was also utilized to ascertain the significance of the relationship in the correlation observed. The study revealed that all five cultural

dimensions except long term orientation are highly and positively correlated with the safety climate which invariably influences the safety perceptions and behavior of construction workers.

**Tariq Umar (2018):** The purpose of this paper is to examine the understanding of using safety climate and to make explicit some of the main elements that have a greater impact in the construction industry in Oman. Relevant safety climate factors from literature have been identified using specific search criteria, which resulted in 62 factors spanning over a period of 37 years from 1980 to 2017. The results of face-to-face interviews with construction professionals from chosen construction companies in Oman that show a high level of safety performance are also presented. The result shows that management commitment; alignment and integration of safety as a value; accountability across the board; supervisory management; empowerment and involvement of workers; improvement of communication; and training and education are some of the main elements that significantly affect the safety climate in Oman.

**Anas A. Makki (2020):** The study revealed three key components of determinants for safety climate evaluation of Saudi Arabian construction sites. Notable components are safety commitment, safety interaction, and safety support. Implications of this study include assisting construction industry stakeholders to bolster the safety climate at their construction sites, which should lead to improved safety performance levels. The hazardous nature of the construction industry requires giving increasing attention to safety management and the available means to eliminate or reduce the risks of workers' injuries. Workers in the construction industry of Saudi Arabia face similar daily risks as workers face in other countries. The safety climate significantly influences safety performance, making research in the field of safety climate a vital step toward raising safety levels at construction sites.

**Ibrahim Mosly (2020):** This study aims at exploring key components of determinants for safety climate evaluation of Saudi Arabian construction sites. Using data collected from 401 industry practitioners, a dimension reduction statistical approach and exploratory factor/principal component analysis were conducted on 13 safety climate factors that were found to significantly correlate with safety climate evaluation of construction sites. The study revealed three key components of determinants for safety climate evaluation of Saudi Arabian construction sites. Notable components are safety commitment, safety interaction, and safety support. Implications of this study include assisting construction industry stakeholders to bolster the safety climate at their construction sites, which should lead to improved safety performance levels.

**Ahmed Jalil Al-Bayati (2021):** This study assesses a newly proposed construction safety culture and climate framework that aims to overcome the present ambiguity in the definitions and measurement of construction safety culture and construction safety climate. The goal is to provide a practical construction safety culture and safety climate framework that fits the construction industry's needs. A survey was designed to validate the proposed framework and assess its influence on safety behavior and safety motivation. The survey was completed by 275 construction practitioners. The findings suggest that the construction safety culture initiates and maintains the construction safety climate.

### III. CONCLUSION

In conclusion, the assessment of safety climate and health in the construction sector is imperative for fostering a work environment that prioritizes both the immediate safety of workers and their long-term well-being. The interconnected relationship between safety climate and health underscores the shared responsibility among employers, supervisors, and workers to create a culture of safety and wellness. This goes beyond regulatory compliance, emphasizing proactive measures, leadership commitment, and worker engagement. As the construction industry continues to evolve, embracing emerging technologies and promoting a holistic approach to safety and health becomes crucial. By investing in comprehensive safety practices and health initiatives, construction organizations can not only reduce accidents and injuries but also contribute to the sustained health and resilience of their workforce, ensuring a safer and more sustainable future for the industry.

#### IV. REFERENCES

- [1] P, R. K. (2010). Empirical Analysis of Construction Safety Climate – A Study. [https://www.academia.edu/34197649/Empirical\\_Analysis\\_of\\_Construction\\_Safety\\_Climate\\_A\\_Study](https://www.academia.edu/34197649/Empirical_Analysis_of_Construction_Safety_Climate_A_Study)
- [2] Mosly, I. (2019). Factors Influencing Safety Climate in the Construction Industry: A Review Factors Influencing Safety Climate in the Construction Industry: A Review. August. <https://doi.org/10.5923/j.ijcem.201908.03.03>
- [3] Fang, D., Chen, Y., & Wong, L. (2006). Safety Climate in Construction Industry: A Case Study in Hong Kong. June, 573–584.
- [4] Wang, M., Sun, J., Du, H., & Wang, C. (2018). Relations between Safety Climate , Awareness , and Behavior in the Chinese Construction Industry : A Hierarchical Linear Investigation. 2018.
- [5] Makki, A. A. (2021). Predicting the Safety Climate in Construction Sites of Saudi Arabia: A Bootstrapped Multiple Ordinal Logistic Regression Modeling Approach.
- [6] Okoye, P., & Chuks, K. O. (2017). Assessment of National Culture Dimensions and Construction Health and Safety Climate in Nigeria. May. <https://doi.org/10.7237/sjeer/167>
- [7] Mosly, I. (2020). Safety Climate Perceptions in the Construction Industry of Saudi Arabia : The Current Situation.
- [8] Umar, T., & Umeokafor, N. (n.d.). Developing a Safety Climate Assessment Tool for Omani Construction Industry. 13(1), 1–24. <https://doi.org/10.4018/IJSSMET.296.265>
- [9] Al-bayati, A. J. (2021). Impact of Construction Safety Culture and Construction Safety Climate on Safety Behavior and Safety Motivation.
- [10] Umar, T. (2020). Safety Climate Factors in Construction – A Literature Review.