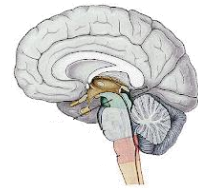


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<https://ejournal.stikeskepanjen-pemkabmalang.ac.id/index.php/mesencephalon>**Corelationship Between Contractor Safety Management And Safety Leadership : Systematic Review****Ossa Yudo Novaryan\*, Dadang Erwandi**

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E-mail: [oscar906326@gmail.com](mailto:oscar906326@gmail.com)**ARTICLE INFO****Keywords:**

Contractor safety management, safety leadership, safety climate, construction industry

**Correspondence:**E-mail:  
[oscar906326@gmail.com](mailto:oscar906326@gmail.com)**ABSTRACT**

The presence of effective safety leadership significantly impacts how workers perceive the significance of safety in the workplace. Safety environment is to the collective attitudes of employees regarding an organization's safety-related policies, practices, and procedures that indicate the importance placed on safety (Omidi et al., 2022; Omidi et al., 2021; Zohar and Luria, 2010). The contractors are responsible for upholding two specific types of safety leadership, with a particular emphasis on transformational leadership. This study use the literature review according to PRISMA guidelines. The necessity of safety leadership in construction projects, particularly in the context of contractor safety management. Safety leadership is considered as a vital aspect in persuading workers to adopt safe behaviors, decreasing accidents, and increasing overall safety performance. The studies show the positive influence of safety leadership on safety compliance, engagement, and safety outcomes, and the need of addressing the safety leadership styles of all stakeholders engaged in a construction project, including owners, contractors, and subcontractors.

**INTRODUCTION**

Despite the breakthroughs in technological applications of robust occupational health and safety management systems, the construction domain still need improvements in work health and safety (Lingard et al., 2019). The current emphasis in literature is on using safety management techniques to mitigate the effects of unforeseen events (Choe and Leite, 2017), as well as on developing effective and user-friendly risk management strategies at various organizational and project levels (Gunduz, 2018). Research on occupational safety suggests that the manner in which managerial leadership is carried out can have a substantial impact on the management of occupational risks and the advancement of occupational safety (Conchie, 2013; Pilbeam et al., 2016). Clarke (2013) provides a comprehensive overview of the current empirical evidence regarding the significance of managerial leadership in preventing occupational risks and ensuring safety. Clarke's (2013) analysis includes empirical studies conducted in several industrial sectors and sets the stage for future research on safety leadership in the construction industry (Grill et al., 2017).

The presence of effective safety leadership significantly impacts how workers perceive the significance of safety in the workplace. Two forms of safety leadership, namely transactional leadership and transformational leadership, have been demonstrated to be beneficial in ensuring workers' compliance with safety regulations. Transactional leaders provide clear guidance on expectations, duties, and task requirements. They also acknowledge the actions that subordinates need to take in order to meet these expectations and accomplish desired outcomes (Clarke, 2013; Bass, 1985). This form of leadership is crucial in guaranteeing adherence to safety requirements and protocols. Transformational leaders, who are intellectually stimulating, assist subordinates in cultivating novel approaches to problem-solving.

Transformational leadership has a good correlation with employees' engagement in safety activities and their perception of the overall safety environment (Clarke, 2013).

Safety environment is to the collective attitudes of employees regarding an organization's safety-related policies, practices, and procedures that indicate the importance placed on safety (Omidi et al., 2022; Omidi et al., 2021; Zohar and Luria, 2010). Prior research has indicated a positive correlation between safety leadership and safety climate (Clarke, 2013), safety climate and psychological contract of safety (), and safety climate and safety compliance (Newaz, 2019). The presence of a safety climate is strongly correlated with a decrease in risk perception (Sepahvand and Mousazadeh, 2020).

The contractors are responsible for upholding two specific types of safety leadership, with a particular emphasis on transformational leadership. Workers regard transformational leadership as more effective in enhancing their compliance and participation in safety. This implies that contractors should demonstrate greater attention and encouragement in influencing workers' behavior towards adhering to safety standards. It can enhance workers' consciousness and assist them in attaining exceptional levels of safety behavior, resulting in high performance (McCarley et al, 2016). This study aims to explore the core relationship between contractor safety management and safety leadership, highlighting the importance of effective safety leadership in promoting a positive safety culture and reducing the risk of accidents on construction sites.

## METHODS

The literature search was conducted using the PRISMA principles for systematic reviews, which were followed in a methodical and structured manner. The PICO (Population-Intervention-Comparison-Outcome) technique was employed to discover the essential keywords utilized. The article search approach employs databases such as Sciencedirect, Google Scholar, PubMed, and Research Gate. Articles on contractor safety management, safety leadership, safety leadership styles, and safety climate are being searched for. Researchers utilize the Boolean operator "AND". The utilization of the boolean operator "AND" aims to amalgamate several notions and elements as search keywords, with the intention of refining the scope of searchable materials.

### Inclusion Criteria:

- 1) Scientific articles published between 2019 until 2024.
- 2) Include studies with high methodological quality.
- 3) Focus on corelationship between contractor safety management and safety leadership.
- 4) The studies should be published in the English language.

### Exclusion Criteria:

- 1) Scientific articles published before 2019.
- 2) Quality of studies: Exclude studies with low methodological quality, such as those with a high risk of bias or insufficient sample sizes.
- 3) Interventions: Exclude studies that do not focus on corelationship between contractor safety management and safety leadership.
- 4) Language: The studies should not be published in languages other than English.

In obtaining articles that fit the inclusion criteria and quality, several stages were carried out. At the end of the stage, 6 articles were obtained that fit the inclusion criteria and had good quality.

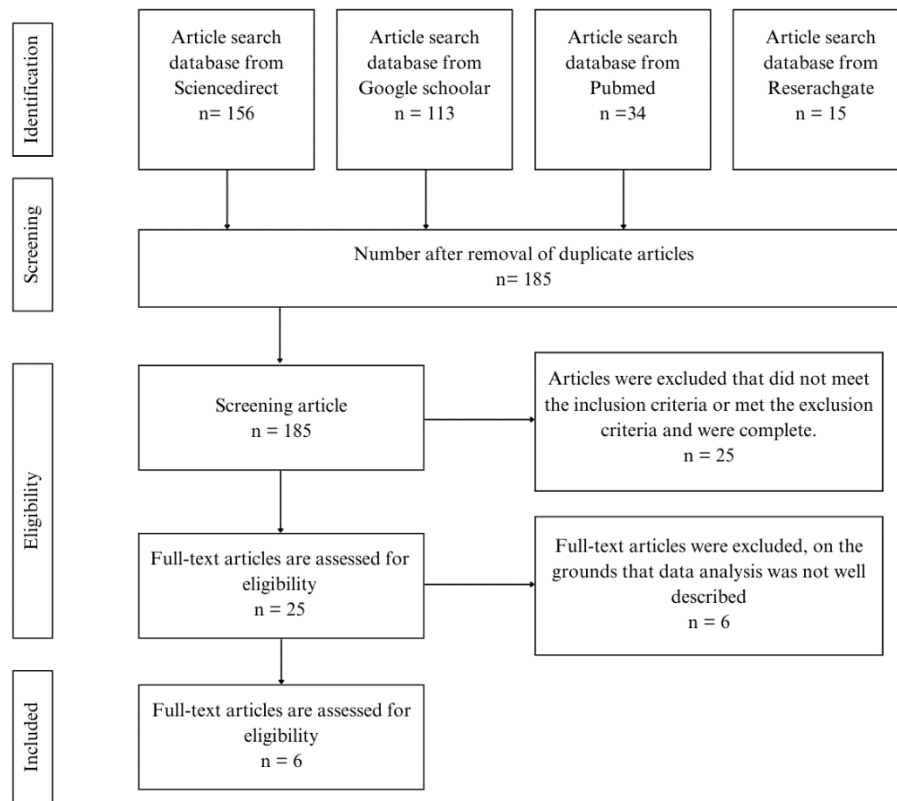


Figure 1. Study Review and Selection Phase Based on PRISMA Diagram

## RESULTS AND DISCUSSION

Table 1. Data analysis matrix table for articles used in the Systematic Review

Author, Title Journal	Method Design	Variable Investigeted	Result
(Sankar and Anandh, 2023)  Navigating leadership styles through qualitative exploration for enhanced safety in the construction sector	The study adopts quantitative research method through questionnaire survey with 44 construction professionals participants.	Diverse safety leadership styles that influence the safety climate and outcomes of construction organisations	The research discovered that most current efforts are centred on transformational leadership, safetyspecific transformational leadership, transactional leadership, safety climate, and safety performance. The findings suggest combining transformational and safety-specific transactional leadership can enhance safety climate and safety performance.
(Grill and Kent, 2019)  Promoting and impeding safety – A qualitative study into direct and indirect	Semi-structured interviews were conducted with construction site managers according to the critical incident technique (CIT) as	The interviews were initiated by asking the informants to describe their roles and responsibilities at the construction site. The managers were then	The results provide detailed descriptions of how construction site managers both promote and impede construction site safety performance through their leadership

safety leadership practices of constructions site managers	described by Flanagan (1954) and Butterfield et al. (2005).	prompted to describe four types of critical incident: (1) Incidents of direct leadership resulting in the improvement of construction site safety performance, (2) Incidents of indirect leadership resulting in the improvement of construction site safety performance, (3) Incidents of direct leadership resulting in a reduction of construction site safety performance, and (4) Incidents of indirect leadership resulting in a reduction of construction site safety performance.	behaviour. The core leadership behaviours involved in positively influencing safety were found to be continuous planning and coordination, role modelling, monitoring work and proactively correcting deviations. Negative safety leadership was found to emerge when site managers were subjected to positive feedback to meet deadlines, minimise costs and refrain from unpopular leadership behaviour. Positive safety leadership may therefore be encouraged by minimizing such feedback and/or providing site managers with positive feedback for engaging in planning, coordinating, role modelling, and monitoring. It may also be encouraged by training and coaching site managers to acknowledge their leadership responsibilities, to communicate clear expectations, to execute individual and collective risk-assessment, and to execute proactive monitoring and feedback procedures.
(Opoku et al., 2020)  Promoting Employee Safety Performance in the Chinese Construction Industry	The study adopts quantitative research method through questionnaire survey with 106 construction professionals leading or participating in safety management work in the Chinese construction sectors.	The role of organisational leadership in promoting safety performance, as moderated by safety climate.	The results show that exerting certain leadership strategies that encourage construction stakeholders to comply with safety practices will improve safety performance. At a moment when the whole industry is suffering from momentous safety challenges, transformation is required; these findings are intended to guide construction managers in their

			commitment to programme safety management.
(Andi et al., 2022)  The Impact of Contractor Safety Leadership on Workers Safety Behavior	To collect the required data, the research employed questionnaire survey method. The respondents were construction workers (skilled and unskilled workers) on several ongoing projects at the time of the survey.	Evaluates the impact of contractors' safety leadership on construction workers' safety behavior. It explores three dimensions of safety leadership variable and two dimensions of safety behavior variable, and then examines the relationship between the two variables.	The findings suggest that safety concern and safety motivation positively impact safety compliance and safety participation, whilst safety policy only have a significant positive impact on safety participation. The paper discusses these findings and their implications for shaping workers' safety behavior in construction projects.
(Basahel, 2021)  Safety Leadership, Safety Attitudes, Safety Knowledge and Motivation toward Safety-Related Behaviors in Electrical Substation Construction Projects	The research collected 636 surveys in electrical construction projects for nine large contractors between November 2018 and July 2019 in Saudi Arabia. Structural equation modeling (SEM) was used to determine the mechanism by which leadership and attitudes affected safety compliance and participation through motivation and knowledge.	The causal effects of leadership and attitudes on safety compliance and participation mediated by motivation and knowledge.	The results indicate that safety leadership and attitude factors as well as their interactions predicted safety motivation and knowledge. Additionally, these factors affected safety participation and compliance via workers' motivation and knowledge. Safety motivation and safety knowledge positively affected workers' participation and compliance.
(Omid, et al., 2023)  Exploring the relationships among safety leadership, safety climate, psychological contract of safety, risk perception, safety compliance, and safety outcomes	Workers' perceptions in terms of safety leadership, safety climate, PCS, risk perception, deep compliance, and surface compliance were measured by appropriate questionnaires. Three questions were asked to measure undesired safety outcomes. Structural equation modeling and correlation analysis were applied to examine the research model and relationships among variables.	The relationships among safety leadership, safety climate, psychological contract of safety (PCS), risk perception, and deep compliance and surface compliance behavior of workers. In addition, the effects of both deep and surface compliance on safety outcomes were considered.	The results of the current study showed that deep compliance was positively predicted by safety leadership, safety climate, and PCS and negatively predicted by risk perception. Surface compliance was positively predicted by safety leadership and safety climate and negatively predicted by risk perception. Surface compliance is not significantly predicted by PCS. With regard to the adverse safety outcomes, the results showed that both deep and surface compliance were negatively associated with adverse safety outcomes, however, deep compliance had a

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stronger negative correlation with adverse safety outcomes than surface compliance.

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The relationship between contractor safety management and safety leadership is a crucial aspect of ensuring a safe working environment in construction projects. The literature review highlights the importance of safety leadership in motivating workers to adopt safe behaviors, reducing accidents, and improving overall safety performance (Andi et al., 2022; Basahel, 2021; Omid et al., 2023). Safety leadership is recognized as a significant antecedent of worker safety behavior, with studies demonstrating its positive impact on safety compliance and participation (Andi et al., 2022; Basahel, 2021; Omid et al., 2023). Leaders can use their influence to achieve organizational security goals, and their safety leadership can motivate workers to work harder, work efficiently, and make everyone feel responsible for safety in the workplace (Andi et al., 2022). This leadership style can also reinforce the adoption of transformational leadership, which emphasizes concern and support for workers, as well as the importance of wearing personal protective equipment and addressing safety issues (Andi et al., 2022).

Safety leadership in the construction industry has unique qualities that differentiate it from safety leadership in other industries or work settings. Effective safety leadership in the construction industry may require a higher level of adaptability and flexibility, as building projects can involve ever-changing surroundings, tasks, and teams. The field of safety leadership in construction faces additional challenges and risks due to the inherent hazards and vulnerability to accidents and injuries in construction operations. However, safety leadership in the construction business may share significant characteristics with leadership for safety in general. For example, safety leadership in construction can benefit from adopting either a transformational or safety-specific transformational strategy. These styles possess the capacity to cultivate a positive safety atmosphere, amplify employee involvement and compliance, reduce risky behaviors, and encourage awareness of safety. Therefore, safety leadership in the construction industry can be considered as a distinct idea from leadership in safety overall, although there may be some similarities and overlaps between the two. Additional investigation is necessary to thoroughly explore this topic and determine the most effective techniques and strategies for safety leadership in the construction sector (Sankar and Anandh, 2023).

The study by Andi et al. (2022) specifically examines the impact of contractors' safety leadership on construction workers' safety behavior. The research found that contractors' safety leadership has a significant impact on workers' safety compliance, with the value of adjusted R<sup>2</sup> indicating that safety leadership, with its three dimensions, explains a substantial proportion of the variance in workers' safety compliance<sup>1</sup>. The study also highlights the importance of the contractors' concern for workers, including providing insurance and coordinating with all parties to solve safety issues (Andi et al., 2022).

The study by Basahel (2021) explores the causal effects of leadership and attitudes on safety compliance and participation, mediated by motivation and knowledge (Basahel, 2021). The research found that safety leadership has significant effects on safety compliance and that a perceived safety climate mediates the relationship between safety leadership and safety compliance (Basahel, 2021). Additionally, the study by Clarke (2013) showed that safety leadership has significant effects on safety compliance, and Pilbeam et al. (2013) indicated that safety leadership practices can affect organizational safety compliance (Basahel, 2021).

The study by Clarke (2013) also found that safety leadership has a negative association with surface compliance, suggesting that surface compliance increases the risks of adverse safety outcomes (Basahel, 2021). On the other hand, deep compliance, which is associated with maintaining workplace safety and reducing the efforts needed for effective risk management strategies, tends to correlate most strongly with safety leadership and safety climate (Basahel, 2021).

Construction site managers are crucial for ensuring safety and performance in the construction business. This study has presented comprehensive explanations of how construction site managers influence construction site safety performance through their leadership behavior, both positively and negatively. The fundamental leadership behaviors that contribute to a positive impact on safety are ongoing planning and coordination, serving as a role model, monitoring work, and proactively addressing any deviations. These leadership behaviors are also suitable for achieving organizational performance goals other than safety performance, such as productivity. One possible approach to improving safety performance in the construction industry is to prioritize safety leadership by emphasizing leadership behaviors that contribute to both productivity and safety. One potential method to enhance positive safety leadership is to provide training and coaching to site managers, enabling them to effectively assume leadership roles, clearly communicate expectations, conduct individual and collective risk assessments, and implement proactive monitoring and feedback procedures. Interventions should focus on leadership at all levels of construction projects, ensuring that there is organizational and managerial support for effective safety leadership behaviors (Grill and Kent, 2019).

The study by Opoku et al. (2020) how safety leadership measures can improve safety performance within the Chinese construction industry. The research was primarily focused on comprehending the correlation between safety leadership, safety performance, and safety climate. This study examined how leadership activities impact employee engagement in safety protocols, taking into account several factors such as incentives, penalties, and other strategies. The findings additionally demonstrate that safety inspiration and safety vision positively influence safety involvement, but do not significantly impact safety compliance. Safety compliance, however, is influenced by policies, incentives, penalties, and a selfless attitude. It is evident that the relationship between safety-specific leadership behavior and occupational safety performance is influenced by the perceived safety climate.

## CONCLUSIONS AND RECOMMENDATIONS

In conclusion the necessity of safety leadership in construction projects, particularly in the context of contractor safety management. Safety leadership is considered as a vital aspect in persuading workers to adopt safe behaviors, decreasing accidents, and increasing overall safety performance. The studies show the positive influence of safety leadership on safety compliance, engagement, and safety outcomes, and the need of addressing the safety leadership styles of all stakeholders engaged in a construction project, including owners, contractors, and subcontractors.

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