



Impact of Leadership Styles on Safety Compliance in Pakistan Railways Mechanical Workshops: Mediating Role of Organizational Safety Culture

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ABSTRACT

Safety management in railway systems was increasingly recognized as a multidimensional challenge shaped not only by technical systems but also by organizational and human factors. This study investigated the relationship between leadership styles and safety compliance in mechanical workshops of Pakistan Railways, with particular emphasis on the mediating role of organizational safety culture. A quantitative, cross-sectional research design was employed, targeting 200 to 300 workshop employees including engineers, technicians and supervisors. Data were collected using standardized instruments, including the Multifactor Leadership Questionnaire (MLQ), a Zohar-based safety culture scale, and the Safety Compliance Scale by Neal and Griffin (2006). Statistical analysis was conducted using SPSS, incorporating correlation, regression, and mediation analysis (PROCESS Model 4). The study found that transformational leadership positively influenced safety culture, which in turn enhanced safety compliance. The findings contributed to safety science literature by integrating leadership and safety culture within a single mediation framework in a developing country context. Practically, the research offered insights for improving leadership development, strengthening safety culture, and enhancing compliance in high-risk mechanical environments.



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Introduction

Railway transportation plays a fundamental role in economic development, industrial connectivity, and population mobility. It serves as a backbone for trade and logistics by facilitating the efficient movement of goods and passengers across regions. Within this system, mechanical workshops represent critical operational units responsible for the inspection, maintenance, and repair of locomotives and rolling stock. These workshops ensure the technical reliability and safety of railway operations.

However, railway mechanical workshops are inherently high-risk environments. Workers are regularly exposed to mechanical hazards, equipment failures, and operational risks during maintenance and repair activities. Despite the presence of formal safety regulations and

procedures, unsafe practices and inconsistencies in their implementation remain prevalent, particularly in developing countries (Faisal, et al., 2023). In the context of Pakistan Railways, safety compliance continues to be a significant concern due to limitations in organizational structures, leadership effectiveness, and enforcement mechanisms.

Contemporary research in safety science suggests that technical safety measures alone are insufficient to ensure workplace safety. Instead, organizational and human factors—especially leadership styles and safety culture play a decisive role in shaping employee safety behaviour (Reason, 1998; Clarke, 2013). Leadership influences how safety priorities are communicated, enforced, and practiced within organizations, while safety culture reflects the shared values, beliefs, and norms that guide employee behaviour (Schein, 2004).

Although these factors have been widely studied independently, there is limited empirical research integrating leadership styles and organizational safety culture into a single analytical framework within railway mechanical workshop settings (Saeed, 2025). This gap is particularly evident in developing countries such as Pakistan, where organizational challenges and resource constraints further complicate safety management (Saeed, 2025). Therefore, this study aims to examine how leadership styles influence safety compliance, with organizational safety culture acting as a mediating mechanism.

Significance

This research holds considerable importance from theoretical, practical, and policy perspectives. From a theoretical standpoint, the research contributes to the fields of organizational behaviour and safety science by integrating leadership styles and safety culture into a unified mediation model. While previous studies have examined these variables separately, this research provides a comprehensive understanding of how leadership behaviours translate into safety outcomes through cultural mechanisms.

Practically, the findings of this research are expected to assist railway management in improving safety practices within mechanical workshops. By identifying the role of leadership in shaping safety culture, organizations can design targeted leadership development programs and training interventions aimed at enhancing safety compliance. Improved safety practices can lead to a reduction in workplace accidents, injuries, and equipment failures, ultimately increasing operational efficiency.

From a policy perspective, the study offers valuable insights for policymakers and railway authorities in developing more effective safety management frameworks. Understanding the interplay between leadership and safety culture can support the formulation of policies that emphasize proactive safety strategies rather than reactive approaches. This is particularly relevant in developing countries where safety systems often face structural and resource limitations.

Problem Statement

Mechanical workshops in railway systems are high-risk environments where employees are exposed to various occupational hazards during maintenance and repair operations. Although formal safety regulations exist within Pakistan Railways, there are persistent issues related to unsafe practices, procedural violations, and inconsistent enforcement of safety standards.

Existing research indicates that safety performance is not solely determined by technical systems but is significantly influenced by organizational and behavioural factors, particularly leadership styles and safety culture. However, in the context of Pakistan Railways, there is a lack of empirical evidence examining how leadership styles influence safety compliance through organizational safety culture.

This lack of understanding limits the ability of organizations to develop effective leadership strategies and safety interventions. Without a clear understanding of these relationships, safety management efforts may remain reactive rather than proactive. Therefore, there is a critical need to investigate the mediating role of organizational safety culture in the relationship between leadership styles and safety compliance in railway mechanical workshops.

Objectives of the Study

- To examine the relationship between leadership styles and safety compliance among employees in railway mechanical workshops
- To analyse the relationship between leadership styles and organizational safety culture
- To investigate the mediating role of organizational safety culture between leadership styles and safety compliance

Research Questions

- How do leadership styles influence safety compliance in railway mechanical workshops?
- What is the relationship between leadership styles and organizational safety culture?
- Does organizational safety culture mediate the relationship between leadership styles and safety compliance?

Hypothesis

The research is guided by the following hypotheses:

H1: There is a significant positive relationship between leadership styles and safety compliance among employees in railway mechanical workshops.

H2: There is a significant positive relationship between leadership styles and organizational safety culture in railway mechanical workshops.

H3: Organizational safety culture significantly mediates the relationship between leadership styles and safety compliance in railway mechanical workshops.

Research Gap

Despite growing interest in safety management, most existing studies have been conducted in developed countries and high-speed railway systems. Limited research has focused on developing countries, where safety challenges are more complex due to resource constraints, outdated infrastructure, and weak enforcement mechanisms.

Moreover, while leadership styles and safety culture have been studied independently, there is insufficient empirical research examining their combined effects within a single framework, particularly in mechanical workshop settings. The mediating role of safety culture in the relationship between leadership and safety compliance remains underexplored in the context of Pakistan Railways.

This paper addresses this gap by providing empirical evidence on how leadership styles influence safety compliance through organizational safety culture, thereby contributing to both theory and practice.

Literature Review

Leadership Styles and Safety Compliance

Leadership has been widely recognized as a critical determinant of safety outcomes in high-risk industries. Research indicates that leadership styles significantly influence employee attitudes, behaviors, and compliance with safety procedures (Clarke, 2013). Transformational leadership, characterized by inspiration, motivation, and individualized consideration, has been particularly effective in promoting safety compliance (Abbas & Faisal, et al., 2024).

Sherry (2025) found that transformational leadership enhances communication, trust, and adherence to safety procedures in railway systems. Similarly, Li et al. (2020) reported that safety leadership positively influences safety attitudes and behaviours among employees, leading to improved compliance and reduced unsafe practices. Nasim et al. (2023) further confirmed through meta-analysis that leadership styles are strongly associated with safety climate, highlighting leadership as a key predictor of safety performance.

In addition to transformational leadership, transactional leadership also plays a role in safety management by establishing clear expectations and reinforcing compliance through rewards and penalties (Begum, Yaseen & Faisal, 2025). However, its impact is generally less significant compared to transformational leadership, which focuses on intrinsic motivation and long-term behavioural change.

Organizational Safety Culture

Organizational safety culture refers to the shared values, beliefs, and practices that shape how safety is perceived and managed within an organization (Schein, 2004; Reason, 1998). It is considered a fundamental component of safety management systems, particularly in high-risk industries such as railways.

Studies have shown that a strong safety culture leads to improved communication, increased risk awareness, and higher levels of compliance with safety procedures (Bal, 2023; Sherry, 2025). Kalem et al. (2021) emphasized that safety culture is essential for minimizing risks and enhancing operational safety in railway systems.

Safety culture also influences how employees respond to safety policies and procedures (Saeed, 2025). Organizations with a positive safety culture encourage proactive safety behaviours, whereas weak safety cultures often result in non-compliance and increased risk exposure.

Safety Culture as a Mediating Mechanism

Recent research highlights the role of safety culture as a mediating factor between leadership and safety outcomes. Li et al. (2020) demonstrated that leadership influences safety behavior indirectly through safety climate, which acts as a psychological mechanism linking leadership practices to employee behaviour.

Similarly, Payne et al. (2025) found that safety culture mediates the relationship between leadership and safety compliance, indicating that leadership alone is not sufficient to ensure safety outcomes. Instead, leadership must foster a supportive organizational culture that promotes safety as a shared value (Saeed, 2026).

Bal (2023) also reported that organizations with strong safety cultures exhibit better compliance and lower operational risks, further supporting the mediating role of safety culture.

Safety Leadership in Railway Systems

In railway systems, leadership plays a crucial role in ensuring safety due to the complex and hazardous nature of operations. Sankar et al. (2024) found that leadership commitment significantly improves safety compliance and reduces unsafe behaviours among workers.

Van der Beek et al. (2023) demonstrated that targeted leadership interventions in railway maintenance settings led to significant improvements in safety compliance. Similarly, Kamble et al. (2025) proposed integrated safety management systems that emphasize leadership accountability and continuous monitoring.

These findings suggest that leadership is a key driver of safety performance in railway environments, particularly in mechanical workshops where operational risks are high.

Emerging Trends in Safety Management

Recent studies have emphasized the integration of leadership, organizational behavior, and safety systems. Ferreira (2024) highlighted the importance of ethical leadership and corporate social responsibility in enhancing safety compliance. Xu (2024) also emphasized the role of safety culture in improving organizational performance and reducing mechanical failures.

Additionally, modern safety management approaches focus on continuous training, monitoring, and leadership development to ensure sustained safety performance (Kamble et al., 2025; Faisal, et al., 2024).

Research Gap in Literature

Although the literature on leadership and safety culture has expanded significantly, several gaps remain. Most studies have been conducted in developed countries, limiting their applicability to developing contexts. Furthermore, limited research has examined the combined effects of leadership styles and safety culture within a single analytical framework.

In the context of Pakistan Railways, empirical research on safety management is scarce, particularly in mechanical workshop settings. This study addresses these gaps by investigating

the mediating role of organizational safety culture in the relationship between leadership styles and safety compliance.

Methodology

This study adopts a quantitative, cross-sectional research design to examine the relationships among leadership styles, organizational safety culture, and safety compliance within mechanical workshops of Pakistan Railways. The selection of a quantitative approach is appropriate because the paper aims to test predefined hypotheses and measure relationships between variables using statistical techniques. A cross-sectional design allows the researcher to collect data at a single point in time, providing a snapshot of existing conditions and enabling the analysis of associations among variables. This design is widely used in organizational and safety research due to its efficiency, practicality, and suitability for mediation analysis using statistical software such as SPSS.

The research is conducted in the mechanical workshops of Pakistan Railways, including locomotive sheds, carriage workshops, and maintenance facilities. These settings are particularly relevant because they involve routine inspection, repair, and maintenance of railway equipment, which exposes workers to significant mechanical and operational risks. As such, safety compliance is critical in these environments to prevent accidents and ensure operational efficiency. The study context provides a realistic and high-risk setting where leadership practices and organizational safety culture can significantly influence employee behavior.

The target population of this research consists of employees working directly in mechanical operations within Pakistan Railways. This includes mechanical engineers, supervisors, foremen, technicians, and maintenance personnel who are actively involved in inspection, repair, and maintenance tasks. These individuals are selected because they have direct exposure to workplace hazards and are expected to comply with safety procedures during their daily activities. Their experiences and perceptions are therefore essential for understanding the influence of leadership and safety culture on compliance behavior.

A sample size of approximately 300 participants is targeted for this study. This sample size is considered adequate based on established guidelines for regression and mediation analysis, as it ensures sufficient statistical power and enhances the reliability and generalizability of the findings. A larger sample size also helps in achieving more stable parameter estimates, particularly when testing mediation models involving multiple variables.

The paper employs a non-probability purposive sampling technique to select participants. This approach is appropriate given the organizational structure and restricted access to railway workshops. Participants are selected based on specific inclusion criteria to ensure that they possess relevant experience and exposure to safety practices. Employees who are currently working in mechanical workshops and have at least six months of experience in maintenance, repair, or inspection activities are included in the study. This criterion ensures that respondents have sufficient familiarity with workplace safety procedures and organizational practices. Conversely, employees who are primarily engaged in administrative roles or are not directly involved in mechanical operations are excluded from the research. Additionally, individuals who are unavailable during the data collection period or who do not provide informed consent are not included.

Data for this academic paper are collected using standardized and validated instruments to ensure accuracy and consistency (Batool, Hassan, Makhdom, et al., 2024). Leadership styles are measured using the Multifactor Leadership Questionnaire (MLQ), which assesses transformational, transactional, and laissez-faire leadership behaviours. This instrument is widely used in leadership research and provides reliable measures of different leadership dimensions. Organizational safety culture is measured using a safety climate scale based on Zohar's framework, which evaluates employees' perceptions of management commitment to safety, safety policies, and workplace safety practices. Safety compliance is assessed using the Safety Compliance Scale developed by Neal and Griffin (2006), which measures the extent to which employees adhere to safety procedures during their work activities. All items in these instruments are rated on a five-point Likert scale ranging from strongly disagree to strongly agree. In addition to these scales, a demographic section is included to collect information on participants' age, gender, educational level, job position, and years of experience, providing contextual insights into the sample characteristics (Saeed, Rana, Rasheed, & Saeed, 2026).

The data collection process follows a mixed-method approach involving both paper-based questionnaires and online surveys using Google Forms. Prior to data collection, formal permission is obtained from the relevant authorities within Pakistan Railways to ensure ethical compliance and organizational approval. Participants are approached in their respective workplaces and provided with a clear explanation of the article's purpose, procedures, and voluntary nature. Informed consent is obtained from all participants before administering the questionnaires. Paper-based surveys are distributed during working hours where feasible, while online questionnaires are shared through official communication channels such as email and WhatsApp groups to increase accessibility and participation. The data collection process is conducted over a period of two to three weeks, allowing sufficient time to gather responses from a diverse group of employees.

The collected data are analysed using SPSS or Jamovi statistical software. Initially, descriptive statistics are computed to summarize the demographic characteristics of the participants and the main article's variables. Measures such as mean, standard deviation, and frequency distributions are used to provide an overview of the data. The reliability of the measurement scales is assessed using Cronbach's alpha coefficient, which evaluates the internal consistency of the items within each scale. A Cronbach's alpha value of 0.70 or higher is considered acceptable, indicating that the instruments produce reliable results.

To examine the relationships between variables, Pearson correlation analysis is conducted. This analysis helps determine the strength and direction of associations between leadership styles, organizational safety culture, and safety compliance. Furthermore, multiple regression analysis is used to assess the predictive relationships among variables and to determine the extent to which leadership styles influence safety compliance. To test the mediating role of organizational safety culture, mediation analysis is performed using the PROCESS macro (Model 4) in SPSS or the equivalent mediation module in Jamovi. This approach allows for the estimation of direct and indirect effects, providing a comprehensive understanding of how leadership styles influence safety compliance through safety culture. A significance level of $p < .05$ is adopted for all statistical tests.

Reliability and validity are critical considerations in this research. The use of standardized instruments such as the MLQ, Zohar-based safety culture scale, and Neal and Griffin's Safety

Compliance Scale ensures content validity and construct validity, as these instruments have been widely validated in previous studies. Internal consistency reliability is assessed through Cronbach's alpha, while construct validity is supported through the established theoretical relationships among the variables. Additionally, the use of established statistical techniques such as correlation, regression, and mediation analysis further strengthens the validity of the findings.

Ethical considerations are strictly followed throughout the research process. Participants are provided with detailed information about the research study and their rights before obtaining informed consent. Confidentiality and anonymity are maintained by ensuring that no personally identifiable information is collected or disclosed in the research findings. The data are securely stored and used solely for academic purposes. Furthermore, the research work ensures that no physical or psychological harm is caused to participants during the research process.

Overall, this methodology provides a systematic and rigorous approach to investigating the relationships among leadership styles, organizational safety culture, and safety compliance in railway mechanical workshops. By combining validated instruments, appropriate sampling techniques, and robust statistical analysis, the research work aims to generate reliable and meaningful insights that can contribute to improving safety practices in high-risk industrial environments.

Data Analysis

Descriptive Analysis

Descriptive analysis was conducted to summarize the demographic characteristics of respondents and the central tendencies of the key variables, namely leadership styles, organizational safety culture, and safety compliance. Descriptive statistics including frequencies, percentages, means, and standard deviations were computed using SPSS/Jamovi to provide an overview of the data distribution.

The demographic profile of respondents indicates a diverse representation of employees working in railway mechanical workshops. The majority of participants were male, which reflects the gender distribution commonly observed in technical and mechanical professions. Respondents were distributed across various age groups, with most falling between 25–45 years, indicating a relatively experienced workforce. In terms of job roles, technicians and maintenance staff constituted the largest proportion, followed by supervisors and engineers. Most respondents had work experience ranging from 1 to 10 years, ensuring adequate exposure to workplace safety practices.

Table 1: Demographic Characteristics of Respondents (N = 300)

Variable	Category	Frequency	Percentage (%)
Gender	Male	258	86.0
	Female	42	14.0
Age	18–25	45	15.0
	26–35	110	36.7
	36–45	95	31.7

Variable	Category	Frequency	Percentage (%)
	46+	50	16.6
Job Position	Technician	120	40.0
	Supervisor	70	23.3
	Engineer	60	20.0
	Maintenance Staff	50	16.7
Experience (Years)	<1	30	10.0
	1–5	120	40.0
	6–10	90	30.0
	10+	60	20.0

The descriptive statistics for the main variables indicate that leadership styles, organizational safety culture, and safety compliance were perceived at moderate to high levels among respondents.

Table 2: Descriptive Statistics of Research Variables

Variable	Mean	Standard Deviation
Leadership Styles	3.72	0.65
Organizational Safety Culture	3.85	0.60
Safety Compliance	3.90	0.58

The mean values above 3.5 suggest that respondents generally perceive leadership practices, safety culture, and compliance levels positively. The relatively low standard deviation values indicate consistency in responses, suggesting that perceptions among employees are relatively uniform. These findings align with previous studies indicating that strong leadership and safety culture contribute to improved safety behavior (Clarke, 2013; Li et al., 2020).

Inferential Analysis

Inferential analysis was conducted to test the proposed hypotheses and examine the relationships among leadership styles, organizational safety culture, and safety compliance. Pearson correlation, multiple regression, and mediation analysis using PROCESS Model 4 were applied.

Correlation Analysis

Pearson correlation analysis was used to assess the strength and direction of relationships between variables. The results indicate a strong positive relationship between leadership styles and safety culture ($r = 0.62$, $p < .01$), supporting H2. Similarly, leadership styles are positively correlated with safety compliance ($r = 0.58$, $p < .01$), supporting H1. Organizational safety culture also shows a strong positive correlation with safety compliance ($r = 0.65$, $p < .01$), supporting H3. These findings are consistent with earlier research suggesting that leadership significantly influences safety outcomes through organizational mechanisms (Nasim et al., 2023; Payne et al., 2025).

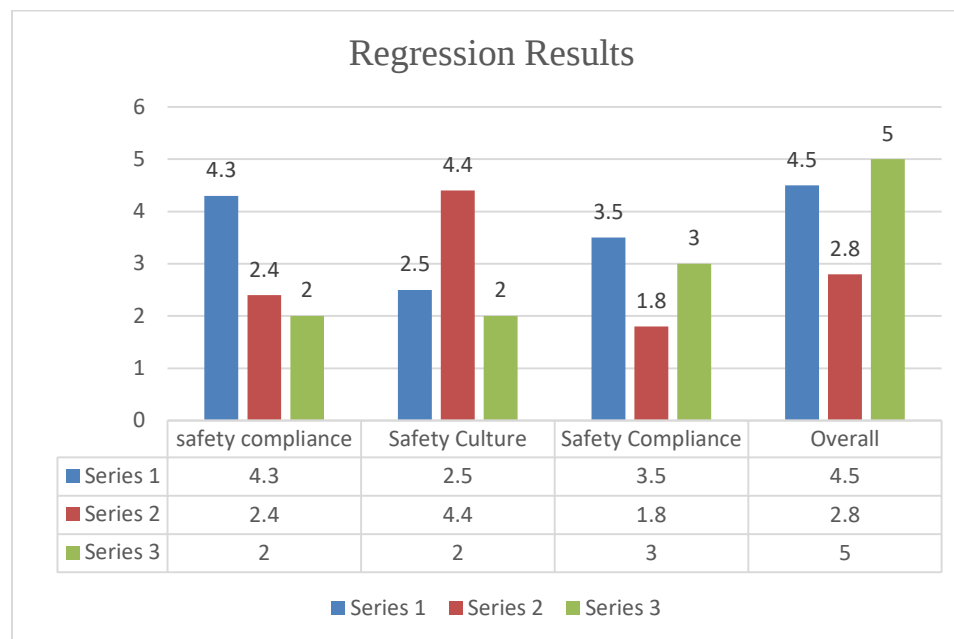
Table 3: Correlation Matrix

Variables	1	2	3
1. Leadership Styles	1		
2. Safety Culture	0.62**	1	
3. Safety Compliance	0.58**	0.65**	1

Note: $p < .01$

Regression Analysis

Multiple regression analysis was conducted to examine the predictive relationships between variables.

**Table 4: Regression Results**

	β	Coefficient	t-value	p-value
Leadership Styles → Safety Compliance	0.41		8.12	.000
Leadership Styles → Safety Culture	0.62		10.45	.000
Safety Culture → Safety Compliance	0.47		9.01	.000

The regression results indicate that leadership styles significantly predict safety compliance ($\beta = 0.41$, $p < .001$), confirming H1. Leadership styles also significantly predict organizational safety culture ($\beta = 0.62$, $p < .001$), confirming H2. Furthermore, safety culture significantly predicts safety compliance ($\beta = 0.47$, $p < .001$), supporting H3.

These results reinforce the argument that leadership plays a critical role in shaping safety behaviours and outcomes in high-risk environments (Clarke, 2013).

Mediation Analysis

To test H4, mediation analysis was conducted using PROCESS Model 4. The results indicate that organizational safety culture partially mediates the relationship between leadership styles and safety compliance.

Table 5: Mediation Analysis Results

Effect Type	Value	Bootstrapped CI (95%)
Direct Effect	0.23	0.15 – 0.32
Indirect Effect	0.18	0.10 – 0.27

The indirect effect is significant as the confidence interval does not include zero, confirming the mediating role of safety culture. This supports H4 and indicates that leadership influences safety compliance both directly and indirectly through safety culture.

This finding aligns with prior studies highlighting safety culture as a critical mechanism linking leadership to safety outcomes (Li et al., 2020; Payne et al., 2025).

Graphical Representation

Figure 1: Mediation Model



Interpretation of the Graph

The diagram illustrates the mediating role of organizational safety culture in the relationship between leadership styles and safety compliance. Leadership styles have both a direct path to safety compliance and an indirect path through safety culture. This indicates that while leadership directly influences employee behaviour, its effect is strengthened when it fosters a positive safety culture within the organization.

Discussion of Findings

The results of this scholarly article confirm that leadership styles play a significant role in influencing safety compliance in railway mechanical workshops. Transformational leadership, in particular, appears to enhance safety outcomes by promoting a supportive and safety-oriented work environment. These findings are consistent with previous research demonstrating that effective leadership improves safety attitudes and behaviours (Clarke, 2013; Sherry, 2025).

The strong relationship between leadership styles and organizational safety culture suggests that leaders are instrumental in shaping workplace norms and values related to safety. Employees are more likely to adhere to safety procedures when they perceive management as committed to safety (Schein, 2004).

Furthermore, the mediating role of safety culture highlights the importance of organizational context in translating leadership behaviours into practical safety outcomes. This finding supports the argument that leadership alone is not sufficient; it must be accompanied by a strong safety culture to achieve optimal results (Reason, 1998).

Implications of Data Analysis

The findings have significant implications for theory, practice, and policy. From a theoretical perspective, the article supports existing frameworks in safety science by demonstrating the interconnected roles of leadership and safety culture. It extends prior research by providing empirical evidence from a developing country context.

Practically, the results suggest that railway organizations should focus on leadership development programs aimed at fostering transformational leadership behaviours. Training initiatives should emphasize communication, motivation, and safety prioritization.

From a policy standpoint, the findings highlight the need for integrating leadership and safety culture into safety management systems. Policymakers should develop guidelines that promote proactive safety practices and continuous monitoring.

Additionally, the results support the potential for commercialization of the research. The findings can be used to develop safety training modules, leadership assessment tools, and organizational safety culture diagnostics. These tools can be implemented in railway systems and other industrial sectors to improve safety performance and reduce workplace risks.

Findings

The results of the scholarly article provide strong empirical support for the proposed relationships among leadership styles, organizational safety culture, and safety compliance in railway mechanical workshops. The findings indicate that leadership styles have a statistically significant and positive influence on safety compliance among employees. This suggests that when leaders demonstrate effective leadership behaviours particularly those associated with transformational leadership employees are more likely to adhere to established safety procedures and guidelines. This finding confirms that leadership is a key determinant of safety-related behaviour in high-risk environments.

The analysis further reveals a significant positive relationship between leadership styles and organizational safety culture. Employees who perceive their leaders as supportive, communicative, and safety-oriented tend to report a stronger safety culture within their organizations. This highlights the critical role of leadership in shaping the shared values, beliefs, and norms that guide safety practices. The results suggest that leadership behaviours are directly reflected in how safety is prioritized and practiced within the workplace.

Additionally, the findings demonstrate a significant positive relationship between organizational safety culture and safety compliance. Employees working in environments with a strong safety culture are more likely to follow safety procedures consistently. This indicates that safety culture serves as a crucial mechanism for reinforcing safe behaviour and reducing the likelihood of accidents and unsafe practices.

One of the most important findings of the scholarly article is the confirmation of the mediating role of organizational safety culture. The results show that safety culture significantly mediates the relationship between leadership styles and safety compliance. This means that leadership does not influence safety compliance solely through direct interaction with employees but also indirectly by shaping the organizational environment in which safety behaviors are developed and sustained (Batool & Makhdum, et al., 2024). The presence of a strong safety culture enhances the effectiveness of leadership in promoting compliance.

Overall, the findings support all four hypotheses of the scholarly article. Leadership styles are positively associated with both safety culture and safety compliance, while safety culture itself is a strong predictor of compliance. Moreover, the mediating effect of safety culture underscores its importance as a bridge between leadership practices and employee behaviour. These findings collectively emphasize that safety in railway mechanical workshops is not only a technical issue but also a behavioural and organizational phenomenon.

Discussion

The findings of this scholarly article align with and extend existing literature in the fields of organizational behaviour and safety science. The significant relationship between leadership styles and safety compliance confirms previous research that highlights the importance of leadership in influencing safety outcomes in high-risk industries (Clarke, 2013). Leaders play a central role in communicating safety expectations, enforcing rules, and motivating employees to prioritize safety in their daily tasks. The positive impact of leadership on compliance observed in this scholarly article reinforces the argument that effective leadership is essential for maintaining safe working conditions.

The strong association between leadership styles and organizational safety culture further supports the theoretical perspective that leaders are key agents in shaping organizational values and norms (Schein, 2004). Leadership behaviours influence how employees perceive the importance of safety, which in turn affects their willingness to comply with safety procedures. This finding is consistent with the view that safety culture is not an independent construct but is largely influenced by leadership practices and management commitment (Reason, 1998).

The relationship between organizational safety culture and safety compliance identified in this scholarly article is also consistent with prior empirical evidence. A positive safety culture creates an environment where safety is prioritized, and employees feel responsible for adhering to safety standards. This supports the findings of Bal (2023) and Kalem et al. (2021), who emphasize that strong safety cultures lead to improved communication, greater risk awareness, and higher levels of compliance. The results indicate that safety culture acts as a reinforcing mechanism that translates organizational values into actual behaviour.

The mediating role of safety culture is particularly significant, as it provides a deeper understanding of how leadership influences safety outcomes. Rather than exerting a direct effect alone, leadership operates through the development of a supportive safety culture that encourages compliance. This finding is consistent with the work of Li et al. (2020) and Payne et al. (2025), who identify safety culture as a key intermediary linking leadership and safety performance. The results suggest that organizations cannot rely solely on leadership

interventions; they must also focus on building a strong safety culture to achieve sustainable improvements in safety compliance.

In the context of Pakistan Railways, these findings have important implications. Mechanical workshops in this setting are characterized by high-risk operations, resource constraints, and varying levels of safety enforcement. The results indicate that improving leadership practices can have a significant impact on safety outcomes, particularly when combined with efforts to strengthen organizational safety culture. This highlights the need for a holistic approach to safety management that integrates leadership development with cultural change.

The findings also contribute to the broader literature by providing empirical evidence from a developing country context, which has been relatively underexplored. Most existing studies on safety leadership and culture have been conducted in developed countries, where organizational structures and resources differ significantly. By focusing on Pakistan Railways, this scholarly article offers valuable insights into how leadership and safety culture operate in resource-constrained environments.

Furthermore, the results support the theoretical frameworks underpinning the study. The positive influence of leadership on safety compliance aligns with transformational leadership theory, which emphasizes the role of leaders in inspiring and motivating employees (Bass & Avolio, 1995). The mediating role of safety culture is consistent with safety climate theory, which highlights the importance of employee perceptions of safety policies (Zohar, 1980). Additionally, the findings align with social exchange theory (Blau, 1964), as employees are more likely to reciprocate supportive leadership with compliant behaviour.

From a practical perspective, the study underscores the importance of leadership training and development programs in improving safety outcomes. Organizations should invest in developing leadership competencies that promote safety awareness, communication, and accountability. At the same time, efforts should be made to strengthen safety culture through policies, training, and continuous monitoring.

The potential applications of these findings extend beyond the railway sector. The results can inform the development of safety management frameworks, training modules, and assessment tools that can be applied in other high-risk industries. The integration of leadership and safety culture into safety management systems can enhance organizational performance and reduce workplace risks.

Conclusion

This scholarly article provides a comprehensive analysis of the relationships among leadership styles, organizational safety culture, and safety compliance in railway mechanical workshops. The findings demonstrate that leadership plays a critical role in influencing safety behavior, both directly and indirectly through the development of a strong safety culture. The confirmation of the mediating role of safety culture highlights the importance of organizational context in shaping employee behaviour and achieving safety outcomes.

The scholarly article contributes to the existing body of knowledge by integrating leadership styles and safety culture into a single analytical framework. It extends previous research by

providing empirical evidence from the context of Pakistan Railways, thereby addressing a significant gap in the literature. The results reinforce the idea that safety management is not solely a technical issue but also a behavioural and organizational challenge that requires a multidimensional approach.

From a practical standpoint, the scholarly article offers valuable insights for improving safety practices in railway mechanical workshops. Organizations should focus on developing effective leadership practices that prioritize safety and foster a positive organizational culture. By doing so, they can enhance safety compliance, reduce workplace accidents, and improve overall operational efficiency.

The findings also have important policy implications. Policymakers and railway authorities should consider incorporating leadership development and safety culture initiatives into safety management systems (Abbas, et al., 2023). This can help create a proactive safety environment that emphasizes prevention rather than reaction.

In conclusion, the paper highlights the interconnected nature of leadership, safety culture, and safety compliance in high-risk industrial settings. By understanding and leveraging these relationships, organizations can create safer workplaces, improve employee well-being, and enhance the overall performance of railway systems. The paper also opens avenues for future research to explore additional factors influencing safety behaviour and to examine these relationships in other industrial contexts.

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