



The Role of Mental Stress and Organizational Relationships in Shaping Safety Perception among Oil and Gas Construction Workers

Bagos Armansyah^{1*}, Berliana Dewi Balqis²

Alumni, Department of Civil Engineering, Faculty of Civil Engineering and Planning,
Sepuluh Nopember Institute of Technology, Keputih, Kec. Sukolilo, Surabaya¹

Alumna, Department of Industrial Engineering, Faculty of Engineering, Brawijaya
University, Jalan MT Haryono 167 Malang, Jawa Timur, Indonesia²

*Corresponding author e-mail address: bagosar@yahoo.com

ABSTRACT

Construction activities in the oil and gas industry are inherently associated with a high level of occupational safety and health risks. Field-related factors that influence workers' safety perceptions are therefore critical to be identified in order to ensure the effective implementation of safe work behaviors. This study aims to analyze the relationship between mental stress and organizational relationships and their effects on safety perception among field workers in the oil and gas industry, particularly within the operational area of Riau Province, Indonesia. The respondents consisted of 106 field workers, and a quantitative research approach was employed. Data were analyzed using multiple linear regression analysis. The results indicate that mental stress and organizational relationships have a significant influence on workers' safety perceptions, with a combined explanatory contribution of 39.6%. Higher levels of mental stress tend to increase workers' negligence and reduce their concern for safety perception. Conversely, stronger organizational relationships enhance workers' understanding and awareness of safety perception, which in turn contributes to the reduction of workplace accidents.

Keywords: Mental Stress; Organizational Relationships; Safety Perception

1. INTRODUCTION

Construction projects are defined as planned activities executed within a specified timeframe under constraints of cost and limited resources. The implementation of construction projects in the oil and gas industry involves a high level of risk, as this sector is closely associated with hazardous materials, including chemicals and gases that may lead to occupational accidents and work-related illnesses. Consequently, occupational safety issues have become a primary concern that significantly influences evolving industry demands, thereby encouraging contractors to operate more efficiently while simultaneously prioritizing safety aspects [1].

For many years, the construction industry has been characterized by relatively poor occupational safety and health performance, although available evidence indicates a continuous trend toward improvement [2]. Accidents are unplanned events that may result in personal injury and material damage. Occupational accidents can arise from negligence on the part of the organization, the workers, or a combination of both, and their consequences extend

beyond physical harm to include psychological trauma experienced by the individuals involved [3].

Effective management of mental stress and organizational relationships is expected to enhance field workers' productivity while enabling them to remain focused on complying with safety regulations, as safety perception plays a critical role in the proper and consistent implementation of safe work practices. Mental stress and workload jointly influence workers' safety perception; however, their effects appear to be less pronounced among managerial staff. For managerial personnel, safety perception is more strongly affected by mental pressure arising from excessive workloads, as they are required to address multiple issues simultaneously and operate within a highly demanding industrial environment [4].

Organizational behavior and organizational commitment are recognized as key determinants of worker safety. Organizational relationships reflect workers' emotional attachment and psychological engagement with the organization. The quality of relationships between the organization and its employees is shaped by management attitudes, managerial support, and coworker interactions, all of which directly or indirectly influence workers' safety perceptions [5]. Furthermore, the relationship between physical isolation due to work in remote areas and workers' safety behavior is mediated, both directly and indirectly, by workers' mental stress and health status [6].

In Norway, approximately 15% of oil and gas workers have reported psychological problems, including nervousness and irritability, anxiety, and depression [7]. Work-related stress has been shown to cause fatigue among firefighters, which in turn adversely affects their safety behavior [8]. When top management demonstrates a strong commitment to safety, both job inspectors and workers are more likely to meet organizational expectations by increasing their willingness to engage in daily safety practices [9].

In construction activities in Batam, leadership and work pressure have been identified as the dominant factors jointly influencing workers' safety behavior, followed sequentially by coworker influence, training, and organizational management commitment as contributing factors [10]. Furthermore, work engagement can lead to stronger employee–organization commitment, both of which can be fostered through consistent and clear communication within the organization and about organizational objectives [11]. Improved organizational relationships, together with job security assurance, have been found to reduce both major and minor workplace accidents, thereby contributing to enhanced product quality and a safer working environment [4].

As a fundamental form of social interaction, the relationship between employers and employees is critically important to organizational sustainability. To survive and grow in an increasingly competitive market, organizations must manage their workforce effectively while fostering harmonious and mutually beneficial working relationships. As an integral component of employment relations research, the employee–organization relationship (EOR), viewed from the employer's perspective, provides an important analytical entry point for enhancing employee well-being and organizational outcomes [12].

The objective of this study is to examine the extent to which mental stress and organizational relationships influence safety perception among field workers in the oil and gas industry.

2. THEORY AND METHODS

2.1 Theory

2.1.1 Mental Stress

Work-related mental stress encompasses negative attitudes, difficulties in concentration, sleep disturbances, and maladaptive attitudes or behaviors toward co-workers, family members, and friends [4]. Mental stress in the workplace may arise from individual characteristics, organizational factors, and external environmental conditions [13]. Such stress has a detrimental effect on job satisfaction and represents one of the major challenges in construction sites.

Mental stress significantly influences workers' performance and may lead to job dissatisfaction as well as compromised personal safety, thereby increasing the likelihood of workplace accidents. Consequently, mental stress constitutes a critical factor that must be addressed in occupational settings to promote workers' health, comfort, and safety [4]. Furthermore, reducing psychological pressure has been shown to positively affect employees' safety behavior [6], [14].

2.1.2 Organizational Relationships

Organizational behavior and organizational commitment are widely recognized as key determinants of worker safety. Organizational relationships refer to workers' feelings of attachment and psychological bonding with the organization. These relationships are shaped by management attitudes, managerial support, and coworker interactions, all of which may directly or indirectly influence workers' safety perceptions [4], [5]. Organizational relationships are understood as all forms of interpersonal interactions that occur in the workplace when individuals engage to perform their assigned tasks and job functions. These relationships encompass a wide range of interactions among employees, including not only formal relationships within the organizational hierarchy but also informal social relationships that develop in the work environment. Organizational relationships extend beyond mere professional contact; they reflect psychological and emotional connections that influence employees' attitudes, perceptions, and behaviors at work, with significant implications for productivity, motivation, and job satisfaction [15]. The Employee–Organization Relationship (EOR) refers to the psychological and reciprocal connection between employees and their organization. It extends beyond formal employment relationships to encompass employees' perceptions of social interactions and exchanges within the organization. This relationship significantly influences organizational outcomes, including employee commitment, engagement, and work-related behaviors [16].

2.1.3 Safety Perception

Perception is defined as the process by which individuals select, organize, and interpret informational inputs to construct a meaningful and coherent understanding of their environment [17]. Safety remains a critical and ongoing issue in the oil and gas industry, which is characterized by high rates of workplace injuries and fatalities [6]. Safety behavior is a primary indicator of safety performance and provides substantial benefits, including the prevention of workplace injuries and fatalities. It is inherently inseparable from overall safety

performance [18]. Safety climate is understood as the collective beliefs of workers regarding their perceptions of safety in the workplace. Workplace safety perception is directly correlated with occupational accidents, as workers with a strong understanding and awareness of safety are less likely to be involved in workplace accidents [19].

2.2 Method

This study was conducted at an oil-contaminated land remediation project located within the operational area of an oil and gas company in Riau Province, Indonesia. Data were collected through the distribution of questionnaires to 106 field workers, complemented by semi-structured interviews with five field workers to clarify and validate the findings obtained from the questionnaire responses. The respondents consisted of personnel directly involved in construction activities in the upstream oil and gas sector, including operators, helpers, foremen, welders, supervisors, safety officers, craftsmen, PM crew members, and other related roles.

The upstream oil and gas sector is characterized by highly complex construction activities that involve multidisciplinary expertise and advanced technologies. Moreover, this sector has been documented as having a higher frequency of occupational accidents and work-related illnesses compared to the downstream sector. Direct observation was also employed as a data collection method, whereby the researcher directly observed the phenomena under investigation in their natural setting without manipulation, serving as an investigative tool. This observational approach was intended to validate and reinforce the questionnaire results by ensuring consistency between respondents' answers and actual field conditions. The questionnaire instrument utilized a Likert scale, consisting of a set of statements with multiple response options designed to measure respondents' levels of agreement or disagreement with specific statements.

The data analysis was conducted using a quantitative approach with SPSS software, employing multiple linear regression analysis. The independent variables (X) consisted of mental stress (X_1) and organizational relationships (X_2), while the dependent variable (Y) was safety perception. The study tested the following hypotheses: (1) mental stress has a negative effect on safety perception among field workers, and (2) organizational relationships have a positive effect on safety perception.

3. RESULTS AND DISCUSSION

3.1 Respondent Characteristics

Based on the questionnaire results, the characteristics of the respondents are presented as follows

Table 1. Characteristics of Respondents Based on the Questionnaire Survey

No.	Characteristics	Description	Total	Percentage
1.	Age	15-24 (Young age)	20	18.87%
		25-34 (Early-career workers)	39	36.79%
		35-44 (Middle-aged workers)	28	26.42%
		45-54 (Pre-retirement age)	19	17.92%
		55-64 (Retirement-age)	0	0.00%

No.	Characteristics	Description	Total	Percentage
2.	Gender	Male	105	99.06%
		Female	1	0.94%
3.	Education	Elementary School (SD)	3	2.83%
		Junior High School (SMP)	0	0.00%
		Senior High School (SMA/STM/SMK)	79	74.53%
		Bachelor's Degree (S1)	23	21.70%
		Master's Degree (S2)	1	0.94%

Based on Table 1, the largest proportion of field workers falls within the 25–34 age group, accounting for 36.79% of the respondents, followed by those aged 35–44 years at 26.42%. These findings indicate that more than 60% of the field workforce is concentrated in the 25–44 age range. No field workers were aged above 55 years. Within this age range, workers are generally expected to possess sufficient physical strength and psychological maturity to perform demanding physical and mental tasks in field operations.

In terms of gender distribution, the field workforce is overwhelmingly male, representing 99.06% of the respondents, with only one female worker serving in a field supervisory role. Regarding educational background, the majority of field workers are graduates of senior high school (SMA/STM/SMK), accounting for 74.53%, while 21.70% hold a bachelor's degree. No respondents reported junior high school education, and only 2.83% had elementary school education. Workers with bachelor's degrees were primarily employed in roles such as safety officers and field supervisors.

3.2 Interview

3.2.1 Stress of Field Construction Workers

Based on interviews with Workers 1 and 2 (spotters), the respondents indicated that their assigned tasks were associated with an appropriate level of responsibility and that interpersonal conflicts were generally absent. However, employment uncertainty, particularly among lower-tier workers, was perceived as a significant source of anxiety. This uncertainty contributed to feelings of restlessness and concern during work activities, which in turn led to reduced concentration. Additionally, non-work-related issues, such as family problems, were reported to affect workers' mental conditions, occasionally resulting in sadness or rumination. Most spotter workers held senior high school (SMA/STM/SMK) qualifications.

Interviews with Workers 3 and 4 (field operators) revealed that they perceived their job assignments as appropriate and reported minimal concern while performing their duties. Similar to the spotters, uncertainty regarding future employment was identified as a factor that negatively affected work motivation. Overall, field operators demonstrated a very good mental condition, expressing comfort at work, clear task allocation, and effective workplace communication.

Consistent findings were also obtained from the interview with Worker 5 (PM crew), who reported experiences similar to those of field operators. The mental stress level of this worker was assessed as low, with job assignments well aligned with required skill sets in the field. Most PM crew members held bachelor's degrees.

3.2.2 Organizational Relationships among Field Construction Workers

Interviews with five workers from various positions, including helpers, heavy equipment operators, and field operators, revealed consistent responses indicating that organizational relationships were perceived to be in very good condition. Similarly, relationships among coworkers were characterized by strong mutual support and cooperation during work activities. These findings suggest that supervisors and coworkers play a critical role in shaping the safety climate and influencing construction performance outcomes. For instance, when coworkers and supervisors are perceived as insufficiently committed to safety, construction workers are more likely to adopt unsafe work practices [20]. Organizational behavior and organizational commitment are key factors that strongly influence worker safety. An organizational relationship refers to workers' feelings of attachment and psychological bonding with the organization. The relationship between the organization and its employees is shaped by management attitudes, managerial support, and coworker relationships, all of which may directly or indirectly affect workers' safety perceptions [4]. The relationship between a worker and the organization encompasses multiple aspects, including perceived management concern, managerial support, and coworker relationships, all of which influence workers' safety perceptions [5].

3.2.3 Safety Perception among Field Construction Workers

Physical safety conditions and psychosocial behaviors arising from workers' activities contribute to supporting and protecting both the physical and psychological safety of the work environment, thereby fostering conditions conducive to overall safety [21]. Safety climate is understood as the collective beliefs of employees regarding their perceptions of workplace safety [22]. Interviews with Workers 1, 2, 3, 4, and 5 yielded largely consistent conclusions, indicating that the implementation and compliance with safety procedures are regarded as mandatory. The workers strongly expressed their expectation to return home in good health and safely reunite with their families. The use of personal protective equipment (PPE) was reported as a consistent and non-negotiable practice during work activities.

However, some aspects of safety understanding, particularly related to safety signage and the interpretation of work procedures, were identified as requiring clearer, more detailed, and simplified explanations, as these materials are sometimes difficult for workers to fully comprehend.

3.3 Impact of Mental Stress and Organizational Relationships on Field Construction Workers

3.3.1 Validity Test

Validity testing is a statistical procedure used to assess the accuracy of a research instrument in measuring the intended concept. The results of the validity analysis are described below.

Table 2. Results of the Validity Test for Mental Stress

Item	Calculated r-value	r table value	Remarks
M1	0.674	0.191	Valid
M2	0.525	0.191	Valid
M3	0.723	0.191	Valid
M4	0.590	0.191	Valid
M5	0.648	0.191	Valid
M6	0.456	0.191	Valid

Table 3. Results of the Validity Test for Organizational Relationships

Item	Calculated r-value	r table value	Remarks
O1	0.640	0.191	Valid
O2	0.763	0.191	Valid
O3	0.785	0.191	Valid
O4	0.816	0.191	Valid
O5	0.756	0.191	Valid
O6	0.731	0.191	Valid
O7	0.345	0.191	Valid

Table 4. Results of the Validity Test for Safety Perception

Item	Calculated r-value	r table value	Remarks
P1	0.705	0.191	Valid
P2	0.669	0.191	Valid
P3	0.704	0.191	Valid
P4	0.768	0.191	Valid
P5	0.384	0.191	Valid
P6	0.744	0.191	Valid
P7	0.630	0.191	Valid
P8	0.508	0.191	Valid
P9	0.430	0.191	Valid
P10	0.643	0.191	Valid

Based on Tables 2, 3, and 4, the validity tests for mental stress, organizational relationships, and safety perception indicate that an item is considered valid when the significance value is less than 0.05 or when the calculated r-value (Pearson correlation) exceeds the critical r-value. With a sample size of 106 respondents, the critical r-value was 0.191. The results show that all questionnaire items met these criteria, as all significance values were below 0.05 and all calculated r-values were greater than 0.191.

An instrument is considered valid when it is capable of accurately measuring the constructs it is intended to assess and effectively capturing the phenomena under investigation. Based on these findings, it can be concluded that the questionnaire items administered to the respondents were appropriate and valid for measuring the proposed research variables.

3.3.2 Reliability Test

A reliability test is conducted to assess whether a questionnaire is reliable or consistent, indicating that respondents' answers to the statements remain stable over time. The results of the regression analysis are presented as follows:

Table 5. Results of the Reliability Test

Variable	Cronbach's Alpha	Alpha	Remarks
Mental Stress	0.780	0.600	Reliable
Organizational Relationships	0.823	0.600	Reliable
Safety Perception	0.796	0.600	Reliable

Based on the results presented in Table 5, the Cronbach's Alpha coefficients for all variables exceed the threshold value of 0.600. This finding indicates that all research instruments demonstrate an acceptable level of internal consistency and are therefore considered reliable.

3.3.3 Results of the Analysis of the Effects of Mental Stress and Organizational Relationships on Safety Perception

Multiple regression analysis was conducted in this study to determine the relationship or influence between independent variables and the dependent variable. The results of the regression analysis are presented as follows:

Table 6. Results of Regression Analysis on the Effects of Mental Stress and Organizational Relationships on Safety Perception

Dependent Variable: Safety Perception (Y)			
Variable	Unstandardized Coefficient (B)	t-value	Sig.
Mental Stress (X ₁)	- 0.422	5.052	0.000
Organizational Relationships (X ₂)	0.226	4.409	0.001
Constant	= 36.458		
F value	= 33.754		
Significance	= 0.000		
R ²	= 0.396		

As presented in Table 6, the following observations can be made:

- a. The t-test was conducted to examine the partial effect of each independent variable (X) on the dependent variable (Y). An effect is considered significant if the significance value is less than 0.05 or if the calculated t-value is greater than the critical t-value (1.983) or less than the negative critical t-value (-1.983). The results show that variable X₁ (mental stress) has a significance value below 0.05 and a calculated t-value of -5.053, which is less than -1.983, with a negative coefficient. This indicates that mental stress has a significant negative effect on safety perception. Variable X₂ (organizational relationships) has a

significance value below 0.05 and a calculated t-value of 4.409, which is greater than 1.983, with a positive coefficient, indicating a significant positive effect on safety perception

- b. The F-test was conducted to assess the simultaneous effect of the independent variables on the dependent variable. An effect is considered significant if the significance value is below 0.05 or if the calculated F-value exceeds the critical F-value (3.08). The results indicate a significance value below 0.05 and a calculated F-value of 33.754, which is greater than 3.08. This demonstrates that mental stress and organizational relationships together significantly affect safety perception.
- c. The coefficient of determination (R^2) is 0.396, indicating that mental stress and organizational relationships collectively contribute 39.6% to the variance in safety perception, while the remaining 60.4% stems from unmodeled factors, including workload, job security, work culture, job satisfaction, and technical safety controls. Subsequent studies should investigate these elements to elucidate their roles in shaping safety perceptions.

Several factors influence workers' safety attitudes, including organizational policies, communication, risk acceptance, psychological conditions, as well as equipment monitoring and management. These factors collectively shape and determine the safety behavior and perceptions of employees in the workplace [23]. Safety climate is understood as the collective beliefs of workers regarding their perceptions of workplace safety. Workplace safety perception is directly correlated with the occurrence of occupational accidents, as employees who have a strong understanding of safety practices are less likely to be involved in workplace incidents [19]. Workers are required to collaborate effectively as a team to accomplish assigned tasks. Employees tend to be more aware of their own safety as well as the safety of their coworkers when they receive support from colleagues and supervisors [24]. A study in the oil and gas industry revealed that reducing psychological stress or mental stress has a positive impact on employees' safety behavior [14].

4. CONCLUSIONS

Overall, the mental stress condition of field construction workers was found to be generally good. Feelings of sadness or depression at work were reported by a small proportion of workers, primarily due to concerns about job uncertainty, as field workers are employed under contractual arrangements. Such mental stress can negatively affect workers' safety perception, leading to reduced attention to safe work practices.

Organizational relationships among field workers, coworkers, supervisors, and management were generally reported to be very positive. Workers provided mutual support and assistance, and their relationships with supervisors and management were also well-established, positively influencing safety perception.

Empirical findings indicate that mental stress has a significant negative effect on workers' safety perception, impacting the proper and consistent implementation of occupational health and safety systems. In contrast, organizational relationships exhibit a significant positive effect

on safety perception. Collectively, these two variables, mental stress and organizational relationships, accounted for 39.6% of the variance in workers' safety perception.

Effective management of mental stress, coupled with harmonious organizational relationships, enhances workers' ability to understand and implement workplace safety principles. This, in turn, fosters a conducive safety climate and promotes safe work behaviors in the field. Therefore, efforts to control stress and strengthen organizational relationships are crucial for improving safety perception, thereby increasing employees' awareness and compliance with established safety standards.

REFERENCES

- [1] S. Ammad, W. S. Alaloul, S. Saad, and A. H. Qureshi, "Personal Protective Equipment (PPE) usage in Construction Projects: A Systematic Review and Smart PLS Approach," Dec. 01, 2021, *Ain Shams University*. doi: 10.1016/j.asej.2021.04.001.
- [2] P. Hughes and E. Ferrett, *Introduction to Health and Safety at Work: for the NEBOSH National General Certificate in Occupational Health and Safety (7th ed.)*. London: Routledge, 2020. doi: <https://doi.org/10.4324/9781003039075>.
- [3] S. Redjeki, *Kesehatan dan Keselamatan Kerja (Occupational Health and Safety)*. Jakarta: Agency for Health Human Resources Development, 2016.
- [4] M. D. Idrees, A. Ansari, and A. Sami, "Perception Of Safety Of Workers In Various Occupations At The Construction Site," *International Journal of Scientific & Technology Research*, vol. 10, pp. 124–127, May 2021.
- [5] U. Masia and J. Pienaar, "Unravelling safety compliance in the mining industry: examining the role of work stress, job insecurity, satisfaction and commitment as antecedents," *SA Journal of Industrial Psychology*, Nov. 2011, doi: 10.1402/sajip.v37i1.937.
- [6] A. S. Alroomi and S. Mohamed, "Physical isolation and safety behaviour among oil and gas workers in Kuwait: The mediating role of mental health," *J. Loss Prev. Process Ind.*, vol. 75, Feb. 2022, doi: 10.1016/j.jlp.2021.104692.
- [7] M. Berthelsen, S. Pallesen, B. Bjorvatn, and S. Knardahl, "Shift schedules, work factors, and mental health among onshore and offshore workers in the Norwegian petroleum industry," *Ind. Health*, vol. 53, pp. 280–292, Feb. 2015, doi: <https://doi.org/10.2486/indhealth.2014-0186>.
- [8] T. D. Smith, K. Hughes, D. M. DeJoy, and M.-A. Dyal, "Assessment of relationships between work stress, work-family conflict, burnout and firefighter safety behavior outcomes," *Saf. Sci.*, vol. 103, pp. 287–292, Mar. 2018, doi: 10.1016/j.ssci.2017.12.005.
- [9] B. H. W. Guo, T. W. Yiu, and V. A. González, "Predicting safety behavior in the construction industry: Development and test of an integrative model," *Saf. Sci.*, vol. 84, pp. 1–11, Apr. 2016, doi: 10.1016/j.ssci.2015.11.020.
- [10] A. Setyawan, L. Sudhartio, and B. Rantau, "Factors Affecting Safety Behavior at Construction Companies in Batam," *Journal of Business Studies and Management Review (JBSMR)*, vol. 5, no. 1, Dec. 2021, doi: <https://doi.org/10.22437/jbsmr.v5i1.14281>.

- [11] J. Walden, E. H. Jung, and C. Y. K. Westerman, "Employee communication, job engagement, and organizational commitment: A study of members of the Millennial Generation," *Journal of Public Relations Research*, vol. 29, no. 2–3, pp. 73–89, Jun. 2017, doi: <https://dx.doi.org/10.1080/1062726X.2017.1329737>.
- [12] H. Li and Y. Cao, "Employee-Organization Relationship and Organizational Citizenship Behaviour: The Roles of Organizational Identification and Leader-Member Exchange," in *6th International Conference on Social Science and Higher Education (ICSSHE 2020)*, 2020, pp. 485–489.
- [13] D. Wang, X. Wang, and N. Xia, "How safety-related stress affects workers' safety behavior: The moderating role of psychological capital," *Saf. Sci.*, vol. 103, pp. 247–259, Mar. 2018, doi: [10.1016/j.ssci.2017.11.020](https://doi.org/10.1016/j.ssci.2017.11.020).
- [14] M. Z. Mirza, A. S. N. Isha, M. A. Memon, S. Azeem, and M. Zahid, "Psychosocial safety climate, safety compliance and safety participation: The mediating role of psychological distress," *Journal of Management and Organization*, vol. 28, no. 2, Apr. 2019, doi: <https://doi.org/10.1017/jmo.2019.35>.
- [15] P. M. Sias, *Organizing Relationships: Traditional and Emerging Perspectives on Workplace Relationships*. SAGE Publications Inc., 2009. doi: [10.4135/9781452204031](https://doi.org/10.4135/9781452204031).
- [16] F. Rezazadeh, M. A. Seyyed-Naghavi, and S. Rezazadeh, "A Theoretical Reflection on the Past, Present, and Future of Employee-Organization Relationship: A Systematic Literature Review," *BISNIS & BIROKRASI: Jurnal Ilmu Administrasi dan Organisasi*, vol. 30, no. 1, Jan. 2023, doi: [10.20476/jbb.v30i1.1420](https://doi.org/10.20476/jbb.v30i1.1420).
- [17] Philip. Kotler and K. Lane. Keller, *Marketing Management (15th ed.)*. Pearson Education, 2016.
- [18] Y. Xue, Y. Fan, and X. Xie, "Relation between senior managers' safety leadership and safety behavior in the Chinese petrochemical industry," *J. Loss Prev. Process Ind.*, vol. 65, May 2020, doi: [10.1016/j.jlp.2020.104142](https://doi.org/10.1016/j.jlp.2020.104142).
- [19] D. W. M. Chan, M. Cristofaro, H. Nassereddine, N. S. N. Yiu, and H. Sarvari, "Perceptions of Safety Climate in Construction Projects between Workers and Managers/Supervisors in the Developing Country of Iran," *Sustainability*, vol. 13, no. 18, Sep. 2021, doi: <https://doi.org/10.3390/su131810398>.
- [20] R. M. Choudhry and D. Fang, "Why operatives engage in unsafe work behavior: Investigating factors on construction sites," *Saf. Sci.*, vol. 46, no. 4, pp. 566–584, Apr. 2008, doi: [10.1016/j.ssci.2007.06.027](https://doi.org/10.1016/j.ssci.2007.06.027).
- [21] B. Bronkhorst, "Behaving safely under pressure: The effects of job demands, resources, and safety climate on employee physical and psychosocial safety behavior," *J. Safety Res.*, vol. 55, pp. 63–72, Dec. 2015, doi: [10.1016/j.jsr.2015.09.002](https://doi.org/10.1016/j.jsr.2015.09.002).
- [22] D. Zohar, "The effects of leadership dimensions, safety climate, and assigned priorities on minor injuries in work groups," *J. Organ. Behav.*, vol. 23, no. 1, pp. 75–92, Feb. 2003, doi: <https://doi.org/10.1002/job.130>.
- [23] P. T. Nguyen, "Attitude of construction workers toward labour safety," *Int. J. Business Continuity and Risk Management*, vol. 10, no. 3, pp. 181–193, 2020, doi: <https://doi.org/10.1504/IJBCRM.2020.108507>.

- [24] N. Turner, C. B. Stride, A. J. Carter, D. McCaughey, and A. E. Carroll, “Job Demands-Control-Support model and employee safety performance,” *Accid. Anal. Prev.*, vol. 45, pp. 811–817, Mar. 2012, doi: <https://doi.org/10.1016/j.aap.2011.07.005>.