Effective Strategy for Increase Awareness Culture Safety Among Workers: Analysis Literature

Christiadi Wijayanto[1], Antoni Ludfi Arifin[2]

[1] The Air Chief Marshall Suryadarma University, Jakarta, Indonesia, email. 241173096@students.unsurya.ac.id.
[2] The Air Chief Marshall Suryadarma University, Jakarta, Indonesia, email. antoniludfiarifin@unsurya.ac.id.

Corresponding Author: 241173096@students.unsurya.ac.id

Abstract. Understanding to culture safety is element key in create a comfortable work area as well as productive. This research aiming For analyze efficient strategies in upgrade understanding culture safety in the group workers sourced from literature previous. This study using the procedure analysis literature against 23 journals that reviewed aspect culture safety, attitude workers, as well as implementation system management safety in various industrial zones. The results of the analysis display when approach based on training, efficient communication, involvement management, as well as implementation "no policy no-blame culture" is a key strategy that contributes to improving understanding culture safety. Not only that, approach innovative kind of usage technology intelligence artificial intelligence (AI) was also found efficient in support management information safety as well as prediction risk, so that strengthen understanding worker to importance culture safety. This study formulate if holistic strategy implementation, linking worker in taking decision safety, and commitment prolonged from management is step means for upgrade understanding culture safety on site Work.

Keywords: Understanding Culture Safety, Efficient Strategy, Workers, Management Safety, & Training.

INTRODUCTION

Understanding culture safety is element essential in create a comfortable work area as well as effective in various industrial zones, cultures safety Already acknowledged as aspect main in reduce risk disaster Work as well as upgrade performance organization (Naji et al., 2021) . Culture safety covers values, beliefs, and norms that support attitude safety workers, and share guide in experience risk in place Work (Cooper, 2000). Interpretation the in line with the civil air navigation services organization that safety refers to values, priorities, and long - term commitment to safety placed by each person as well groups in each level organization. Culture safety reflect behavior, norms, and attitudes of people, groups, and linked organizations with provision service navigation comfortable air (Civil Air Navigation Services Organization

(CANSO), 2008).   But, the level understanding worker to culture safety often happens challenges, especially in industries that have risk big like aviation, construction, and oil and gas.

According to Job Demands-Resources (JD-R) theory, pressure high work without support source adequate power can result in fatigue emotional, which in the end influence behavior safety worker (Derdowski & Mathisen, 2023). On the other hand, supervisor support and clarity role can increase awareness safety as well as compliance worker to protocol safety. This is show that the strategy is based on training, communication and engagement management is very important in build culture effective safety.

Study previous show that approach innovative, such as use technology intelligence artificial intelligence (AI), can also support improvement awareness culture safety. AI enables safety data analysis in a way deep, detect pattern risk, and predict potential accident, so that support taking more decisions effect (Aderamo et al., 2024). Additionally, implementation " no policy blame " (no-blame culture) is proven push reporting incident without fear, which is step important in increase awareness culture safety (Claxton et al., 2022).

Based on the background come back said, research This aims to analyze efficient strategies in upgrade understanding culture safety in the group worker past study literature. This research expected can share guide for organization in to design a holistic approach to strengthening culture safety as well as reduce risk disaster Work.

METHOD

This research using the procedure analysis literature for exploring efficient strategies in upgrade understanding culture safety in the group workers. Information obtained of 23 published journals between 2019 to 2024, covering aviation, construction, oil zones and gas, and banking. The election Journal based on relevance focus research to culture safety, understanding workers, as well as on- site safety strategies work. Analysis process started with choose early Journal based on the title, abstract, and keywords, accompanied by with grouping invention based on focus research and industrial zones. The results of journals - journals the analyzed in a way thematic for recognize this kind of strategy training, communication, involvement management, as well as supporting technology improvement understanding safety. This research refers to the Job Demands- Resources (JD-R) theory for analyze bond between pressure Work as well as support organization to attitude safety workers, and the principle of "no-blame culture" for evaluate reporting incident without any worries. Approach This designed for share Comprehensive synthesis, though There is limitations shaped dependence on information secondary as well as generalization that is needed tried with Be careful.

Table 1. Journal Previously Analyzed

No.	Author & Year	Title Study	Focus Study	Research result
1.	Hendro Agung Prakoso and Amelia Puspa Tamara (Agung et al., 2023)	Analysis Understanding of Personnel Safety Culture in the Implementation of Safety Management System at Yogyakarta International Airport	Analysis Description of Personnel Safety Culture in the Implementation of the Safety Management System at Yogyakarta International Airport Analyzing description personnel to culture safety (safety culture) in implementation System Management Safety (SMS) at Yogyakarta Airport	Personnel at Yogyakarta Airport have understanding culture safety 92.7% with effectiveness SMS by 72%, supported by mitigation strategies risk according to SOP.

No.	Author & Year	Title Study	Focus Study	Research result
2.	Daffa Ramadian Indratma, Dewi Kurniasih, and Farizi Rachman (Indratma et al., 2022)	The Influence of Safety Culture on Worker Safety Behavior in Container Companies	Measure influence culture safety to behavior safety workers in the company chest pack.	Culture safety influence behavior safety worker in a way significant , with influence strong on training , supervision , procedures Work safe, and communication.
3.	Shabrina Siti Maryam, Muhardi, and Nunung Nurhayati (Maryam et al., 2019)	Influence Leadership Transformational and Cultural Safety on Employee Performance (Case Study of PT. Gerbang Mas Bersama Bandung)	Researching impact leadership transformational and cultural safety to performance employees at PT. Gerbang Mas Bandung.	Leadership transformational own impact positive significant on performance employees , while culture safety own influence positive but No significant.
4.	Ivan Yusri, Muchammad Furqan Muchaddats, and Afiyan Krisna (Yusri et al., 2024)	Safety Culture towards Implementation of Safety Management System in the Nursing Unit Indonesian Aviation College Aircraft	Analyze connection culture safety with implementation System Management Safety (SMS) in the Care Unit STPI aircraft.	Culture safety in the Care Unit The STPI aircraft is located in category good (82.5%) and significant to SMS implementation (82.75%).
5.	Carolyna Mairing, I Made Ady Wirawan, Deswandri, (Mairing et al., 2021)	The relationship between Safety Culture and Health and Safety Behavior Work at the Technology and Safety Center Reactor BATAN Nuclear 2020	Identifying connection culture safety and factors individual to K3 behavior at PTKRN BATAN.	Level of education significant to K3 behavior , with education tall own proportion good K3 behavior by 52.08%.
6.	Hadiyan and Dadan Erwandi (Hadiyan et al., 2023)	Factors Influencing Safety Culture in the Mining Industry	Identifying factors that influence culture safety in industry mining.	Behavioral factors contributed 47%, situational 29%, and psychological 24% in build culture safety , with commitment management as contributor main.
7.	Muhammad Osaegi Restu Amrulloh, Endik Riyanto, and Rozzaq Alhanif Islamudin (Amrulloh et al., 2023)	Increase Awareness Safety With Implementation of the Five Pillars of the Program Through Measurement Culture Safety	Analyze effectiveness of the five pillars of the safety program in increase culture safety at PT Putra Perkasa Abadi.	Five pillars of safety increase culture safety from category reactive (value 2.18) becomes proactive (value 4.13) and reduce number accident.
8.	Dani Eka Prasetya and Kifni Yudianto (Prasetya et al., 2024)	The Influence of Situation Awareness on the Safety Management System in Ground Handling at PT Gapura Angkasa Juanda International Airport , Sidoarjo	Evaluate the impact of situational awareness on effectiveness System Management Safety in ground handling at PT Gapura Angkasa.	Situational awareness increases effectiveness of SMS in general significant (p-value < 0.001).
9.	Megitas Walewangko, Martim N. Tooy, and Fernando JMM Karisoh	Culture Safety Flight Based on Constitution Number 1 of 2009 concerning Flight	To explain implementation culture safety flight based on Law No. 1 of 2009.	Effective rewards and punishments build culture safety based on implementation of Law No. 1 of 2009.

No.	Author & Year	Title Study	Focus Study	Research result
	(Walewangko et al., 2021)			
10.	Sudirman Hi. Umar and Diah Anggraeni (Umar & Anggraeni, 2001)	The Influence of Safety Culture on Safety Flights at GGang Airport The Great Cilacap	Analyze implementation culture safety at tinggi airport The Great Cilacap and its impact on safety flight.	Improvement culture safety 1% increase safety flight up to 82.7%.
11.	Adeoye Taofik Aderamo, Henry Chukwuemeka Olisakwe, Yetunde Adenike Adebayo, Andrew Emuobosa Esiri, (Aderamo et al., 2024)	Leveraging AI for Financial Risk Management in Oil and Gas Safety Investments	Explore use of AI for management risk financial in investment safety in industry oil and gas.	AI improves prediction risk , strategy simulation , and optimization investment safety in industry oil and gas.
12.	SO Ajayi, OO Adegbenro, HA Alaka, PA Manu, and AS Oyegoke, (Ajayi et al., 2021)	Addressing Behavioral Safety Concerns on Qatari Mega Projects	Identifying problem safety behavior on the project construction big in Qatar and its handling strategies.	The low awareness safety behavior can overcome with management proactive , training , and communication effective.
13.	Irene Bautista-Bernal, Cristina Quintana - García, Macarena Marchante-Lara, (Bautista-Bernal et al., 2024)	Safety Culture, Safety Performance, and Financial Performance: A Longitudinal Study	Explore connection between culture safety , performance safety , and performance financial in companies in Europe.	Culture safety increase performance safety , lowering level injury , and improve performance financial company.
14.	Garry Claxton, Peter Hosie, Piyush Sharma, (Claxton et al., 2022)	Toward an Effective Occupational Health and Safety Culture: A Multiple Stakeholder Perspective	Identifying theme main influencing factors culture safety Work from various perspective stakeholders interest.	Approach proactive , training , and culture without blame increase culture safety Work.
15.	Lukasz Andrzej Derdowski, Gro Ellen Mathisen, (Derdowski & Mathisen, 2023)	Psychosocial Factors and Safety in High-Risk Industries: A Systematic Literature Review	Evaluate connection between factor psychosocial work and safety in industry at risk tall.	Psychosocial factors like pressure work and ambiguity role influence safety , while supervisor support increases behavior safety in the industry at risk tall.
16.	Tor-Olav Nævestad, Ingeborg Storesund Hesjevoll, Karen Ranestad, Stian Antonsen, (Nævestad et al., 2019)	Strategies Regulatory Authorities Can Use to Influence Safety Culture in Organizations: Lessons Based on Experiences from Three Sectors	Identifying regulatory strategies For increase culture safety in the organization based on experience sector certain.	Regulators can increase culture safety through rules , audits, guidelines , and training involving organization.
17.	Tor-Olav Nævestad, Ingeborg Storesund Hesjevoll, Rune Elvik, (Nævestad et al., 2021)	How Can Regulatory Authorities Improve Safety in Organizations by Influencing Safety Culture? A Conceptual Model of Relationships	Developing a conceptual model For increase culture safety through regulation in the sector transportation and energy.	Regulation culture safety can reduce risk accident up to 60%-80% if applied with a strategy that involves organization.

No.	Author & Year	Title Study	Focus Study	Research result
		and a Discussion of Implications		
18.	Gehad Mohammed Ahmed Naji, Ahmad Shahrul Nizam Isha, Mysara Eissa Mohyaldinn, Stavroula Leka, Muhammad Shoaib Saleem, Syed Mohamed Nasir Bin Syed Abd Rahman, Mohammed Alzoraiki, (Naji et al., 2021)	Impact of Safety Culture on Safety Performance; Mediating Role of Psychosocial Hazard: An Integrated Modeling Approach	Analyze connection between culture safety, danger psychosocial, and performance safety in industry oil and gas.	Culture safety in a way significant reduce danger psychosocial ($\beta = 0.598$, $p < 0.000$) and increased performance safety Good in a way directly ($\beta = 0.200$, $p = 0.004$) and through mediation partial danger psychosocial (coefficient mediation = 0.185, $p < 0.01$) in the industry upstream oil and gas in Malaysia.
19.	Ozan Okudan, Cenk Budayan, İrem Dikmen, (Okudan et al., 2021)	A Knowledge-Based Risk Management Tool for Construction Projects Using Case-Based Reasoning	Develop tool management risk based on knowledge For project construction with case-based reasoning approach.	CBRisk Tools increase efficiency management risks in the project construction and can applied in other industries.
20.	Siti Sofuah, Firly Fauziah, Netania Emilisa, (Sofuah et al., 2022)	The Influence of Resilient Safety Culture and Job Crafting on Service Performance Mediated by Work Engagement on State-Owned Bank Employees in West Jakarta	Explore principles knowledge risk For build culture safety in the organization.	Culture safety tough and job crafting increases performance service through work engagement mediation.
21.	Terje Aven, Marja Ylönen, (Aven & Ylönen, 2021)	How the Risk Science Can Help Us Establish a Good Safety Culture	Explore principles knowledge risk For build culture safety in the organization.	Culture good safety must built with principle knowledge risk, resilience strategies, and learning sustainable.
22.	Ivan Yusri, Muchammad Furqan Muchaddats, Afiyan Krisna, (Yusri et al., 2024)	The Influence of Safety Culture on Implementation of Safety Management System in the Nursing Unit Aircraft	Review connection between culture safety and implementation System Management Safety in the Nursing Unit STPI Aircraft.	Culture safety (82.5%) contributed significant on SMS implementation (82.75%) in the Care Unit STPI aircraft.
23.	Zieyaad Isaacs, (Isaacs, 2019)	The Effects of Safety Culture on Project Performance in High Risk Industries	Evaluate influence culture safety to performance projects in industry at risk tall.	Culture safety strong increase performance project with reduce incidents and increase flexibility.

RESULTS AND DISCUSSION

This research recognize 4 main efficient strategies in upgrade understanding culture safety in the group workers, based on analysis of 23 journals literature previous. Initial strategy is approach based on training, which is proven upgrade knowledge worker about procedure safety as well as Motivate they for comply provision safety (Maryam et al., 2019). The second strategy is efficient communication, which includes two way communication between management as well as workers, implementation reporting incident without any worries, as supported by the principle of " no-blame culture" (Claxton et al., 2022). The third strategy is

involvement management, where commitment management in a way direct influence compliance worker to protocol safety (Naji et al., 2021). Finally, the utilization of technology kind of intelligence artificial intelligence (AI) found efficient in analyze information safety, predict risk, and maximize taking decision safety (Aderamo et al., 2024).

Research results show that training is a fundamental strategy that plays a role as base For increase awareness culture safety in the work area. This is in accordance with Job Demands-Resources (JD-R) theory , which emphasizes importance source Power work in reduce stress and increase performance worker (Derdowski & Mathisen, 2023) . Effective communication can also become key in create environment supportive work, especially through implementation "no-blame culture" policy, which encourages worker For report incident without fear to consequence negative. In addition, involvement management considered important in ensure worker prioritize safety, with fact that commitment management in a way significant influence implementation system management safety (Yusri et al., 2024).

Utilization AI technology also offers opportunity innovative for strengthen awareness culture safety. AI enables identification pattern risk based on historical data, which provides guide in determine priority areas For intervention safety (Aderamo et al., 2024). However, implementation technology This need source power and training additional so that you can applied optimally. In overall, research This highlight importance an integrated and sustainable approach, where training, communication, involvement management, and technology Work in a way synergistic for create culture more safety strong in the work area.

CONCLUSION

This research formulate that improvement understanding culture safety in the group worker need integrated strategic approach. Four main strategies were identified is training based on safety, effective communication, involvement management, and utilization technology intelligence artificial intelligence (AI). Training build understanding base worker to procedure safety, while communication effective, especially through implementation "no-blame culture" policy, encouraging reporting incident without fear. Involvement management proven play role important in ensure worker prioritize safety. In addition, AI technology offers potential for analyze safety data, predict risk, and support taking decision data-based, which is collective increase awareness culture safety on site work. A holistic and sustainable approach This expected can create environment more work comfortable and productive in various industrial zones.

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